

THE SOCIAL DYNAMICS OF DEFORESTATION  
IN THE SIERRA MADRE, PHILIPPINES

Proefschrift

ter verkrijging van de graad van Doctor  
aan de Rijksuniversiteit te Leiden,  
op gezag van de Rector Magnificus Dr. W.A. Wagenaar,  
hoogleraar in de faculteit der Sociale Wetenschappen,  
volgens besluit van het College voor Promoties  
te verdedigen op dinsdag 13 oktober 1998  
te klokke 15.15 uur

door

Gerhard Martin van den Top

geboren te Bennekom in 1961

FOR MARLEEN, AND FOR MY PARENTS

Promotiecommissie:

Promotores: Prof.dr.ir. W.T. de Groot  
Prof.dr. O.D. van den Muijzenberg (Universiteit van Amsterdam)

Referent: Prof.dr. F. Hüsken (Katholieke Universiteit Nijmegen)

Overige leden: Prof.dr. H.J.M. Claessen  
Prof.dr.ir. B.F. Galjart  
Prof.dr. R. Schefold

## Preface

## Acknowledgements

1	<i>Tropical deforestation: a preliminary exploration</i>	
1.1	Introduction	1
1.2	The changing nature of the deforestation problem	1
1.3	Degradation and loss of tropical moist forests: formal dimensions	4
	1.3.1 Deforestation defined	4
	1.3.2 Formal dimensions of tropical deforestation	5
1.4	Normative side of the tropical deforestation problem	11
1.5	Functions and values of tropical moist forests	14
	1.5.1 Hydrology and climate functions	14
	1.5.2 Watershed function	17
	1.5.3 Biodiversity	18
1.6	Conclusion	20
2	<i>Theoretical elements and approach</i>	
2.1	Introduction	23
2.2	Factors of influence on tropical deforestation	24
	2.2.1 Population growth	24
	2.2.2 Poverty	28
	2.2.3 Corporate timber production and -trade	30
	2.2.4 Government policies and -institutions	32
2.3	Contribution, approach and methodology of this study	37
	2.3.1 Background, aim and objective	37
	2.3.2 Research questions	39
	2.3.3 Approach, methodology and limitations	40
3	<i>Meeting the Sierra Madre deforestation problem</i>	
3.1	Travelling North	53
	3.1.1 Philippines, form and figure	53
	3.1.2 Profile of the Cagayan Valley region	55
3.2	The Philippines: from timber exporter to -importer	59
3.3	Domestic views on the causes of deforestation in the Philippines	69
3.4	Forest degradation and loss in the Sierra Madre region	79
4	<i>As the Cagayan Valley</i>	
	4.1 Introduction	19
	4.2 Cagayan Valley: a geographical profile	19
	4.3 Forest migration: a geographical profile	79
	4.3.1 Forest migration: a geographical profile	79
	4.3.2 Forest migration: a geographical profile	79
	4.3.3 Forest migration: a geographical profile	79
	4.3.4 Forest migration: a geographical profile	79
	4.4 Corporate logging	81
	4.4.1 The activity	81
	4.4.2 Actors in corporate logging	81
	4.4.3 The activity	81
	4.4.4 Actors in corporate logging	81
	4.5 Upland agriculture	81
	4.5.1 The activity	81
	4.5.2 Actors in upland agriculture	81
	4.5.3 The activity	81
	4.5.4 Actors in upland agriculture	81
	4.5.5 The activity	81
	4.5.6 Actors in upland agriculture	81
	4.5.7 The activity	81
	4.5.8 Actors in upland agriculture	81
	4.5.9 The activity	81
	4.5.10 Actors in upland agriculture	81
	4.5.11 The activity	81
	4.5.12 Actors in upland agriculture	81
	4.5.13 The activity	81
	4.5.14 Actors in upland agriculture	81
	4.5.15 The activity	81
	4.5.16 Actors in upland agriculture	81
	4.5.17 The activity	81
	4.5.18 Actors in upland agriculture	81
	4.5.19 The activity	81
	4.5.20 Actors in upland agriculture	81
	4.5.21 The activity	81
	4.5.22 Actors in upland agriculture	81
	4.5.23 The activity	81
	4.5.24 Actors in upland agriculture	81
	4.5.25 The activity	81
	4.5.26 Actors in upland agriculture	81
	4.5.27 The activity	81
	4.5.28 Actors in upland agriculture	81
	4.5.29 The activity	81
	4.5.30 Actors in upland agriculture	81
	4.5.31 The activity	81
	4.5.32 Actors in upland agriculture	81
	4.5.33 The activity	81
	4.5.34 Actors in upland agriculture	81
	4.5.35 The activity	81
	4.5.36 Actors in upland agriculture	81
	4.5.37 The activity	81
	4.5.38 Actors in upland agriculture	81
	4.5.39 The activity	81
	4.5.40 Actors in upland agriculture	81
	4.5.41 The activity	81
	4.5.42 Actors in upland agriculture	81
	4.5.43 The activity	81
	4.5.44 Actors in upland agriculture	81
	4.5.45 The activity	81
	4.5.46 Actors in upland agriculture	81
	4.5.47 The activity	81
	4.5.48 Actors in upland agriculture	81
	4.5.49 The activity	81
	4.5.50 Actors in upland agriculture	81
	4.5.51 The activity	81
	4.5.52 Actors in upland agriculture	81
	4.5.53 The activity	81
	4.5.54 Actors in upland agriculture	81
	4.5.55 The activity	81
	4.5.56 Actors in upland agriculture	81
	4.5.57 The activity	81
	4.5.58 Actors in upland agriculture	81
	4.5.59 The activity	81
	4.5.60 Actors in upland agriculture	81
	4.5.61 The activity	81
	4.5.62 Actors in upland agriculture	81
	4.5.63 The activity	81
	4.5.64 Actors in upland agriculture	81
	4.5.65 The activity	81
	4.5.66 Actors in upland agriculture	81
	4.5.67 The activity	81
	4.5.68 Actors in upland agriculture	81
	4.5.69 The activity	81
	4.5.70 Actors in upland agriculture	81
	4.5.71 The activity	81
	4.5.72 Actors in upland agriculture	81
	4.5.73 The activity	81
	4.5.74 Actors in upland agriculture	81
	4.5.75 The activity	81
	4.5.76 Actors in upland agriculture	81
	4.5.77 The activity	81
	4.5.78 Actors in upland agriculture	81
	4.5.79 The activity	81
	4.5.80 Actors in upland agriculture	81
	4.5.81 The activity	81
	4.5.82 Actors in upland agriculture	81
	4.5.83 The activity	81
	4.5.84 Actors in upland agriculture	81
	4.5.85 The activity	81
	4.5.86 Actors in upland agriculture	81
	4.5.87 The activity	81
	4.5.88 Actors in upland agriculture	81
	4.5.89 The activity	81
	4.5.90 Actors in upland agriculture	81
	4.5.91 The activity	81
	4.5.92 Actors in upland agriculture	81
	4.5.93 The activity	81
	4.5.94 Actors in upland agriculture	81
	4.5.95 The activity	81
	4.5.96 Actors in upland agriculture	81
	4.5.97 The activity	81
	4.5.98 Actors in upland agriculture	81
	4.5.99 The activity	81
	4.5.100 Actors in upland agriculture	81

FOR MARLEEN, AND FOR MY PARENTS

Programme Environment and Development

College of Environmental Science, Leiden University

P.O. Box 9515

2300 RA Leiden

The Netherlands

351

Pharmaceuticals

- Presentator: Prof. dr. ir. W. T. de Groot  
Prof. dr. G. D. van den Hulzenberg (Universiteit van Amsterdam)
- Debetor: Prof. dr. F. H. H. H. (Katholieke Universiteit Nijmegen)
- Overleg leden: Prof. dr. H. J. M. C. C. C.  
Prof. dr. G. N. F. G. G.  
Prof. dr. B. B. B. B.

Layout and illustrations: Gerhard van den Top  
Maps: Mr. Paul Langeveld, Fa. INTCOMPAS, Amsterdam  
Print: Universitair Facilitair Bedrijf, Rijksuniversiteit Leiden

Cover photographs: newly opened *uma*, producing hybrid corn and [inset] son of Ifugao  
'newcomer' migrant, Sierra Madre, Jan '98.

isbn 90-5191-120-3

© Gerhard M. van den Top, 1998

vandentop@RHBCML.Leidenuniv.nl  
Programme Environment and Development  
Centre of Environmental Science, Leiden University  
P.O. Box 9518  
2300 RA Leiden  
The Netherlands

## Table of Contents

### Preface

### Acknowledgement

<b>1</b>	<b><i>Tropical deforestation: a preliminary exploration</i></b>	<b>297</b>
1.1	Introduction	1
1.2	The changing nature of the deforestation problem	1
1.3	Degradation and loss of tropical moist forests: factual dimensions	4
1.3.1	Deforestation defined	4
1.3.2	Factual dimensions of tropical deforestation	5
1.4	Normative side of the tropical deforestation problem	11
1.5	Functions and values of tropical moist forests	14
1.5.1	Hydrology and climate functions	14
1.5.2	Watershed function	17
1.5.3	Biodiversity	18
1.6	Conclusion	20
<b>2</b>	<b><i>Theoretical elements and approach</i></b>	
2.1	Introduction	23
2.2	Factors of influence on tropical deforestation	24
2.2.1	Population growth	24
2.2.2	Poverty	28
2.2.3	Corporate timber production and -trade	30
2.2.4	Government policies and -institutions	35
2.3	Contribution, approach and methodology of this study	37
2.3.1	Background, aim and objective	37
2.3.2	Research questions	39
2.3.3	Approach, methodology and limitations	40
<b>3</b>	<b><i>Meeting the Sierra Madre deforestation problem</i></b>	
3.1	Travelling North	53
3.1.1	Philippines, facts and figures	53
3.1.2	Profile of the Cagayan Valley Region	55
3.2	The Philippines; from timber exporter to -importer	64
3.3	Common views on the causes of deforestation in the Philippines	66
3.4	Forest degradation and loss in the Sierra Madre, 1950-1990	68
<b>4</b>	<b><i>At the Cutting Edge;</i></b>	
	<b><i>Primary actors and activities in the deforestation of the Sierra Madre</i></b>	
4.1	Introduction	91
4.2	Upland population estimates	91
4.3	The Agta	94
4.4	Forest migrants: origins and motives	97
4.4.1	Forest migration: singular step or staggered process?	97
4.4.2	Forest migrants: a typology	98
4.4.3	Source- and destination motives in forest migration: an initial inventory	105
4.5	Corporate logging	106
4.5.1	The activity	106
4.5.2	Actors in corporate logging	112
4.6	Carabao logging	116
4.6.1	The activity	116
4.6.2	Actors in carabao logging	120
4.7	Upland agriculture	124
4.7.1	The nomenclature	124
4.7.2	A closer examination of <i>uma-ublag</i> sequences	126

4.7.3	Some remarks on the sustainability of <i>uma</i> farming in the Sierra Madre	137
4.8	Other livelihood options	143
4.8.1	Paid labour	143
4.8.2	Hunting and gathering of non timber forest products	144
4.9	The overall livelihood picture	151
4.10	First conclusions, further questions	155
<b>5</b>	<b><i>Policies and policy actors in Philippine forest management</i></b>	
5.1	Introduction	159
5.2	Philippine forest policy	159
5.2.1	Ownership of lands and natural resources	160
5.2.2	Forest product utilization, from corporate license to democratic access	162
5.2.3	Forest land use and -occupancy	173
5.2.4	Reforestation and conservation	181
5.3	The forest policy actors in Cagayan Valley	186
5.3.1	Line Agencies	186
5.3.2	Elected government officials	196
5.3.3	The NGO sector	203
5.3.4	International actors	211
5.4	Concluding analysis	213
<b>6</b>	<b><i>Of Ballot and Bureaucracy: mechanisms of distorted policy implementation</i></b>	
6.1	Introduction	217
6.2	Options for policy circumvention	218
6.2.1	Manipulation of the information flow	220
6.2.2	Misleading policy interpretation	226
6.2.3	Co-opting DENR Officials	230
6.2.4	Tolerated settlement and forest clearing	233
6.3	Motives of DENR officials to facilitate illegal access	234
6.3.1	Intra-bureaucratic motives: status, security, conflict avoidance	235
6.3.2	Financial incentives	237
6.3.3	Political interference	238
6.4	Mutual Accommodation Networks: the actors field of government accommodated illegal access to public forest	243
6.5	Local Bosses and National Government: political origins of state weakness and accommodated access	248
<b>7</b>	<b><i>Historical roots of corporate logging</i></b>	
7.1	Introduction	259
7.2	Historical dimensions of political patronage and brokerage	260
7.2.1	Colonial rulers and the indigenous <i>principalia</i>	260
7.2.2	The Tobacco Monopoly	264
7.2.3	Introduction of mass politics and district representation	267
7.3	Corporate logging: made in the USA	272
7.3.1	Overcoming labour constraints in forest utilization	272
7.3.2	The 'Forest Development' view	278
7.3.3	Logging history of Cagayan Valley	282
7.4	Logging and the Cagayan Valley Chinese	288
7.4.1	Introduction	288
7.4.2	Brief historical sketch of the Philippine Chinese	288
7.4.2	Chinese role in the Cagayan Valley wood industry	290
7.5	Conclusions	292

<b>8</b>	<b><i>Perpetual Land of Promise; forest migration in a historical perspective</i></b>	
8.1	Introduction	297
8.2	Contours of the original landscape	298
8.3	Migration and agricultural expansion in the Cagayan Valley lowlands	306
8.3.1	Late Spanish period: tobacco farmers migrate to Cagayan	306
8.3.2	The American period: colonization of the southern lowlands	309
8.3.3	After independence: logging and agricultural expansion towards Isabela	313
8.3.4	Population growth and the post-1970 migration pattern: analysis	314
8.4	A first assessment of farmland scarcity in the lowlands	318
8.5	Farmland distribution and agrarian reform	322
8.5.1	Cagayan Valley's friar lands: the first land reform that failed	322
8.5.2	Indications of unequal land distribution	327
8.5.3	Landowner strategies to consolidate holdings through semi-compliance	328
8.5.4	Land reform and informal credit	331
8.5.5	Conclusions on access to farmland in the lowlands	335
8.6	Forest migration-in-context	335
<b>9</b>	<b><i>Hybrid corn, rural credit and the future of the Sierra Madre</i></b>	
9.1	Introduction	341
9.2	Corn: from staple to corporate cash crop	342
9.3	Hybrid corn: the 'coming crop' in upland farming	344
9.4	Crop choice and informal credit	353
9.4.1	The importance of the informal sector in rural credit	353
9.4.2	The crop collateral	354
9.4.3	Commercial grains: the post-logging business opportunity	358
9.5	Credit as a risk-avoidance strategy	363
9.6	The actors field of hybrid corn production in the Sierra Madre	367
9.7	Implications for future forest cover in the Sierra Madre	370
9.8	Subsidizing corn production with logging revenue: the Miramar Cooperative	372
9.9	Conclusions	375
<b>10</b>	<b><i>Synthesis</i></b>	<b>379</b>
<b>Annexes</b>		
A	Data-sheets of reclassification and normation process, forest cover maps Ch. 3	387
B	Calculations of projected forest conversion due to <i>uma</i> farming, 1990-2040 (table 4.8)	393
C	Calculations underlying estimated returns to labour of rice, corn and banana in upland farms (table 4.12)	397
D	Late 19 <sup>th</sup> century map of Northern Luzon, Manila Observatory Enlarged version of map 8.1 and its legend	401
E	Description of three cases from overview table 9.1	409
<b>References</b>		<b>415</b>
<b>Summary (in Dutch)</b>		<b>433</b>
<b>Curriculum vitae</b>		<b>439</b>

**List of Figures**

2.1	Correlation between forest cover and population density: 23 observations in 13 tropical Asian countries during 1956-89	25
2.2	The Problem-in-Context framework	41
2.3	An example actors field	42
3.1	Regional distribution of Philippine forest cover, 1950 and 1992	64
3.2	Changes in distribution of tree crown cover classes, 1950-1990, Sierra Madre	70
4.1	A basic actors field of corporate logging	114
4.2	Projected <i>Narra</i> depletion pattern on the Western slopes, 1995-2010	119
4.3	A basic actors field of carabao logging	123
4.4	Common crop-fallow sequences in upland farming	134
4.5	Projected forest conversion due to <i>uma</i> farming, 1990-2015-2040	141
4.6	Expenditure pattern of 33 migrants in five forest settlements	151
4.7	Activity calendar for major livelihood options	154
6.1	Mutual Accommodation Network	245
7.1	Philippine log extraction rates (1875-1992)	277
8.1	Indexed logging rate, population, and forest cover, Philippines (1900-1995)	296
8.2	Changes in cultivated farm area, Cagayan Valley (1918-1991)	306
8.3	Homestead applications, Cagayan Valley (1904-1937, x 1,000 ha)	310
8.4	Tobacco area & production, Cagayan Valley, 1830-1895	312
8.5	Indexed population growth, Cagayan Valley and Philippines, 1850-1996	315
8.6	Changes in forest cover and per capita agricultural land, Philippines and Cagayan Valley	321
8.7	Action-in-Context explanation of forest migration by newcomers	336
9.1	Corn area and -production in Cagayan Valley, 1903-1995	342
9.2	Action-in-Context explanation of hybrid corn cultivation in the Sierra Madre	368

**List of Tables**

1.1	Global Forest Areas, by type and percentage of area protected	6
1.2	Global inventories of tropical forest, various sources (x 1,000 hectares)	9
3.1	Philippine land use (1985)	54
3.2	Philippines, distribution of crop lands	55
3.3	Cagayan Valley land use (1988, hectares)	57
3.4	Cagayan Valley population, by province and mother tongue	58
3.5	DENR forest data on Cagayan Valley	61
3.6	Cagayan Valley regional economy: Value added by sector (1988, x 1000 Pesos)	62
3.7	Philippine forest cover and loss, by region (10 <sup>5</sup> ha, 1950-1992)	65
4.1	Estimated upland population (Cruz <i>et al.</i> 1986) compared with population census (NSO 1995) Cagayan Valley	92
4.2	Inventory of 'forest occupants' in the Sierra Madre (GTZ 1990)	93
4.3	Registered upland population for selected settlements (a comparison of GTZ 1990 and Census 1990)	94
4.4	Forest migrant categories	99
4.5	Distance from <i>sitio</i> 's Mansarong and Dy Abra to <i>Narra</i> -extraction areas	120
4.6	Yields of common upland crops	131
4.7	Common rotational cropping patterns in fire-and-fallow farming	135
4.8	Projected Forest Conversion due to <i>uma</i> farming, 1990-2015-2040	140
4.9	Agricultural wage labour rates (pesos/day, 1992-1994)	143
4.10	Income composition of rattan and bamboo gatherers in San Mariano, Isabela	149
4.11	Income and expenditure of 33 migrants in five forest settlements	152
4.12	Estimated return to labour for livelihood options in the Sierra Madre	154

5.2	Local Government Units, criteria and number in Cagayan Valley	194
6.1	Checkpoint 'SOP' payments by a ten wheel lumber truck on a trip from Ilagan, Isabela, to Manila (Ph ₱, summer 1992)	231
7.1	Annual allowable cut of corporate timber concessions, Cagayan Valley (1972-1997)	287
8.1	Homestead Applications & patents issued, Cagayan Valley 1904-1937 (Ha.)	310
8.2	Population growth, Cagayan Valley and National Capitol Region, 1970-1990	316
8.3	Cagayan Valley's migration balance with other Regions, 1975-1980	316
8.4	Changes in people-to-land ratio in three provinces of Region 2 (1980 - 2020)	319
8.5	Cagayan Valley and the Philippines: a comparison of socioeconomic indicators	320
8.6	Landed Estates in Cagayan Valley, 1955	327
9.1	Cultivation of hybrid corn in relation to other variables	346
9.2	Hybrid corn production and informal credit, survey results (1995)	351

### List of Maps

3.1	Philippines, geographic location	52
3.2	Topographic map of northeastern Luzon	56
3.3	Areas covered by the 1950, 1980 and 1990 forest cover maps	71
3.4	1950 Forest area, by crown cover class	73
3.5	1980 Forest area, by crown cover class, and 1982 timber concessions	75
3.6	Comparison of 1950 and 1980 forest area, by crown cover class	77
3.7	1990 Forest area, by crown cover class, with roads and rivers	79
3.8	Comparison of 1980 and 1990 forest area, by crown cover class	81
3.9	Comparison of 1950 and 1990 forest area, by crown cover class	83
3.10	Changes in forest cover 1950-1980, Northern Sierra Madre	85
3.11	Changes in forest cover 1980-1990, Northern Sierra Madre	87
3.12	Changes in forest cover 1950-1990, Northern Sierra Madre	89
7.1	Corporate logging concessions in the Philippines, 1920	275
8.1	Navigation Map of the lower Cagayan River, 1898	299
8.2	Forest Map of Northeast Luzon, 1908	300
8.3	A comparison of 1908 and 1950 forest boundary, Northern Sierra Madre	301

### List of Boxes

2.1	Solomon Western Islands Fair Trade (SWIFT)	34
4.1	Profile of a 'pioneer' forest migrant	100
4.2	Profile of a 'follower'	101
4.3	Newcomers from the lowlands: The Ramon family, <i>sitio</i> Ibon, Cagayan	102
4.4	Newcomers from the uplands: " <i>Natadem ti buning ti Ifugao</i> "	103
4.5	Overview of forest migration motives	105
4.6	Profile of a <i>Salabadiok</i> (illegal logging) entrepreneur	111
4.7	Profile of a Company Forester	115
5.1	The Albano clan: from cow-traders to Congressmen	199
5.2	The Dynasty: immigrant rulers in Isabela	202
8.1	Tobacco agronomy	308
9.1	The frontier <i>sitio</i> of Malayo, Musinga, San Mariano, Isabela	347
9.2	<i>Sitio</i> 's Minanga and Ibon, Baliuag, Peñablanca, Cagayan	348
9.3	Barangay Musinga, San Mariano, Isabela	350
9.4	Remy Castillo, trader and moneylender in the uplands	359

## Glossary

A&D	Alienable and Disposable (land)
AAC	Annual Allowable Cut
AFP	Armed Forces of the Philippines
bft	board foot (1 m <sup>3</sup> = 429 board feet)
CADC	Certificate of Ancestral Domain Claim
CAFGU	Civilian Armed Forces Geographical Units
CARP	Comprehensive Agrarian Reform Programme
CBFMA	Community Based Forest Management Agreement
CBRM	Community Based Resource Management
CDF	Countryside Development Fund
CENRO	Community Environment and Natural Resources Office(r)
CFP	Community Forestry Project
CLOA	Certificate of Land Ownership
CML	Centre of Environmental Science
CSC	Certificate of Stewardship Agreement
CTO	Certificate of Timber Origin
CVPED	Cagayan Valley Programme on Environment and Development
DA	Department of Agriculture
DAR	Department of Agrarian Reform
DAO	Department Administrative Order
dbh	diameter at breast height
DENR	Department of Environment and Natural Resources
DTI	Department of Trade and Industry
ENR-SECAL	Environment & Natural Resources Sectoral Adjustment Loan
IFMA	Industrial Forest Management Agreement
IPAF	Integrated Protected Area Fund
ISF	Integrated Social Forestry Programme
ISU	Isabela State University
LOI	Letter Of Instruction
MSFPC	Multi Sectoral Forest Protection Committee
MOA	Memorandum of Agreement
NBI	National Bureau of Investigation
NEDA	National Economic Development Authority
NFA	National Food Authority
NIPAS	National Integrated Protected Areas System
NTFP	Non Timber Forest Product
NPA	New People's Army
OLT	Operation Land Transfer
OP	Operations Plan
PAMB	Protected Area Management Board
PD	Presidential Decree
PENRO	Provincial Environment and Natural Resources Office(r)
Ph₱	Philippine Pesos (26 Ph₱ = 1 US\$ (1992))
PIC	Problem-in-Context
PLA	Pasture Lease Agreement
PLTP	Private Land Timber Permit
PNP	Philippine National Police
RSOG	Regional Special Operations Group
SLS	Selective Logging System
SOP	<i>Standard Operating Procedure</i> (secret accommodation payments)
TLA	Timber Licensing Agreement
TSI	Timber Stand Improvement

## Preface

The two-lane concrete *Maharlika* highway connects Cagayan Valley with the national capital of the Philippines, Manila. During an election rally in Isabela in 1992, former President Corazon Aquino pledged 50 million US\$ for the reconstruction of this road; the southbound lane leading to Manila had been crunched into a rubble of concrete by the heavy trucks carrying lumber and grains out of the Region for twenty-odd years. The north-bound lane to Aparri remained in better shape but could hardly be used by traffic during the months of March, April, August and September. During these months, farmers bring their bags of newly harvested rice and corn to the highway in the early morning hours, empty them, spread and turn the grains over all day and sweep them back into the bags in the evening. Four months per year, the artery of Cagayan Valley's economy turns into a huge solar dryer, irrespective of traffic laws or regulations.

Economic life slows down wherever one turns left or right from this road. To its west are the sleepy, rural towns where the Region's rice, corn and tobacco is produced. To the east is the rugged Sierra Madre range; only the first 20-30 kilometers can be entered through a dusty ride on a Jeepney or passenger truck. Beyond that point, the territory of the indigenous forest tribes and operators of powerful bulldozers and logging trucks begins. When this research on the deforestation of the Sierra Madre got underway, in 1990, we started here, entering inside the forest as deep as we were permitted to go, and looking for hunters, chainsaw operators, rattan gatherers and farmers in the mountains. Five years later, I had returned to the *Maharlika* in search of explanations for the activities taking place inside the forest.

The structure of this dissertation more or less reflects this chronological order. After establishing, in Chapter one, factual and normative dimensions of tropical deforestation as a global environmental problem, and a brief exploration of wider theoretical elements of potential relevance for this case study, in Chapter 2, we meet the Sierra Madre deforestation problem more or less the way I did, on my first road journey from Manila to Cabagan, in Chapter 3. This chapter presents basic facts and figures about the Philippines and Cagayan Valley Region and establishes the temporal and spatial dimensions of deforestation in the northern Sierra Madre in the 1950-1990 period. Chapter 4 describes the principal activities taking place inside the forest, that contribute to the degradation and loss of forest cover. The fifth and sixth Chapter deal with the role of the Philippine government; after a description of the most important policies pertaining to Philippine forest management, and of the actors engaged in their formulation and implementation, answers are sought to the question why so many policies are almost systematically distorted, evaded or simply ignored at the implementation level. Chapter 7 searches historical roots of state-facilitated corporate access to the Philippine forests, by examining relevant political and administrative legacies of the Spanish and American colonial periods. Chapter 8 is an attempt to give historical dimensions to the second important cause of deforestation in the Sierra Madre, the conversion of logged-over forest into farmland by forest migrants. Via the Region's settlement history, and an assessment of farmland scarcity in the lowlands, we encounter motives of people in the lowlands and the nearby Cordillera region to leave their place of origin and establish new settlements inside abandoned logging concessions. The ninth Chapter returns to the forest lands, dealing with the fairly recent development of the increasing cultivation of cash crops here, notably hybrid corn, and seeks to answer the question why migrants are shifting away from a more subsistence oriented farming strategy to the adoption of this new crop. The tenth chapter is a synthesis of the insights gained in this study.

In 1988, Joost Maus and Erick Schieferli carried out CML's first case study of the Cagayan Valley Region and produced a report that became an indispensable source of information for researchers working here. A year later, the Cagayan Valley Programme on Environment and Development went



## Acknowledgement

This dissertation completes, for the time being, a period during which the Philippines, Cagayan Valley and the Sierra Madre became to me from an unknown, distant spot into a home and, especially during the past three years, the object of what some might consider a slightly disproportionate investment in time and energy. At several stages during this period, and in different capacities, a number of special people used the human talents and material means at their disposal to facilitate my work. If this PhD project may be compared to a long, and fairly lonely journey through unknown terrain, then the role of those who supported me during that journey might well be that of the occasional, brightly lit nightly sky, each star with its own colour and place, offering inspiration, direction, or, probably most importantly, relativism.

Having said that, I wish to distinguish the contributions of some persons in particular, such as the Honourable Rodolfo C. Nayga, President of Isabela State University, and patron of CVPED from 1988, the year of its conception, until the present; Leon Gonzales and Roger Guzman, the respective Deans of the ISU College of Forestry and Environmental Management during my term as CVPED coordinator; Miguel Ramos, director of the ISU-Cabagan campus, and my colleagues at ISU. While all of you contributed to an enjoyable and stimulating environment in Garita, Robert Araño obviously stands out among any crowd. Like a big *kamagong* tree, you were there during the years in which I started my professional career in partnership with you. My memories of that period are not only source of many good laughs, but will certainly continue to be source of strength in the future. I hope this book raises more issues for lively discussions between us, as we continue to work for the Sierra Madre forest, in years to come. Among the stars mentioned above, those of the CVPED staff were the least dispensable ones during my years in Cabagan. With Remy creating an atmosphere of fun, and happiness in the office, Walter keeping things tidy and organized, Gina and Onia turning our house into an oasis of organized quiet, and last, but not least Arnold's magic ability to make people smile and feel at ease with us in the field, I have repeatedly realized how lucky I was with a team like you around me. I would have wished, I could still have mentioned Maricel Nolasco's name as part of that team, and to have seen her move forward in life with you. Let's carry her spirit onward with us.

Among the many others in Cagayan Valley, who generously offered me their hospitality, insights and friendship, a special acknowledgement is due, first of all, to Perla Visorro. I do not exaggerate if I attribute many of my own insights - and of our smooth sailing at CVPED - to your enthusiasm and friendship. I also owe thanks to Mr. Lucio Cureg, for patiently recounting sharp memories of your long life in the Region. Dirk and Lievia de Temmerman, Gina Ruiz and her hardworking colleagues at Payoga continue to be examples of what spirit can do. There are numerous officials at the regional, provincial, and community offices of the Department of Environment and Natural Resources, whom I know I serve best by not giving their name here. I hope my respect for your work, and for the risks you took in sharing your experiences for this research, speaks from the way I have used the material. A person to whose courage and tenacity much of the recent turn-around in anti illegal logging enforcement in the Sierra Madre should be attributed, is Leonardo Paat, Regional Executive Director of DENR in Cagayan Valley during the 1989-1994 period, and from 1996 to 1998. Your terms in office have been landmarks for the difference one human being can make in an organization, no matter the odds against him.

The Royal Netherlands Embassy in Manila facilitated my work, and that of my colleagues at CVPED, in a way that was highly conducive for CVPED's operations and, therewith, for the conduct of this research. Mr. Peter van Leeuwen, Mr. Adriaan Palm, Ambassadors H.E. L.J. Hanrath and H.E. E.T.J.T. Kwint, and Mrs. Marijke van Drunen Littel played a key role in the establishment and operations of CVPED, not only through by official means, but also through their friendship and hospitality. Napoleon Caballero, thank you and Lylia for your tireless support, 'rain or shine', as you

would say, and for being role-models of Filipino optimism and warmth. Director Esther Pacheco, at Ateneo de Manila University Press, thank you for your friendship, support, and patience, especially during the preparation of the proceedings of the first CVPED Work Conference.

I also owe gratitude to the many graduate students, from the Netherlands and Cagayan Valley, who participated in the CVPED joint research programme between early 1990 and the end of 1994; most of you will see your output cited somewhere. In addition to those individual contributions, the experience of working with you in the various research teams during this period has been significant at a collective level, too. Building communication lines across cultural and disciplinary boundaries, you were the living proof of how intellectually and culturally challenging interdisciplinary environmental science can be. I owe special thanks to Jan Maarten Dros, for his extensive written comments on various drafts of the fourth Chapter, as well as stimulating discussions on my corn hypothesis during earlier stages of this project. John Wiersma and Rosanne Rutten greatly facilitated my interest in the historic dimensions of the deforestation problem, by granting me access to their private collection of articles and clippings about this subject. Mrs. Verna H.F. Young at the government document section of the Hamilton Library in Mañoa, Hawaii, was very helpful in my literature research on Philippine forest management during the American period. Prof. dr. Caspar Schweigmann (Rijksuniversiteit Groningen) is acknowledged for a highly stimulating discussion in the early stages of this project, and his encouragement to try and maintain the interdisciplinary nature of our research in Cabagan as much as possible in the dissertation, too. Co Andriess, thank you for keeping a fatherly eye on us, and on my work, and for valuable comments on earlier drafts of Chapter 4. Prof. dr. Willem Wolters (Katholieke Universiteit Nijmegen) offered a thorough critique on earlier drafts of Chapters 8 and 9. Your comments certainly influenced my approach to the issue discussed in these chapters. I hope our views on the role of traders and informal moneylenders in rural economies still differ enough to continue our lively debate.

The geographic information presented in Chapters 3, 7 and 8 was developed in close cooperation with Mr. Paul Langeveld; you analyzed the basic data, helped to untie the many knots we encountered in those data, digitized several additional map themes, created new maps and painstakingly re-created old ones. One way for readers to have an impression of the accuracy with which you took on this task is by looking at map 7.1, and to know that, for example, one white pixel was added to all the tiny a's and e's in the legend, to improve readability... I am not sure if I want to know how many days and nights you - voluntarily - invested in this project; undoubtedly they are a great many more than those we spent together in Amsterdam behind your computer. Your generosity and patience have been nothing less than monumental to me.

After I completed her course in the writing of English texts, in late 1996, I approached Mrs. Barbara Fasting early this year with a request for an English edit of the final draft of his dissertation. Thank you, Barbara, for accepting that task, including the complications caused by the need to shift to new word-processing software. During the past two months of producing this final draft, your knowledge and wits lightened my load, and made it more fun to carry.

As in many other important ventures in the past seventeen years, my best pal, Jaap Jan Speelman, was at close range during most of three and a half years I spent on this research. Thank you for your humour, confidence in me, good sparring in endless discussions and occasional reminders of the mere instrumentality of professional ambitions for other important goals in life. Neither of us can claim having done much more yet than paying lip service to that principle, but we'll get there, eventually. Carel Drijver, Luis Enrique Ramos and Raoul Wirtz personify what friends are for, organizing relaxation time, offering encouragement throughout the writing period, and keeping me going with occasional dispatches from the dynamic world around the quiet spot I needed to accomplish this task. And finally, my own family clan. My parents Maas and Fransje, and my sister Annelies gave me the best of childhoods, supported me in my education, during long periods abroad, and are a constant source of optimism, purpose and energy. Marleen, my *commander* as our colleagues in Cabagan used to say, I owe you most. After all, this journey wasn't all that lonely: I had my true companion.

*Gerhard van den Top, August 1998, Leiden, the Netherlands*

## Tropical deforestation: a preliminary exploration

### 1.1 Introduction

The problematic nature of tropical deforestation appears beyond dispute. All over the world, policy makers, activists, scientists and concerned citizens are devoting time, effort and resources to battling the continuing decline in global forest cover. The tropical rainforests are the icon, so to speak, of this heterogeneous community of forest conservationists. This is not surprising, for who can deny a sense of loss when confronted with images of wildlife and forest peoples fleeing from the ravages of the forest fires in Kalimantan and the Amazon? In our minds, we compare this image with the way these forests should be, the way most of us in the Western world first encountered them, usually in television documentaries: lush, green paradises full of exotic sounds, plants and animals. This, together with a personal or institutional mix of other considerations, such as solidarity with the indigenous forest people, or a general respect for the earth and all its creatures, is why viewing deforestation as a problem implies adherence to a certain set of norms. These norms have been shaped largely by the way we relate to these forests. In the following section, I will show that the normative basis for our valuation of deforestation as an undesirable development has altered, and indeed varies considerably among those directly or indirectly involved in forest management. Following an overview of the factual dimensions of tropical deforestation, sections 1.3 and 1.4 examine these facts in relation to a set of aims of environmental policy, and the ways in which tropical forests contribute to the achievement of those aims. Therewith, I also address the values behind my own determination - by means of this study - to help make deforestation a thing of the past.

### 1.2 The changing nature of the deforestation problem

If forests could write a history of the world, they would probably not have a good word to say about mankind. With the exception of indigenous forest peoples living inside large contiguous forest tracts, people have always had the tendency to conquer and dominate the unknown, dangerous world surrounding their settlements. Forest removal was invariably associated with a process that the history books generally refer to as civilization. From the Mesopotamian kingdoms, through the Greek and Roman empires, and well into the nineteenth century, control of forest areas was a key factor in geopolitical shifts and an indispensable resource in the acquisition of wealth, culture and military power. The need to supply fuel for shipbuilding, the smelting of copper and silver ore, and Rome's 900 hot baths exacted a heavy toll on European and North African forests. In turn, forest depletion often led to cultural and military decline (Perlin 1991).

Throughout the colonial era, wood remained a strategically important resource. One of the major sources of conflict between England and its North American colonies, for example, was the use of the extensive white pine forests in the eastern states, source of the finest ship masts in the world. To put an end to the unregulated lumbering activities of colonists, England restricted access to trees over 24 inches in diameter, which were reserved exclusively for masts for the Royal Navy. Lumbering was one of the main sources of livelihood for the settlers, and a prominent sawmill operator in New York warned that

enforcing restrictions to local access to timber would "be of very pernicious consequence to the subjects, put them into extreme convulsions and disorder and divide between the affections of His Majesty and his people..." (Robert Livingstone (*Colonial 19-1701:237-238*) cited in Perlin 1991:291). Eighty years later, American independence dispossessed England of the main storehouse of timber for its navy and merchant fleet. In response, from the early nineteenth century onwards, England began to replace wood with iron in shipbuilding and the construction of waterwheels and bridges, making use of its extensive coal reserves (Perlin 1991:327). While America's decision, another one hundred years later, to assume governance of the Philippines was driven by domestic and geopolitical rather than resource motives (Bootsma 1986; Karnow 1989), the presence there of over 16 million hectares of pristine, heavily stocked rainforest offered a welcome relief, after nineteenth-century industrialization had left the United States severely deforested (Richards and Tucker 1988:4). From 1900 to 1914, the United States doubled its import of tropical timber, much of which was destined for the East Coast, where it was used in the production of cabinets (Laarman 1988, see also Chapter 7).

The twentieth century saw a fundamental change in the reasons behind the perception of deforestation as a problematic development. Until then, forest degradation and depletion had led primarily to military and economic<sup>1</sup> problems for the nations who managed these resources. But gradually the continuous degradation and loss of forest cover came to be seen as problematic by countries which were not themselves facing shortages of essential forest products. As forest cover in economically advanced countries stabilized, the loss of tree cover accelerated in the boreal forests of Siberia and the moist forests of the tropics and subtropics. Increasing scientific insights into the global ecological and economic importance of these forests gave rise to a new conception of these ecosystems as the common property of mankind. A second shift in the perception of deforestation was the increased awareness of the importance of non-tangible, environmental objectives in the definition of its problematic nature. While economists worldwide are still "far from able to apprehend, let alone comprehend, the entire range of values implicit in forests" (Myers 1996:163), current concerns about the loss of tropical rainforests are rooted in their role as repositories of biodiversity and regulators of the global climate. Increasingly, the culture and lifestyle of indigenous forest peoples has become part of the set of normative principles by which the conversion of tropical forests into other land uses is perceived as problematic. Thus in the striving to end the decline of the world's rainforests, the ancestral rights of its original human inhabitants are today largely undisputed. The timber trade underscores the international dimension of the current loss of global tree cover (Laarman 1988; Nectoux and Kuroda 1989; Barbier et al. 1993); earlier internal market checks on the depletion of forest products have all but disappeared under the growing influence of world markets. The international supply of forest products prevents the depletion of forest resources in individual countries from driving up local prices to levels which would stimulate interest in conservation and plantation forestry among policy makers and private investors. Under these circumstances<sup>2</sup>, many developing countries extract commercial timber from their forests in

<sup>1</sup> Awareness of the ecological values of forests speaks from Plato's description of an ideal Attica, which contains hills covered by a vast forest canopy, preventing soil erosion and allowing the surrounding lowlands to be "enriched by the yearly rains from Zeus..." and providing all the nearby "districts with abundant springs and streams". (Plato, *Critias*:111 cited in Perlin 1991:93)

<sup>2</sup> In other words, in a situation where there is unrestricted trade, global production more or less matches demand, and the resources of the country do not represent a significant share of the global timber trade. The trade debate is

order to generate scarce capital for investments in other sectors of the economy (Vincent 1995). Whether this is a rational strategy from an economic point of view depends largely on the margin between the public share of private benefits gained from deforestation and the environmental and social cost generally associated with it. The view that tropical deforestation is the inevitable consequence of the need to jump-start developing economies long upheld an unproductive "environment or economy" dichotomy in the international debate about ways of achieving a more sustainable management of tropical forests. This is reflected in an editorial comment on the 1992 Earth Summit in the *Far Eastern Economic Review*, where the standoff between the industrialized nations and tropical timber producers with respect to the protection of rainforests is reduced to a wealth issue:

*"The richer people are, the cleaner they want their air and water, the more pristine they want their forests - and the more they are willing and able to pay for the benefits"*

(*Far Eastern Economic Review*, June 1992)

Thus the current owners of the world's remaining forest areas tend to perceive international initiatives aimed at the conservation and sustainable use of these resources as contrary to their economic interests. This has led to the present tendency to define the benefits of forest conservation and sustainable use all the more in economic terms, recognizing boundary conditions such as national sovereignty and the globally recognized need to redress the political and economic inequalities characteristic of the post-colonial world order. Barbier *et al.* (1994) propose offering compensation to timber-producing countries for the implementation of sustainable forest management systems, the cost of which they estimate at between 0.3 and 1.5 billion dollars annually. Whether realized through tax or revenue transfer schemes, such an economic compensation package has clear political implications, including the need for an internationally agreed system of monitoring and enforcing the use of these revenues for investments in sustainable forest management, and concerns over economic competition between timber producers from tropical and temperate forests (ibid:289-294). Other compensatory measures, such as the establishment of a Global Forest Fund as proposed by De Groot and Kamminga (1995:92), targeted financial aid, and the current negotiations over an international Forest Convention are alternatives to a trade-based approach to the current over-exploitation and clearing of tropical moist forests. Thus during the twentieth century deforestation has been transformed from a local or regional - primarily industrial - resource depletion problem into an international political issue.

For the first time in the history of mankind, new sources of energy, building materials and economic opportunities enable us, in theory, to break with our long tradition of building civilizations on deforestation. Quite in contrast, however, forest clearing and degradation have continued to accelerate. The fact that in the year 2000 an estimated two to three billion people worldwide will still depend entirely on wood for their fuel and construction needs (Brown 1991; FAO 1994) illustrates how unevenly access to these resources is distributed, both within and between national economies. While half the world's population still lives close to the subsistence level, multinational timber, oil and mining companies in both tropical, boreal and temperate regions have gained access to extensive tracts of sparsely populated old-growth forests to service the needs of consumers in the urban and industrialized areas of the globe; and urban wealth and rural poverty continue to be the two faces of deforestation in modern times. Hence, to understand - and find solutions for - the current deforestation, we need to study the interactions between, on

the one hand, non-forest society, where patterns of access to resources and income are instituted, and, on the other hand, the actors and activities inside forest areas which are the cause of the continuing degradation and decline in global forest cover. The present case study, which focuses on these relations, may be seen as a response to the call made by David Kummer at the conclusion of his statistical analysis of deforestation in the postwar Philippines:

*"Deforestation is most appropriately studied by a multidisciplinary approach which emphasizes the socio-economic and political environment in which the actual process of deforestation occurs"* (Kummer 1992:155).

### 1.3 The degradation and loss of tropical moist forests: factual dimensions

#### 1.3.1 Deforestation defined

There are two - often sequential - processes which together constitute the continuous degradation and loss of global forest cover: the extraction of timber and non-timber forest products beyond their natural productivity rates, and the clearing of forest vegetation for other land uses. Some scholars currently studying this process of change adhere to the definition proposed by the United Nations Food and Agriculture Organization, which maintains a strict distinction between these two dimensions, limiting deforestation to *"the complete clearance of tree formations (closed or open) and their replacement by non-forest land uses"* (Grainger 1993a; FAO 1990; Jepma 1995; Lanly 1982; WRI 1996). This definition implies that selective logging, hunting and other interventions, such as road construction by oil companies, are not part of deforestation, since these activities cause only temporary modifications to the composition and structure of a forest, and do not entail conversion to a non-forest land use.

For several reasons, a representation of deforestation as the equivalent of forest clearing, for agriculture or plantation establishment, obscures the fact that extractive activities and forest clearing are in fact closely related to almost all deforestation contexts (Jepma 1995; Kummer 1992; Repetto 1990). Desiccation of the residual forest biomass after large-scale selective logging and road construction in Borneo and Sumatra is widely acknowledged to have aggravated the extensive fires that ravaged the tropical moist forests of Borneo and Kalimantan in 1997 and 1998. While satellite imagery shows that slash-and-burn agriculture is responsible for two-thirds of the forest areas lost each year through conversion to other land uses (Myers 1996:159), the indications are that the loss of biomass in tropical forests is occurring at a significantly higher rate than the loss of forest areas (Houghton 1995, National Research Council 1993)<sup>3</sup>. In sum: an empirically founded - and solution-relevant - definition of deforestation must address the role of both forest clearing and extractive activities. For this reason, more encompassing definitions have been developed which take into account both the dimensions of 'forest disturbance' and conversion into other land uses (Myers 1984; Johnson 1991; Schminck 1994). The

<sup>3</sup> Based on a comparison of surveys carried out in 1973 and 1987 in peninsular Malaysia (Brown, Gillespie and Lugo 1991) and on estimates of changes in tropical forest biomass between 1880 and 1980 in Southeast Asia as a whole (Flint and Richards 1994), the overall loss of biomass was found to be about 60% greater than the volume that would result from forest clearing alone, confirming that *"as more forests were cleared for agriculture, logging and fuelwood harvest increased proportionally"* (Houghton 1995:274-275).

complications already caused by regional variation in forest definition and classification<sup>4</sup> complicate further if the variable of forest quality is also taken into account. The assessment of changes in forest conditions requires more and smaller-scale data on such aspects as fragmentation, biomass volume and health, the intensity and naturalness of management measures, and the extent to which recent human activity has altered forest structure and species composition. This study follows the mainstream approach of distinguishing "forest clearing" from "forest degradation", but tries to capture the interrelatedness of the two dimensions in practice. The comparatively small scale of this case study, and the decision to adopt a single indicator, *i.e.*, crown cover, for both dimensions makes it feasible to define deforestation as the combined changes in natural tree crown cover and extent over a given period of time. The following definitions are used:

*Forest clearing is the complete removal of existing natural forest vegetation and its replacement by other forms of land use.*

*Forest degradation is a temporary or permanent reduction in the percentage of the crown cover of existing natural forest vegetation (after Grainger 1993a).<sup>5</sup>*

The second definition is not sensitive to the other indicators of forest condition referred to above. On the other hand, crown cover is both a reliable and a practical indicator of forest disturbance, which makes it possible to use aerial photographs and satellite imagery to assess deforestation rates and patterns. In this case study, therefore, "deforestation" refers to changes in crown cover as the combined result of forest clearing and degradation, and is defined as: "a human-induced or natural reduction in - or even the complete removal of - tree crown cover in a given natural forest area over a given period of time". In this definition, the replacement of natural tropical moist forests by industrial tree plantations is regarded as part of the deforestation process (see also Sargent and Bass 1992). The definition includes those losses in forest cover that are partially if not fully attributable to natural phenomena such as typhoons and the El Niño phenomenon.

These definitions do not contain multi-interpretable criteria on the permanence or reversibility of man-made or natural modifications to forest condition and area. Nor are they based on normative or multi-interpretable variables such as the impact such modifications may have on 'capabilities to fulfill particular social, economic, aesthetic or ecological functions' (Schmink 1994). In accordance with the approach proposed by the Problem-in-Context Framework (see section 2.3.3), this chapter opens with a factual assessment of whether there has been a loss of forest cover and condition over a certain period. Once the factual dimensions of tropical deforestation have been established, separate normative and impact analyses are presented, on the basis of which this development may be regarded as problematic.

### 1.3.2 Factual dimensions of tropical deforestation

In 1995 the total area of natural forests, composed largely of native tree species, plantation forests and other wooded land was approximately 3.4 billion hectares, or about 27% of the

<sup>4</sup> The FAO/UNEP Tropical Forest Resources Assessment Project (1978-1980) distinguished 4 categories of tree plantations and 17 classes of natural woody vegetation, ranging from undisturbed productive broadleaved forests to shrublands.

<sup>5</sup> "Forest degradation is a temporary or permanent deterioration in the density or structure of vegetation cover or its species composition" (Grainger 1993a: 46)

total land area of the world (Greenland and Antarctica excepted). The FAO uses separate definitions of forests for developed and developing nations: in the former, they are defined as 'land with a minimum tree crown cover of 20%' and in the latter as 'planted and natural ecosystems with at least 10% crown cover of trees and bamboos'. On the basis of these definitions, developing countries, which represent 58.9% of global land cover, harboured 56.8% of global forest cover in 1995. Over 60% of the world's forests are located in seven countries: the Russian Federation, Brazil, Canada, the United States, China, Indonesia and the Republic of Congo (FAO 1997).

**Table 1.1 Global Forest Areas, by type and percentage of area protected**

Forest Type	Global area (1990, million ha)	% of area protected
Tropical, moist	1,120	8
Tropical, dry	80	5
Temperate, broad leaf/mixed	720	6
Temperate, needleleaf	1,390	5
Mangrove:	20	9
TOTAL	3,330	6

Source: WWF 1996

As Table 1.1 shows, temperate forests constitute the largest part of the global forest cover. The boreal forests of the northern hemisphere comprise 1.3 billion ha, more than half of the temperate forest area (Myers 1996). Tropical moist forests still comprise around one-third of global forest cover. Other sources (Myers 1994, 1996,;WRI 1996) adhere to lower estimates of approximately 760 million ha.

#### TROPICAL MOIST FOREST

The two main forest types found in the tropics, rainforests and moist deciduous forests, together comprise the so-called tropical moist forests, defined as "evergreen or partly evergreen forests, in areas receiving not less than 100 mm of precipitation in any month for two out of three years, with mean annual temperature of 24-plus degrees and essentially frost-free" (Myers 1980); the vast majority of these forests are broadleaved, but needleleaved and bamboo forests occur in the humid tropics. Whitmore (1984, cited in Grainger 1993a:34-35) distinguishes fourteen different types of tropical rainforest ecosystems, which can be divided into three main categories: dryland, wetland and montane.

The two most extensive forest ecosystem types contained in the dryland rainforests category are the *evergreen* and *semi-evergreen* rainforests. Evergreen rainforests are found in climates without a pronounced dry season, mostly in Southeast Asia and in certain places in South America where rainfall is evenly distributed. Most of the rainforests in the Amazon and Central Africa are of the semi-evergreen type, which occurs in areas where there is a short dry season. Some of the canopy-top and emergent species are deciduous, and one or two species are either dominant or very common in these forests. In even drier climates, rainforests are replaced by tropical seasonal or open dryland forests.

Of all the tropical moist forests, the evergreen rainforest reaches the greatest height,

biomass and species diversity<sup>6</sup>. Dipterocarp forests are characteristic of the evergreen rainforests of the Southeast Asian region. Mature trees reach a height of 40-50 metres and a diameter of 2-3 metres. Buttresses as high as 7-8 metres add stability to these trees, which often have rather shallow root systems. Dipterocarp timber has excellent mechanical qualities combined with a hardness that permits easy processing. Commercial stocks of 80-100 m<sup>3</sup>/ha occur in eastern Sabah, while areas with more than 300 m<sup>3</sup> of extractable hardwoods per hectare have been recorded in the Southern Philippines. In South American and African rainforests, an extractable volume of 30 m<sup>3</sup>/ha is more common (Whitmore 1995:11). Thus it is not surprising that Southeast Asian dipterocarp timber have dominated international timber markets throughout the twentieth century. These are presently regarded as the forests under the greatest threat (Jacobs 1981).

In principle, dipterocarp forests can be sustainably managed under a selective logging regime. Since the *dipterocarpaceae* flower and fruit gregariously (two or three times per decade), there is an abundance of young seedlings to grow a new crop of timber after a carefully implemented selective logging operation. The opening of the canopy produces the higher light intensity that these seedlings need to develop into mature trees. The residual stand will regenerate well, provided the degree of opening is controlled, logging damage is minimized, and competition with non-commercial species and climbers is managed. Due to sub-optimal supervision in the implementation of technical prescriptions towards that goal, however, few dipterocarp forests in the region have actually reached a second cut (EIA 1996; Hurst 1987; Plumwood and Routley 1982; Repetto 1988).

Whitmore (1995) describes two other members of the tropical moist forest category that occur quite extensively in the Malesian region. *Heath forests* are found on poor, podzolized soils in South Kalimantan. As they consist of a high density of slender, relatively short trees, these forests are of little commercial value. Once damaged or exposed to high-intensity sunlight, the thin humus layer on top of the sandy subsoils quickly oxidizes, creating white sand and open shrubland (ibid: 9). Malesia also has considerable areas of *peat swamp rainforests*, with high volumes of commercial timber. Once cleared of their vegetation, the peat soils under these forests require careful management to prevent them from drying and oxidizing into unproductive areas of high acidity and low fertility. And finally, mangrove forests occur in coastal zones with salty or brackish water. Large areas of these species-rich and multi-functional systems have already been reclaimed or converted into industrial fishponds (Fiselier 1990).

#### EXTENT, LOSS AND DEGRADATION OF TROPICAL MOIST FORESTS

The first serious efforts to obtain an approximate idea of the extent of global forest cover date back less than two decades. Earlier global and regional forest surveys, carried out by the United Nations Food and Agriculture Organization between 1948 and 1976, were based on inventories of data provided on paper by the countries themselves. For a variety of reasons, including differences in the systems which each country used to define and classify its forest formations, changes in forest area recorded in these initial inventories reflected

---

<sup>6</sup> Whitmore (1995:7) calls attention to the link between the extent of the various forest types and their biological richness and diversity. The Amazon has the highest number of species but is also the most extensive, several times the island of Borneo. According to the same author, a better method of assessing species richness is to establish small inventory plots and count the number of tree-species with individuals larger than 10 cm in diameter at breast height. By that measure, Southeast Asian rainforests are richer than those of Latin America and the Caribbean. These, in turn, contain more tree species than plots inventoried in Africa. It must be kept in mind that such ranking is based on limited insights into the biological diversity of tropical moist forests.

progress in the quality of national databases rather than the quality of local forest management (Lanly 1983). Between December 1978 and July 1981, FAO and the United Nations Environment Programme (UNEP) jointly conducted a comprehensive survey of the world's tropical forest resources (Lanly 1983; Wyatt Smith 1987). This survey, which covered 97% of the total land area of 76 countries, the majority with a tropical monsoon climate and situated in the belt between the tropics of Cancer and Capricorn, was the first to make extensive use of imagery produced between 1972 and 1978 by the Landsat 1 and 2 satellites, radar images and, to a lesser extent, aerial photographs.

The 1980 survey revealed that the world had a total of 1,200 million ha of tropical broadleaved forests, 990 million of which had not yet been altered by large-scale mechanized logging operations. Based on legal and physical characteristics, more than two-thirds of these primary forests, or 670 million hectares, were classified as 'commercially productive'. In 1980 a mere 41 million hectares, less than 5% of the world's rainforests, were in protected national parks<sup>7</sup> and reserves (Lanly 1983; Wyatt Smith 1987). Brazil, Indonesia and the Democratic Republic of Congo together own more than half the world's tropical moist forest (see table 1.2). The proportion of Africa's tropical moist forest cover within the Democratic Republic of Congo rose dramatically, indicating high deforestation rates in other African countries with smaller forest areas (Grainger 1993a:40).

Table 1.2, which summarizes the results of the 1980 and 1990 surveys by region, shows the countries which manage the world's largest tropical forest areas. While large-scale logging activities and forest clearing were widely believed to cause an annual average loss of 1% of global tropical moist forest area<sup>8</sup>, this effect was effectively overshadowed by improved remote sensing techniques. These reveal larger areas of forest with each survey undertaken, as witness the results of the 1980 and 1990 global forest surveys carried out by the FAO. In spite of accelerating timber extraction (especially in Southeast Asia) and forest clearing (in South America), the 1990 survey set the total area of tropical forests well above that established a decade earlier. Because of the inaccuracy of the 1980 survey, the annual deforestation rates presented in the last column of table 1.2 do not correspond to the differences between the areas of tropical moist forest recorded in the 1980 and 1990 surveys. They appear to be estimates based on regional and national surveys in the period 1980-1990.

Singh (1993) and WRI (1996) report a global area of tropical lowland rainforest of 718 million ha, close to the estimates used by Myers (1994) and Whitmore (1995). The difference between that figure and the aggregate result of the 1990 FAO survey is in the large areas of moist deciduous forests, comprising 40% and 74% respectively of the moist forest of tropical Latin America and Africa which were included in the most recent FAO survey. This area is composed of an amalgam of moist forest ecosystems with a crown cover that ranges from a closed climax canopy to the threshold value of 10% woody

<sup>7</sup> The largest part of the world's 4,500 nature parks and reserves, together comprising 480 million ha, was not established until after 1970. Half of these (2,253 sites, covering 240 million ha) are located in the tropics (Reid and Miller, 1989 in Brandon and Wells 1992:558)

<sup>8</sup> Dykstra (1992) shows the tropical moist forest areas opened up annually for timber extraction. In addition to the 10 to 17% of the areas that had been logged earlier, his data lead to a total area of opened for logging between 1961 and 1991 of just over 100 million ha. That figure is in keeping with global production volumes of tropical timber. Annual round wood production in 1987 amounted to 150 million m<sup>3</sup>, a fourfold increase since 1960 (Jepma 1995:37) On the basis of the production data presented by Jepma, approximately 2.5 billion m<sup>3</sup> of round wood was extracted from tropical rainforests worldwide between 1960 and 1987. If that figure is combined with the average extractable volume of 30 m<sup>3</sup>/ha given by Whitmore (1995:11), the resulting logged-over area approximates the one derived from Dykstra's data.

vegetation cover which, according to the FAO definition, qualifies an area as a tropical forest. Therefore, understocked and degraded forests are included in the FAO estimate.

**Table 1.2 Global inventories of tropical forest, various sources (x 1,000 hectares)**

<i>Year</i>	1980	1980	1990	1990	1990	1980-1990
<i>Forest type</i>	"Broadleaved Tropical Forest"	"Tropical Moist Forest"	"Natural Forest"	"Tropical rainforest + moist deciduous forest"	"Tropical Moist Forest"	Annual loss of rainforest + moist deciduous forest
<i>Data source</i>	<i>FAO 1980 (Lanly 1983)*</i>	<i>FAO 1980, (Grainger 1993a)</i>	<i>FAO 1992, cited in WRI 1996</i>	<i>FAO 1992</i>	<i>Myers 1994</i>	<i>FAO 1992</i>
<i>Country/Region</i>						
Brazil		331,800	561,107	488,679	220,000	1,718
Rest of Latin America & Caribbean		281,200	363,080	259,412	196,000	3,374**
<b>Tropical LatAm/Carib.</b>	<b>653, 950 (600,450)</b>	<b>613,000</b>	<b>924,187</b>	<b>748,091</b>	<b>416,000</b>	<b>5,092</b>
Indonesia		113,600	109,549	112,915	86,000	1,063
Rest of Asia Pacific		150,400	228,476	106,937	125,000	1,757**
<b>Tropical Asia/Pacific</b>	<b>291,900 (197,300)</b>	<b>264,000</b>	<b>338,025</b>	<b>219,852</b>	<b>211,000</b>	<b>2,820</b>
De. Rep. Congo (formerly Zaïre)		105,700	113,275	105,646	100,000	662
Rest of Africa		100,000	416,543	232,113	52,000	2,055**
<b>Tropical Africa</b>	<b>214,400 (170,850)</b>	<b>205,700</b>	<b>529,818</b>	<b>337,759</b>	<b>152,000</b>	<b>2,717</b>
<b>TOTAL Tropical Forest</b>	<b>1,160,250 (968,450)*</b>	<b>1,082,700</b>	<b>1,792,030</b>	<b>1,305,702</b>	<b>779,000</b>	<b>10,629</b>

\* Between brackets the cumulative areas of undisturbed productive and unproductive broadleaved tropical moist forest, provided by the same source (Lanly 1983:310, table 5)

\*\* Other Latin American and Caribbean countries that lost extensive areas of tropical moist forest cover between 1980 and 1990 are (by order of surfaces lost) Bolivia, Venezuela, Colombia, Paraguay, Mexico and Ecuador. In the Asia Pacific Region, Thailand, Myanmar, Malaysia, India and the Philippines follow Indonesia. Moist forest losses in the Democratic Republic of Congo are matched by those of the combined states of West Africa, followed by Zambia, Tanzania and Sudan.

Further efforts to clarify and resolve the inconsistencies between two global forest surveys, and the large differences between these estimates and those of Myers (1994) are beyond the scope of this study. The next FAO global forest resources assessment, scheduled for the year 2000, may help to resolve some of these questions. In the absence of more accurate

data on the extent and condition of the world's remaining rainforests, it is perhaps advisable to conclude that all estimates converge towards a total area of tropical evergreen and semi-evergreen rainforests of between 800 and 1000 million hectares. The three major biomes where tropical moist forests occur are (Whitmore 1995:5):

- I The Orinoco and Amazon Basins in Brazil (400-600 million ha)
- II 250 million ha in Southeast Asia, primarily Malesia heartland
- III 200-250 million ha of mainly deciduous moist forest in the Congo basin of Central Africa, extending westward towards Guineé.

Originally, tropical rainforests are believed to have covered about 1600 million hectares (Sommer 1976). The loss of rainforest is largely a recent development. Based on national forest inventories, an estimated 450 million hectares of tropical forest cover were cleared between 1960 and 1990 alone, and rates continued to increase between the 1960s and the 1980s (NRC 1993; WRI 1996). During the 1980s, the rate at which tropical forests were cleared was 36% higher than during the late 1970s (FAO 1993, cited in Palo 1994)

Depending on definitions of forest cover and deforestation, estimates of the current annual loss of tropical forest range from 0.8 to 1.8 % of the total global stand (FAO 1992; Myers 1994; NRC 1993; WRI 1996). Table 1.2 shows the large differences in deforestation rates between countries. The Philippines and Thailand had deforestation rates of 2.9% in the same period (WWF 1996). This comparison of national deforestation rates gains in significance when relative rates are translated into absolute areas. For example, Brazil's relatively low deforestation rate of 0.6% means that it loses between two and three million hectares of rainforest every year. Worldwide, between 10 and 15 million hectares of tropical moist forest are cleared annually, an area roughly the size of the U.S. state of Carolina, or three times the size of the Netherlands. It should be noted here that this area does not include the approximately five million hectares of old-growth<sup>9</sup> tropical moist forests logged every year (Dykstra 1992 in EUROFOR 1993).

The odds on survival are most favourable for the world's largest contiguous forest areas in the poorly accessible and sparsely populated areas of Kalimantan, Irian Jaya and Papua New Guinea, Central Africa and the Amazon (Myers 1996). However, Asian and European timber companies are increasingly investing both resources and manpower into creating goodwill among the governments who own these areas, with a view to procuring long-term timber concessions (EIA 1996; Rice and Counsell 1993). For example, in 1991 Barama Ltd, a joint venture of Malaysian and South Korean logging and trading companies, was granted a 25-year license to log 1.7 million hectares of tropical moist forests in Northwest Guyana<sup>10</sup>. Similar wholesale agreements are either under negotiation or have already been signed in Surinam (Colchester 1995), western Brazil, Papua New Guinea and the Congo basin (EIA 1996). Pressure from other developments, including road construction,

<sup>9</sup> I have consciously avoided the use of the term 'virgin' forests. As the ancestral use of these ecosystems by indigenous forest peoples is gaining international recognition, and archeological findings add evidence of early natural and man-made modifications to rainforests (Boerboom 1982, Grainger 1993a), terms like primary and virgin forest are no longer accurate. I distinguish *old-growth forests* (not logged), *residual* (logged recently) and *secondary* stands (maturing logged-over, natural-production forests).

<sup>10</sup> As in most Asian timber concessions, these licenses are give-away deals in which only a fraction of the financial value of the resources accrues to the nations concerned. The Barama concession was granted a ten-year tax holiday and timber royalties, to be paid in local currency, to the equivalent of US\$1 for every cubic metre of timber extracted, worth 150US\$ in the international market in 1994. Since the level of the royalty was fixed for a period of 20 years, this royalty will decline with the devaluation of the local currency (EIA 1996)

industrial plantation development and mineral exploration, is unlikely to ease much in the decades to come. With less than 10% of the world's rainforest enjoying any degree of legal protection, it is unlikely that the global loss of tropical moist forests will cease in the near future. The following section examines a normative framework in the light of which these developments are widely regarded as a cause for concern.

#### 1.4 Normative side of the tropical deforestation problem

*"The immediate and long-term consequences of global deforestation threaten the very survival of life as we know it on earth. Indeed, the scale of deforestation and its impact now represent one of the gravest emergencies ever to face the human race"* (WRM 1990:26)

The question of whether something should be done about the accelerating pace at which tropical moist forests are being cleared and degraded around the world is answered differently by different persons, depending on personal, institutional or disciplinary factors which themselves cannot be seen in isolation from one's position and one's stakes in the process. Hence, the cause of the accelerating degradation and loss of tropical moist forests is not only a lack of "international consensus on how to protect forests" (WRI 1996:xiv), but also a divergence of opinion on whether protection is necessary, and at what cost. As Palo (1990, 1994) and Grainger (1993a,b) argue, countries or regions endowed with large forest resources may see deforestation as part of a national land-use transition engendered by national economic development. The deforestation histories of Europe, which lost 60% of its original forest cover, and North America (20%) appear to confirm the validity of such an 'evolutionary' perspective (Grainger 1995).

The scope of this research does not permit me to examine in depth the validity of an analysis defining a singular path via deforestation to development, or of using the example of the industrialized world as evidence of the existence of such a path. The forests of the Netherlands had by-and-large been depleted well before the industrial revolution. Here, forest decline had already led to high fuelwood prices during the sixteenth and seventeenth centuries, but instead of leading to the establishment of forest plantations, high fuelwood prices spurred the use of alternative energy sources, such as peat, and later coal. In the final chapter of his standard work on the forest history of the Netherlands, Buis (1985) links deforestation in this period to opposing views and interests between, on the one hand, a newly emerging urban bourgeoisie, which no longer depended directly on forests for a living, but was increasingly attached to their aesthetic and environmental functions and, on the other hand, the landed gentry and its clientele, who perceived these resources as either financial assets or basic needs<sup>11</sup> (Buis 1985:895-919). In the absence of consensus, forests lacked effective protection and were eventually sold for financial reasons, with the exception of a few private domains.

There are similarities between this pattern of conflicting valuations of forests throughout Dutch history and the contemporary differences in the valuation of tropical deforestation on a global scale. The industrialized world, not economically dependent on exports of primary commodities, is interested in rainforests for their recreational, medicinal, biological and emotional value, and for their perceived benefit for the global climate. Governments in

<sup>11</sup> One conclusion that the author draws about the history of Dutch deforestation is that the first managed forests to be cleared were those owned and managed by absentee members of the local nobility "who no longer depended directly on these resources and saw them merely as financial assets" (Buis 1985:902, translated by GT).

developing countries value the immediate economic advantages of turning forests into liquid capital, and perceive forest clearing as part of the structural transformation which is inherent in economic progress.

As long as this international disagreement lingers, any concerted international policy to protect forests, for example, through a global forest convention, will remain beyond reach. The market offers an alternative route to sustainability. From a neo-classical economic perspective, forest degradation and loss come to a natural halt once the scarcity of forest products pushes prices up, stimulating efficiency and investments in forest plantations (Hyde and Seve 1991, cited in Palo 1994)<sup>12</sup>. In this 'weak sustainability' perspective, in which natural capital can be substituted by man-made capital, "deforestation can be economically sustainable when the process yields new productive assets, or unsustainable when forest resources are depleted for short-term profit.....(Horne and Palo 1995:19) and ....should be replaced by sustained-yield forestry from that point where social marginal opportunity costs of deforestation exceed the respective marginal benefits achieved through deforestation" (Pearce and Markandya 1989 in *ibid*:21). It is only beyond this turning point that forest clearance becomes "excess deforestation", problematic because it causes net economic cost to the societies concerned. Palo and Horne (1995) emphasize that economic value must be attributed to non-timber forest productivity, including carbon sequestration, biodiversity, watershed protection and other ecological functions for downstream areas. These can then be incorporated into a cost-benefit analysis to determine the optimum deforestation level. Sustainability, then, is not limited to ensuring that revenues earned in the clearing of natural forests are used either to develop forest plantations<sup>13</sup> or to invest in another sector of the economy, which can take over as the engine of the economy once forests have been depleted. By defining sustainability as "a continuous inter-generational increase or status quo in human well-being" (Horne and Palo 1995: 21), objectives related to the quality and length of life are added to income and employment. Moving closer to a strong sustainability perspective, in which forests themselves have protection value, market-based initiatives are underway as well, such as timber certification, the growing demand for 'green' capital investment opportunities, and the increasing attention to achieving forest protection through trade and investments in sustainably produced forest products (ICCO, in press).

This is probably as close as the economic and the ecological definitions of unsustainable deforestation have come so far. Since the publication of the IUCN/WWF/UNEP *World Conservation Strategy* in 1980, the world's leading conservation organizations also link sustainable development to conservation initiatives (Robinson 1993). The WCS led to the internationally funded development of National Conservation Strategies in 50 different countries, and to the implementation of a host of Integrated Conservation and Development Programmes, in which sustainable livelihood options were developed to mobilize local support for forest conservation. Neither these programmes, nor the planning "mania" (Sayer 1995:6) triggered by the FAO's launch of the 1985 Tropical Forest Action Plan produced substantial gains in forest protection (Brandon and Wells 1992, Sayer 1991). On

<sup>12</sup> If productivity rates were pushed to their potential levels, just over 1 million hectares of tropical moist production forest could, in theory, produce the natural annual volume increment of today's 3.3 billion hectares of natural forest (Poore 1994, cited in Sayer 1995:13)

<sup>13</sup> These authors also recognize that plantations cannot fully replace these values, particularly those pertaining to habitat functions for biodiversity (Sargent and Bass 1992: Sayer 1995).

the contrary, the various National Forestry Action Plans often served as political tools for national governments to open large new logging concessions in old-growth natural forest areas designated as conversion and production forests (Colchester and Lohmann 1990). The impact of Timber Certification, the most recent effort to pursue forest protection through economic incentives, has yet to be assessed, but aside from the general problem of monitoring and enforcement, it will again hinge mainly on the criteria by which logging is defined as sustainable and thus certifiable.

Encompassing definitions of sustainability such as the above, and the much-quoted one introduced by the Brundtland report (WCED 1987)<sup>14</sup> conceal, rather than help to resolve the conflicting views held by different scales and sectors of the world community regarding the balance between conservation and development (Sayer 1995:5). The political achievement of having found a compromise definition for a term that recognizes the need to integrate ecology and economics into human development must be complemented with practical principles that enable stakeholders to agree on the valuation of tropical deforestation and its environmental impacts.

This approach, whereby decisions on resource and nature conservation are turned into a numeric balance of costs and benefits to mankind, entails risks of its own. First, the willingness - and capability - of people to pay for the non-timber products, functions and values offered by forests varies considerably with time and place. Second, there is the constraint of our current limited level of understanding of the services, products and values represented by forests, their scarcity levels and the price we are willing to pay. With the exception of the extensive studies devoted to localized hydrological impacts of logging and forest clearing (Bruijnzeel 1990; Bruijnzeel and Critchley 1994; Critchley and Bruijnzeel 1996), little is known about how changes in forest area and quality influence these non-timber functions and values. For example, what is the minimum habitat and population size of a species that may possibly produce new medicines or food products in the future? Unknown species, as well as less attractive or even undesirable flora and fauna have less value, and hence less chance of surviving. It remains to be seen how many of the 1.8 million species we know today (1 million insects, 250,000 plants, 9,100 fishes and 4,170 mammals (Gadakhar 1992:43) have sufficient recreational value - for how long and for how many consumers? - to save them from extinction. How much global forest is needed for their local and global climate functions to work, and how many centimetres of sea level rise can be convincingly attributed to each percent of global tree cover lost? In other words, there is in practice no clear line between non-problematic deforestation and 'excess deforestation' (Horne and Palo 1995), because we cannot weigh the marginal benefits achieved through deforestation against all the marginal opportunity costs of deforestation, including those in the realm of the above, largely unknown, forest functions. And, beyond that, how would we value the rights of forest creatures to exist without somehow being functional for humans? Finally, who should in fact be the evaluators? Is it the abstract 'we' of humankind in general, or are there special places for special people? The latter option is related mainly to the ancestral rights of indigenous forest peoples. While the appropriate response to the various rights claimed by forest peoples around the world may still be subject to debate in each of the countries concerned, there is little dispute about the legitimacy of the basic claim that most of the world's rainforests were originally the economic, spiritual and emotional home of indigenous forest-based communities, before

---

<sup>14</sup> "development that meets the need of the present without compromising the ability of future generations to meet their own needs" (WCED 1987:8)

modern, written laws enabled legislators and educated groups to appropriate those resources (Caufield 1982; IWGIA 1996; Kingsbury 1995; Lynch 1986).

### 1.5 Functions and values of tropical moist forests

Hence in forest valuation it is the functions concept which is generally adhered to, whereby sustainable forest management can be defined as:

*"the management and use of forests and wooded lands in a way, and at a rate, that maintains their diversity, productivity, regeneration capacity, vitality and their potential to fulfill, now and in the future, relevant ecological, economic and social functions at local, national and global levels without causing any damage to other ecosystems"* (quoted from EC Council Regulation 3062/95, 20/12/1995, cited in European Commission 1996:82)

It would be beyond the scope of this study to attempt to list all the products, services and values that tropical forests provide, together with the most recent insights into how these are affected by forest degradation and clearing. A recent attempt by Costanza *et al.* (1997) placed the total cash value of all services and natural capital of the world's tropical forests at US\$ 3.8 trillion. While this amount is probably impressive enough to help justify greater budgets for forest protection, efforts such as these also run the risk of giving a replacement value to forest functions, suggesting that they can be bought with capital. Moreover, it could prevent local forest users, who often have little cash income, from retaining access to products for which they may have no substitute. Less fundamental weaknesses involved in expressing the value of forest products and services in monetary terms are the above mentioned limitations to our knowledge of these functions, the highly site-specific nature of productivity where forest products and services are concerned, variations in local market and trade structures, and incomplete databases on these variables (De Beer and McDermott 1989:148-156).

To define the normative dimensions of the tropical deforestation problem, it is necessary to have a qualitative notion of the contributions these ecosystems make to human well-being. By way of illustration, I will examine those functions of tropical forests that generally serve as a basis for international concerns about the degradation and loss of crown cover in tropical moist forests.

#### 1.5.1 Hydrology and climate functions

##### MICRO CLIMATE: REGULATION OF THE WATER AND ENERGY BALANCE

Deeper root systems enable trees to pump soil moisture up from deeper soil layers than other types of vegetation. Under conditions of adequate and evenly distributed rainfall, a closed canopy tropical forest consumes approximately 1,000 millimetres of water per year (Bruijnzeel and Critchley 1994:14). The greater surface roughness of the crown canopy facilitates air turbulence and thus water removal from the vegetation by the atmosphere. In this manner, 50-75% of local rainfall is recycled within the Amazon basin (Salati and Vose 1984, cited in Houghton 1995). At the level of individual forest areas, countries or regions, the high evapotranspiration of tropical moist forests cools down the micro-climate. Once a forested land use is replaced by a more open vegetation of annual crops and grasses, local soil and air temperatures rise. The effect of local temperature increases due to reduced evapotranspiration, a cooling process, is amplified by decreased cloud formation and higher exposure to sunlight.

In the Amazon basin, the climatic impact of total forest removal is expected to be stronger than global warming effects; model simulations of that scenario suggest that such losses would be irreversible, with local temperature increases of around 2.5°C, a 30% decrease in evapotranspiration, and 25% decrease in rainfall (Nobre, Sellers and Shukla 1991, cited in Houghton 1995:284). A similar effect is to be expected in equatorial Africa. More uncertainty remains as to the relative importance of changing land use and temperature gradients with surrounding water bodies *vis-a-vis* the large-scale interactions between the oceans and the atmosphere that appear to be the main driving force behind the monsoon rains of Southeast Asia. Small-scale deforestation and forest degradation events are not believed to significantly alter local precipitation patterns (Bruijnzeel 1986; Oosterberg 1997:9)

#### GLOBAL CLIMATE: CARBON SEQUESTRATION, 'FLYWHEEL' FUNCTION

Since the mid 19<sup>th</sup> century, an estimated 300 giga tons (billion metric tons, GT) of carbon have been released into the earth's atmosphere, one-third as a result of land-use changes and two-thirds from the combustion of fossil fuels. The total volume of carbon currently held by the atmosphere is 750 GT (Houghton *et al.* 1990; Woodwell 1993, cited in Myers 1996:158). The greenhouse effect of atmospheric carbon is that it allows short-wave sunlight in more easily than it lets long-wave, earth-heat radiation out; normal concentrations thus add 33°C to the earth's surface temperature, a condition which is fundamental to the existence of life on earth (Houghton 1995:264). As more carbon dioxide and other greenhouse gases (methane, nitrous oxide and chlorofluorocarbons) are released, concentrations rise, enhancing the normal greenhouse effect; average global temperatures are expected to rise by 1°C between now and 2025, and by 3°C up to 2100, which is warmer than it has been for the last 1000 years. As minor as these temperature changes may appear, the significance of such shifts is probably best illustrated by earlier temperature changes in the earth's geological history. During the last glacial period, for example, when large parts of America and Europe were covered by ice, the average temperature was only 6°C lower than today (Kroonenberg 1992:57).

Forests are the world's largest carbon storehouse. Accounting for 65% of the world's carbon sequestration potential (Zak 1995, cited in Myers 1996:158), their plants and soils hold 1200 GT of carbon, more than all the world's proven fossil reserves (Nilsson 1996, cited in Myers 1996). Tropical moist forests hold approximately one-fourth of that volume; if all the remaining tropical moist forest were to burn down, this would release an estimated 100-300 GT of carbon into the atmosphere. The 'flywheel effect' of the carbon mass stored in forests refers to a positive feedback loop that could be set in motion by the release of this reserve into the atmosphere: dessication, die-off and longer dry seasons in boreal forests of the Northern hemisphere, most affected by temperature rises, would increase the incidence of fire in these forests, where half the world's forest carbon is stored, further increasing atmospheric carbon concentrations. Methane releases from melting permafrost and tundra areas in the same region would accelerate the process still further.

At the moment, forest fires worldwide (but mostly in the tropics) contribute about one-fourth of the approximately 8 GT of carbon added to the atmosphere every year (Houghton 1995). To offset these releases alone, very large forest plantations would need to be established:

*"Perhaps as much as 1.5 BMT carbon could be accumulated annually in woody biomass if huge areas were to be replanted; This strategy would reduce total emissions of carbon to about 6.5 BMT. Requiring an enormous amount of land, energy and expense, such reforestation would*

*accumulate carbon only while these forests were growing. Once grown, the forests would hold, perhaps, 150 BMT carbon but would no longer withdraw carbon from the atmosphere. Reforestation would stabilize atmospheric concentrations of CO<sub>2</sub> only temporarily, at best"* (Houghton 1995:281)

Therefore, protecting existing forests against fires is a more cost-effective approach to the problem of global warming than the establishment of new plantations. The main function that forests perform for the global climate is the storage of a substantial carbon stock, which has the potential to add considerable impetus to the global warming processes (Myers 1989; Houghton 1992). The enhanced greenhouse effect is in the first place an industrially related environmental problem, which cannot be solved by planting trees. Because of the world's continuing reliance on fossil fuels for economic growth, little progress has yet been made in efforts to arrive at binding international commitments to reduce emissions of greenhouse gas. Even the most progressive proposals forwarded to the 1997 Climate Conference in Kyoto would have achieved only a fraction of the 60% reduction required to stabilize atmospheric concentrations at their current level.

The possible effects of rising carbon concentrations and temperatures on tropical forests are presently the subject of debate. While some authors predict an accelerating natural contraction of tropical moist forests due to changing rainfall patterns and the aridification of equatorial areas (Caufield 1982; Sorensen 1994), others draw upon the earth's geological history to argue that global warming might in fact allow tropical moist forests to expand northwards and southwards. The origins of tropical moist forest go back to the Cretaceous period, around 100 million years ago, when carbon dioxide levels were 10-25 times current levels (Boerboom 1982; Kroonenberg 1992). When the earth's climate began to cool down in the Oligocene, tropical rainforests receded from the Northern and Southern Hemispheres to their current limits in the equatorial belt. Outside the present geographical boundaries of the tropical rainforests, only species resistant to cooler, drier climate remained in the forests of the moderate climatic zones, that developed here from the Cretaceous period on. Thus a return to the climatic conditions of that era might allow the tropical forests to regain some of the terrain lost in the recent cooler periods:

*"maybe we should see the Cretaceous period and its greenhouse climate as the period in which anything was possible, when the sky was the limit. A genetic explosion in the greenhouse-earth, the proliferation of life forms of which has gradually been tempered by the cooling down of the climate in the Tertiary and the glacial periods of the Quaternary"* (Kroonenberg, 1992:59)

Notwithstanding the attractiveness of this argument, not least because it exudes what appears to be geologically founded optimism, the time-scale involved is of an entirely different order than the pace at which temperatures are now rising and forests declining; current tropical deforestation rates will decimate the world's remaining rainforests to a fraction of their remaining area within the next century. In the same period, global temperatures are expected to rise by one full degree Celsius, *i.e.*, ten to fifty times faster than at any point in time since the Ice Age, 15,000 years ago (Sorensen 1994). Because a large part of the world's genetic diversity is safeguarded inside these forests, many of the ingredients for a 'genetic explosion' or an expansion of tropical moist forests will have disappeared by the time a more conducive climate for these forests could develop outside their present confines. Rapid temperature increases aggravate the potential impact of climatic change on biodiversity, as life-forms do not have sufficient time to adapt, especially in the high-diversity rainforest ecosystems, where the competition among species is most intense and specialized reproduction strategies have been developed by species in

response to this competition (*ibid*). Even if the problem of species extinction did not exist, the recovery of these complex ecosystems would take centuries. Due to their heavy reliance on internal nutrient and energy cycling, rainforests are among the most fragile of all ecosystems (Caufield 1982; Myers 1984); a rise in global temperatures amplifies the above mentioned impacts of forest clearing on the local microclimate as a result of lower evapotranspiration.

### 1.5.2 Watershed functions

*"Of all the environmental effects associated with logging, it is probably the hydrological changes which are the most misunderstood"* (Bruijnzeel and Critchley 1994:12)

The claim that downstream droughts and flooding are aggravated by tropical deforestation is as popular as it is disputed (Oosterberg 1997). Anyone who has personally experienced the changes in the micro-climate that occur when one enters a cool forest with springs and running creeks after hours of hiking through the *cogon* grass and silted creeks of the lower, already denuded mountain slopes would readily underscore the longstanding claim that tropical moist forests have a beneficial effect on local and downstream hydrology. Nevertheless, scientific evidence gathered so far shows that watershed objectives are not always compatible with forest conservation (Bruijnzeel 1990; Hamilton and Pearce 1987; Sayer 1995).

If we limit the present discussion to the two main hydrological impacts associated with deforestation, *i.e.*, increased flooding and more frequent downstream water shortages, there is general consensus that deforestation *per se* does not lead to either a lower water yield or increased peak flows during heavy rain. Paired-basin experiments in Malaysia show that watersheds produce 40 to 70% more water after forest clearing, but this occurs primarily in the baseflow or the normal subsurface flow released from the watershed's groundwater table (Bosch and Hewlett 1981, cited in Oosterberg 1997). Due to reduced evapotranspiration, deforested watersheds tend to have higher watertables and yield more subsurface runoff, provided the forest soil is not disturbed. Increased stormflows (the total volume of water released by the watershed) rather than higher peakflows (the maximum instantaneous discharge during the rainstorm) cause the more frequent occurrence of minor flooding events in downstream areas, but this effect is more difficult to attribute in the case of larger flooding events and in watersheds larger than 1000 hectares; large watersheds attenuate the effect of peakflows because of their storage capacity in river channels and floodplains (Oosterberg 1997:36).

Problems of soil erosion and downstream sedimentation, which commonly accompany forest removal and clearance, have a more significant hydrological impact in watershed areas. The use of heavy machinery disturbs the leaf litter and root mat characteristic of undisturbed forest, causes soil compaction and exposure, which in turn increase overland flow and surface erosion (Bruijnzeel 1994). During the rainy season, poorly constructed logging roads turn into deep erosion gullies; in order to make these roads passable again during the following harvesting season, bulldozers scrape off layers of soil every year and open up new stretches in places where land slides and local waterways have made them unpassable. Slash-and-burn farming in sloping areas leads to further exposure, and the loss of organic matter and soil depth. But even such minor forest modifications as the removal of undergrowth from a natural forest or forest plantation increase soil erosion.

Hence, the watershed function of forests is related primarily to their role in soil protection and the indirect effects of soil degradation on the water balance, rather than to

their direct effect on water yield. Consequently, the key to watershed protection lies in the conservation of forest soils and their hydrological properties (Hamilton and Pearce 1987). Logging natural moist forest in watersheds inevitably affects the soil stabilization functions that natural forests provide, at the cost of higher evapotranspiration losses and lower downstream water yield. As sediments carried from logged-over forest areas accumulate in downstream waterways, water yield initially remains low due to regrowth of the residual forest, only to increase with the gradual removal of forest vegetation and, eventually, conversion to farmland. Prolonged severe soil degradation affects infiltration and groundwater recharge and causes the lowering of dry-season river flow often reported by local observers (Bruijnzeel 1989, cited in Oosterberg 1997). Even when this baseflow is not significantly lowered, the river's increased sediment load reduces the flow and quality of water intakes for downstream irrigated farmlands, affects wildlife and fisheries by disturbing the ecology of the river system and coastal waters and exposes downstream productive lands and population centres to increased flooding risks and -damage. During extreme rainfall events, the combined impacts of increased stormflow, heavy silt loads and other forest debris being transported downstream by the water in a watercourse already partly obstructed by earlier sediments combine to produce serious flooding in downstream areas. In the 1992 floods of Ormoc City, Leyte, these factors came together at several locations where bridges had been built across the river. Blocked by a mass of debris and soil transported downward from a heavily degraded watershed, these bridges instantly turned into dams which blocked the river at several points, exacerbating the flooding; there was extensive material damage, and over 8,000 people perished.

### 1.5.3 Biodiversity<sup>15</sup>

*"Tropical moist forests are by far the richest biological units in terms of genetic diversity and by far the most threatened by human activities..." (WCED 1987:150)*

One of the fundamental values of tropical rainforests for life on earth is that they represent the bulk of life forms that we know: although they occupy only about 8% of the earth's land surface, they host 60% of all plant and animal species. Adopting the number of tree species with individuals larger than 10 cm in diameter at breast height (dbh) recorded on small forest inventory plots - a widely used indicator for overall species diversity - Whitmore (1995) illustrates the biodiversity function of tropical rainforests as follows:

*"The whole of Europe north of the Alps and west of the Commonwealth of Independent States has 50 native species and all of eastern America has 171. By comparison, small sample plots of tropical rainforest commonly have 100 species (and many have more than 200) of trees at least 10 cm in diameter at breast height per ha" (Whitmore 1995: 7)*

<sup>15</sup> Essentially an indicator of both the number of species as well as the number of specimens per species in a particular area, the term biodiversity captures the variety of life on earth, i.e., the diversity of genes, species and ecosystems:

- Genetic diversity refers to the variations within or between populations of the same species.
- Species diversity is a measure for the number of different plant and animal species (including micro-organisms) in a site or habitat, as well as the number of individuals per species.
- Ecosystem diversity values the variety of ecosystems, habitats, forest types, or communities, each of which is composed of a distinctive set of genes and species, and distinctive elements of soil and climate (EC 1996:71)

See (Angler 1994) for a critical view on how this definition of biodiversity influences the ranking of tropical rainforests vis-a-vis other ecosystems, such as the deserts, grasslands and temperate forests outside the equator, which contain many families rather than species.

Another example is the 'La Selva' Forest Reserve in Costa Rica, which covers less than 15 km<sup>2</sup> and contains more species than the whole of Great Britain's 243,500 km<sup>2</sup>. Because of its extraordinary size, the Amazon basin, several times the total area of Borneo, hosts the largest number of known plant and animal species; in one site in Peru, 300 tree species were counted per ha.; in Manaus a stunning 500 different tree species were counted in a plot which measured 2000 square metres (Fittkau 1983, cited in Hoogmoed 1992). Given their relatively small size, the Asian rainforests are regarded as even richer in species and diversity, followed by the Neotropical (American) rainforests and certain plots in Africa. Obviously, this does not mean that the loss of African rainforest is less problematic than deforestation in Asia; each of the world's major tropical forest areas has its own unique set of forest types and endemic species.

From the point of view of biodiversity conservation, priority should be given to those forest types and areas that have already undergone a sharp decline, are still threatened by further degradation or clearing, and which harbour a large number of endemic species or families. Indonesia, the Philippines and Sri Lanka have the highest recorded rates of endemism (World Rainforest Movement 1990:16). This high rate of endemism, combined with a marked reduction in total forest area and continuing threats of forest degradation and clearing, mean that the Philippine forests are generally counted among the world's ten top-priority 'hotspots' for biodiversity conservation (Myers 1988, cited in McNeely *et al.* 1990:87). Other areas where 30-40% of biodiversity remains, located in less than 5% of the original area are Madagascar, the montane and Atlantic forests of the Amazon, New Caledonia and peninsular Malaysia. All the above ratings are based on incomplete data; to date, only an estimated 20% of the world's plant and animal species have been determined. The current rate at which species are lost is thought to be as much as 40,000 times faster than in recent geological times (Schücking and Anderson 1991). If unabated, the greater part of the software of life on earth will be erased before it has been discovered, let alone understood by mankind.

To a certain extent, therefore, biodiversity conservation is an end in itself; in that it protects life as we know it. But the maintenance of species, gene and ecosystem diversity is already serving the more anthropocentric final variables of human material and immaterial well-being. Many sectors of modern society benefit from the gene pool provided by rainforests (and other ecosystems), including the pharmaceutical, food and cosmetics industries. An astonishing 98% of crop production in the United States is based on species from outside the US (Caufield 1982); in the 1970s, a wild, fungus-resistant maize species from the forests of Mexico enabled American maize growers to overcome a major plant disease that had caused losses of over two billion US dollars. When the *arabica* variety was affected with the coffee-rust disease, rainforests also provided an alternative species for coffee-growers in Latin America. With an estimated 85% of the world's food supply derived from only eight species, our vulnerability to disease can be reduced only if we maintain a reservoir of remedies for possible new diseases in any of these crops. Worldwide, the estimated commercial value of medicines derived from wild organisms was estimated to exceed 40 billion US dollars per year (BP 1986 in WCED 1987:155). Forest-based and rural people in the developing world rely on the collection of medicinal and food plants from rainforests for their subsistence; waxes, dyes, resins, oil, wax, fibres, fish, game and other extractive products provide local communities with the means to obtain market commodities through exchange (De Beer and McDermott 1989).

## 1.6 Conclusion

This chapter has explored the factual and normative dimensions of the loss and degradation of global forest cover, in particular the world's tropical moist forests. The nature of the deforestation problem has altered considerably over the years. In the twentieth century, what was initially a clearly defined internal resource depletion constraint that directly threatened the survival of civilizations has become a global environmental issue. As concrete as the grounds for its problematic nature were in the past, so controversial are its dimensions at present. There is still considerable uncertainty about the extent of global forest cover, degradation rates and total loss. Even more divergence has been noted in international perceptions regarding the question of whether deforestation is a cause of concern, and if so why? Hardly any of the effects of deforestation on the local hydrological balance, the global climate, human health and biodiversity have been defined convincingly enough in ecological, let alone economic terms, to precipitate a breakthrough in the international resolve to protect the forests. Furthermore - again, in contrast to the past - the problem now appears to be of least concern to the countries in which the world's forests are situated. All these considerations together have made global deforestation into one of the most elusive environmental problems of our time.

Moreover, we now know that tropical forests have multiple functions for the various final variables identified in this chapter. They contribute to the hydrological balance which sustains the local climate; they protect watersheds from erosion and downstream areas from excessive sedimentation; they retain a considerable amount of carbon which, once released into the atmosphere, would further exacerbate the greenhouse effect; finally, and perhaps most important of all, they constitute a significant portion of global biodiversity. In view of our limited insight into their economic value, the precise links, and the area/utility relationship of most of these functions, adherence to the precautionary principle is advisable when it comes to defining sustainable forest management, in order to minimize the danger of the known and unknown functions of these ecosystems being further jeopardized. All deforestation, defined here as the combined effect of forest degradation and clearing, is bound to affect one or more of these functions on a global level, and will be defined here as problematic or unsustainable. Because of their complexity and vulnerability this is particularly true of the rapid decline in the global area of natural tropical moist forests which we have seen in the past 50 years, irrespective of their location or the size of the areas lost in relation to the overall local and global forest cover remaining.

If we were to value the impact of forest clearing on the basis of the effect on individual countries, regions or provinces alone, this would not take into account the global cost of the rapid deforestation in the world's major forest areas within Siberia, Canada, Indonesia, and the Congo and Amazon basins. In such local or national perspective, the environmental cost of decreasing natural forest cover in these areas is externalized, or rolled off to mankind as a whole and future generations. On the other hand, defining deforestation as problematic on the basis of global environmental functions only may encourage free-riding behaviour by the less forested countries, whose smaller reserves cannot perform as substantial a role in many global functions. The value of the world's forests is based on the mix of functions that all tropical moist forests produce, each area in accordance with its size, degree of naturalness, the richness, diversity and endemicity rate of its species, and its services to other land uses. Hence a minimal condition for sustainability at our current state of knowledge would be the stabilization of natural forest cover at the 1990 level.

The question remains whether not only clearing, but also human activities which modify these ecosystems should be defined as problematic. From an ecological perspective, the

answer is probably negative. Most of the world's rainforests are not static, unpopulated ecosystems: for thousands of years they have undergone man-made and natural modifications, gradually developing into the multifaceted natural and modified forests we know today. The ancestral claims of forest peoples testify to the longstanding utilization of these ecosystems by mankind. Small-scale forest utilization, the introduction of fruit trees and traditional slash-and-burn methods, and a carefully implemented selective extraction of timber can maintain - and even enhance - the productivity of particular forest functions. From a socioeconomic point of view, however, large-scale corporate logging and mineral extraction in large areas of public forest land have proved less compatible with the maintenance of forest cover than the small-scale forest uses by communities residing in or near these resources. Hence, as a preliminary thesis, we may conclude that the social and ecological sustainability of human modifications to natural forest cover can only be precisely defined on a case-to-case basis, that it tends to be more problematic as the scale of the activity increases, and as those who make the decisions on that activity are physically, culturally and economically less directly dependent on the natural resources in the area concerned.

Given the fact that local sustainable management of tropical moist forests serves not only local, but also global final variables, responsibility for the financial and economic burden of sustainable use and conservation likewise needs to be globalized. International concerns about the future of the rainforests will gain in credibility if the world community is willing to compensate tropical forest countries for the lost opportunity to put forest products and lands to immediate economic use, and for the cost of implementing conservation projects and sustainable management systems.

While overestimating the influence of science on developments in society, it is wise to say that the division and polarization that still characterize the field of deforestation studies have hampered rather than helped the search for effective solutions.

One of the causes of controversy, emphasized by authors such as Grainger (1993a), Kummer (1992a), Myers (1988) and Palo (1994), is the paucity of comprehensive and in-depth case studies linking deforestation to its wider context. General causal theories of tropical deforestation that focus on one of the elements mentioned above may well find compelling evidence of correlation. However, when such global findings are translated into generic solutions, location-specific factors are bound to limit the relevance of those solutions. In other words, the global environmental problem of tropical deforestation requires a location-specific approach to analysis, explanation and solution. Does that mean that there are no valid general theories and that we might as well deal with the problem on a case-by-case basis? Not necessarily. Interdisciplinary case studies contribute to the development of relevant general deforestation theory by "... describing interactions of people ... with the tropical forest ... and making these interactions intelligible by showing the situations in which they occur." (Vayda et al. 1980: 188). In a comparative perspective, such theory may consist of common 'source fields' (see section 2.3.3) and patterns of decision making that lead to forest clearing and degradation, which are probably best explained by sets of common ecological and sociocultural factors. Keys to sustainable forest use are not found by singling out a single factor for use in comparative studies, but by simultaneously examining - and dealing with - decision making patterns observed in comparable contexts. As vague as that may sound, the practicality of that approach will, hopefully, surface as we proceed to examine the context of deforestation in the Sierra Madre.

Finally, before proceeding to a brief overview of influential theories on the causes of tropical deforestation, I should mention a third aspect in which a case study such as this

## Theoretical elements and approach

### 2.1 Introduction

What more is there to be said about tropical deforestation? Ever since the 1970s, when the decline of tropical moist forests became an international issue, its origins have been repeatedly described in a host of NGO publications, policy reports, scholarly articles and books. The general tenor was that large-scale logging, road construction, human migration from crowded regions to the empty forest lands, slash-and-burn agriculture, new ranches, mining and oil drilling all contributed to the continuing degradation and loss of these fragile ecosystems. By the time I began on this book, a great many studies had already been dedicated to each of these causes and the various sequences or combinations in which they occur. The main conclusion to be drawn from a broad selection of these studies is that the results thus far are either inconclusive or contradictory. The debate continues on such issues as whether or not logging contributes to deforestation, whether slash-and burn-farming is compatible with forest conservation, whether roads facilitate forest migration or, conversely, are necessary to enable forest migrants to switch to permanent market-oriented farming, and whether government interventions in markets for land and timber slow down or stimulate deforestation, to mention but a few of the unresolved issues in the deforestation debate. And while the polemic goes on among researchers, policy makers and activists, more tropical forests are logged and burned every day. Without overestimating the influence of science on developments in society, it is true to say that the division and polarization that still characterize the field of deforestation studies have hampered rather than helped the search for effective solutions.

One of the causes of controversy, emphasized by authors such as Grainger (1993a), Kummer (1992a), Myers (1980) and Palo (1994), is the paucity of comprehensive and in-depth case studies linking deforestation to its wider context. General causal theories of tropical deforestation that focus on one of the elements mentioned above may well find compelling evidence of correlation. However, when such global findings are translated into generic solutions, location-specific factors are bound to limit the relevance of those solutions. In other words, the global environmental problem of tropical deforestation requires a location-specific approach to analysis, explanation and solution. Does that mean that there are no valid general theories and that we might as well deal with the problem on a case-to-case basis? Not necessarily. Interdisciplinary case studies contribute to the development of relevant general deforestation theory by "...documenting interactions of people.... with the tropical forest... and making these interactions intelligible by showing the situations in which they occur." (Vayda *et al.* 1980:188). In a comparative perspective, such theory may consist of common 'actors' fields' (see section 2.3.3) and patterns of decision making that lead to forest clearing and degradation which are probably best explained by sets of common ecological and sociocultural factors. Keys to sustainable forest use are not found by singling out a single factor for use in comparative studies, but by simultaneously examining - and dealing with - decision making patterns observed in comparable contexts. As vague as that may sound, the practicality of that approach will, hopefully, surface as we proceed to examine the context of deforestation in the Sierra Madre.

Finally, before proceeding to a brief overview of influential theories on the causes of tropical deforestation, I should mention a third aspect in which a case study such as this

complements studies focussing on a single issue or factor. Individual personalities, or specific ecological conditions, may play a decisive role in a specific deforestation context. As these individuals, communities, or ecological changes enter a local deforestation actors' field in a specific position or at a particular point in time, when the seeds of their values and ambitions fall into a dynamic social environment, such as the post-Marcos Philippines, they may significantly alter past developments and help to avert trends that might be expected on the basis of general theory. Case studies, in other words, not only enable us to understand the context of the dominant deforestation process, but also allow us to make the acquaintance of some of those rare individuals who have managed to prevail over context and theory and actually make a difference.

## 2.2 Factors of influence on tropical deforestation

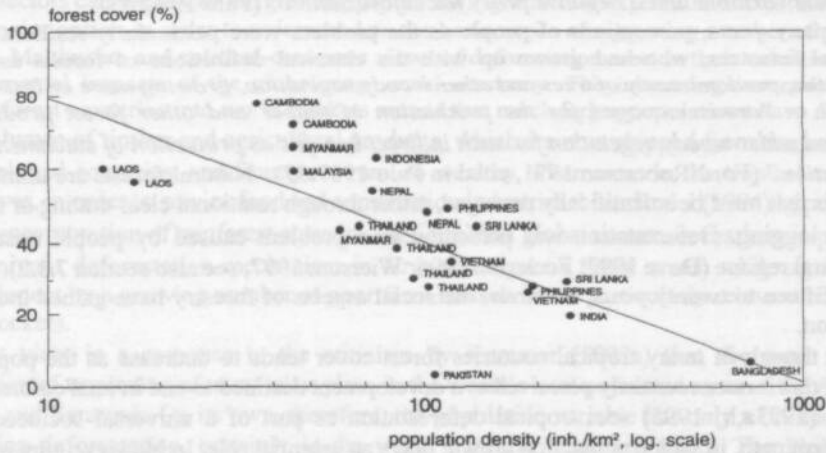
This section examines the four causes of tropical deforestation that are covered most extensively in the literature: population growth, poverty, large-scale timber extraction and trade, and the role of government policies. My review does not intend to be as comprehensive as the work of Brown and Pearce (1994), for example; rather it inventories the key arguments and assumptions underlying those theories. One drawback of discussing these perspectives sequentially is that by the end of each subsection we are back where we started, since each factor represents a separate area of deforestation studies, in which the influence of that factor is established in isolation from others of potential relevance. On its own, none of these focuses offers a full explanation for the degradation and loss of tropical moist forests. By going over the main arguments pursued in these different areas, I will construct a set of theoretical elements of potential relevance for this more comprehensive study of one particular deforestation context. In this way, I lay the foundations for the discussion in section 2.3, centring on the contribution that this study hopes to make to the existing body of knowledge on tropical deforestation.

### 2.2.1 Population growth

*"Unlike the case with non-human species, little can be said about human population-environment interrelations until details of technology, social organization, and culture are brought into the discussion....When they are specified, and notionally held constant, well defined economic consequences of demographic change can be discovered and their implications for ecological stability gauged."* (McNicoll 1990: 151)

The continuous increase in the number of people inhabiting the earth is widely held to be a problematic development for the global environment. Authoritative policy documents, such as the Brundlandt report and 'Agenda 21', adopted during the 1992 Earth Summit (National Research Council 1993; World Bank 1990; Myers 1988; ADB 1988), emphasize the importance of demographic change for forest clearance. One approach by which the population dimension has been statistically linked to deforestation consists in static cross-country comparisons of population density and forest cover (see, e.g. Palo *et al.* 1987). Many of these exercises find negative correlation between higher overall population density and forest cover (Grainger 1993; Palo 1987, 1994; Cruz *et al.* 1992). Fig 2.1 shows the statistical correlation between forest cover and the logarithm of population density on 23 observations, dating from 1956 to 1989, in 13 tropical forest countries in Asia.

Fig.2.1 Correlation ( $R=-0,76$ ) between forest cover and population density: 23 observations in 13 tropical Asian countries during 1956-89 (Source: Palo 1994:48)



Comparing population density and forest cover data from 35 industrialized countries also produces fairly strong negative or non-linear correlations, especially when exceptional cases like Japan, Finland and Sweden are excluded (Palo 1994:51-53). In most countries of the industrialized world, high population densities and low forest cover are a historical legacy, with population size stabilizing and forest areas gradually increasing in the postwar period. In most tropical forest countries, by contrast, both population growth and deforestation are still in full swing. A more dynamic approach, in which changes in population growth, and the corresponding changes in population density, are related to changes in forest cover, also produces statistically significant correlation factors (Grainger 1986, 1993b; Palo *et al.* 1987).

Absolute population growth and population density are the variables most commonly used to measure changes in population pressure (Kummer 1992a). These are not consistent variables, as scarcely populated forest areas may experience rapid population growth and still have a very low population density. Another problem with the use of undifferentiated statistics on population growth and density is the 20-year lag time between birth and the time when a proportion of these male children actually start farming on their own (Billsborrow 1997). Likewise, efforts to correlate changes in forest cover to changes in average national, or even provincial, population densities mask the variations which often exist between urban and forested regions. Changes in per capita farmland area (Grainger 1993b), or forest migration rates as a percentage of rural population increments are probably more meaningful variables. Likewise, as the authors themselves also note, the ratio of deforested area to total forest area would be a more valid deforestation indicator for correlation analysis. Data limitations have as yet prevented the use of these more realistic variables.

Studies in this realm generally work with national statistics, and hence include all population-related changes in the national land-use pattern in their analysis: direct interactions at the forest frontier, where a growing number of poor farming households clear rainforests for agriculture, as well as more indirect effects of the increasing demand on the part of the population as a whole for timber, fuel and food in a particular country or region, or even at the level of the world economy (Grainger 1993a:94-95). It is widely recognized that a growing population is neither a sufficient, nor a necessary condition for deforestation to occur. Palo, for example, presents a model which distinguishes seven 'direct local agents' of deforestation. However, population growth is considered to be the principal driving force behind these agents as well, by creating

more demand for food, clothing, energy, shelter and services related to health and culture: "Population density appeared to be a key independent variable in 'explaining' forest cover as a dependent variable and a negative proxy for deforestation." (Palo 1994:45)

For many years, perceptions of people as the problem were particularly resilient among traditional foresters, who had grown up with the classical definitions of forests as "plant communities, predominantly of trees and other woody vegetation, growing more or less closely together" or "areas managed for the production of timber and other forest produce, or maintained under woody vegetation for such indirect benefits as protection of catchment areas or recreation" (Ford-Robertson 1971, cited in Palo 1987:57). Natural forests are uninhabited tree stands that must be scientifically managed, either through rotational clear-cutting or through selective logging. Deforestation was presented as a problem caused by people upsetting a silvicultural regime (Dove 1992; Eccleston 1996; Wiersum 1997, see also section 7.3.2). During the past fifteen to twenty years, however, the social aspects of forestry have gained increasing recognition.

Even though in many tropical countries forest cover tends to decrease as the population increases, this is not necessarily perceived as a development destined to end in total deforestation. Grainger (1993a,b; 1995) sees tropical deforestation as part of a universal socioeconomic development path, in which population growth plays an essential role. In his view, after a "forest mining phase", which all forest countries go through as part of a national land-use transition associated with economic development, tropical countries eventually pass over into a "forest transition" phase, during which

*"socioeconomic factors, particularly population growth and economic development, are the driving forces for changes in national land use morphology. These lead to increased demand for food and timber, which are supplied by increases in agricultural area and/or intensity and in the logging rate respectively"* (Grainger 1993b: 77)

Equilibrium is induced by scarcity, once a critical *per capita forest cover* (of approximately 0.1 ha.) is neared. From then onward, the exploratory, profit-maximizing 'mining' phase is gradually replaced by a management-oriented phase, after which forest cover may stabilize or even replenish. A similar interpretation is offered by Horne and Palo (1995), who argue that sustainable development goes hand in hand with a national land use transition that includes deforestation, particularly in countries with a high forest cover, since economic development implies structural transformations within the economy. In practice, there are few examples of tropical countries that have actually built better economies using the capital raised by deforestation, or where population growth rates decreased as a result of deforestation-induced economic progress. Many tropical forest countries are still characterized by weak and predominantly rural economies and by the world's highest fertility rates.

Other studies in this field take the neo-Malthusian position that population growth itself is the root cause of an ever increasing discrepancy between what the earth can produce and what mankind demands from it. Direct intervention in the population factor, through extension work and incentives for family planning, is seen as the key to solving the problems of natural resource depletion and environmental degradation (Ehrlich and Ehrlich 1991; Hern 1990, cited in Arizpe and Velasquez 1994). In developing countries, where a relatively large share of the population depends directly on local resources for a living, that view appears to be confirmed with every new survey on population numbers and forest cover, leading to pessimistic projections for the future: "given the demographic momentum built into population growth processes in the tropical countries, and even allowing for expanded family planning programmes, population projections suggest that in those tropical countries where economies appear likely to remain primarily agrarian, there will surely be progressive pressures on remaining forests, extending for decades into the future" (Myers 1991:22, quoted in Jepma 1995:146)

The way the argument is phrased here, the facts can hardly be disputed. Without the deforestation-based economic development foreseen by Palo and Grainger, urban industrial and service sectors cannot absorb the growing population; agricultural expansion into forest areas is then a major option in order to accommodate the basic needs of a growing number of people.

Neo-Malthusian and political-economic views of deforestation meet in their valuation of the environmental impacts of the globalizing world economy. The increasing incorporation of tropical forest countries into world markets means that much larger populations have access to local volumes of timber and agricultural products, which are now shipped from the tropical to the developed countries, and from poor rural to wealthy urban areas in the tropical countries themselves, in order to service food and construction industries there. Rudel (1994) hypothesizes that the incorporation of rainforest areas into national and global consumer markets is probably the dominant deforestation mechanism in large, contiguous forest areas, while agricultural encroachment by a growing number of poor farm households is particularly relevant in smaller forest pockets.

That view is a response to the criticism by Kummer (1992a) that the most massive destruction of tropical rainforests takes place in the world's least populated areas of the Amazon, Borneo and Sarawak. On its own, therefore, the population variable has only a limited role in explaining deforestation, certainly in the world's largest rainforest tracts. The Philippines, according to Palo an "*illuminating case of population growth and deforestation*" (1987:117), was the subject of what Kummer calls the first quantitative study to conclude that population pressure is not an important explanatory variable in tropical deforestation (*ibid*). The author calls for other national and subnational case studies to examine the explanatory value of population growth for changes in forest cover in other countries, and repeatedly emphasizes the need to contextualize the results of such studies

*"In short, while population numbers and density are rapidly increasing in the Philippines, it is more important to understand the context in which this is occurring...While population obviously plays a role in tropical deforestation (somebody is cutting down the trees), a discussion which ignores the context in which population growth is occurring is incomplete..."* (Kummer 1992a:147-148)

Analyzing deforestation on the basis of population statistics alone disregards differences between countries with comparable population densities, in which local culture, laws or government incentives have led to different percentages of forest cover. While theoretically it may be necessary to temporarily keep other factors constant in order to build population deforestation theory, there is a chance that this approach will draw attention away from other causal factors, such as differences in wealth and consumption. As the richer part of the population in the developing world embraces the lifestyle and consumption patterns of the industrialized world, encouraged by advertisements from Western companies and their local subsidiaries, the birth rates of the poor are targeted as a principal cause of environmental degradation. A more fundamental criticism of this school of thought is that it is based on a negative perception of people as problematic organisms in the earth's ecosystem, rather than as human beings with the potential to be value-driven, intelligent partners of nature. In that vein, a more interesting way to look at fig. 2.1 might be to focus on the positive deviations from the general trend, and examine what makes these countries different from others.

Demographic trends gain in explanatory value if they are not severed from their context along with other variables, such as the distribution of land and income, urbanization, industrialization and land-use techniques. Billsborrow (1997) carried out a detailed study of the relation between population and environment in Latin America, combining an analysis of overall land use and population statistics in selected countries with a survey among 419 carefully selected households who had migrated from the highlands of the Andes to the lowland rainforests of eastern Ecuador.

One of the findings of this study was that in this case, as in Latin America as a whole, the total area of crop land changed little as the population grew. Rather the loss of forest areas translated into an increase in pasture area servicing the growing urban and international market demand for meat. The study also revealed that the concentration of agricultural land ownership in the place of origin was as significantly related to forest migration as population growth. However, a cross-examination of demographic land use and environmental statistics in 85 tropical countries found no statistically significant correlation between land distribution patterns and the rate at which new agricultural land was opened up (Billsborrow and Goeres 1994b).

Without venturing any further into the population/environment debate as it has evolved over the past decades (for a concise overview see Arizpe *et al.* 1994), suffice it to say that in this otherwise polarized field there appears to be a consensus that the population dimension can neither be understood nor managed in isolation from its broader socioeconomic context.

### 2.2.2 Poverty

Forest migration is the link via which deforestation is perceived to be related to poverty. Low income and a lack of economic opportunity, often combined with rapid population growth, are assumed to drive rural youngsters away from their place of birth to farm lands cleared from their original tropical moist forest vegetation (Myers 1984; Whitmore 1984; Watters 1971, cited in Rudel 1993). Before examining this factor in more detail, we can point to its limitations: in the sparsely populated great rainforests of Latin America and Africa, where human interventions concentrate on large-scale mechanized logging, mining and the establishment of ranches and plantations, poverty can have little if any explanatory value for the deforestation problem. Especially in large, inaccessible tracts of rainforest, poverty-induced resource extraction and agricultural expansion may play a role in deforestation, but mostly as a sequel to or a side-effect of logging, road construction, plantation development or land speculation by better-off actors (Brown and Peace 1994; Kartawanata and Vayda 1984; Klein & van der Wal 1997; Plumwood and Routley 1982).

While neither poverty nor population growth alone form a sufficient condition for forest migration, the two factors tend to reinforce each other: people who find adequate income and well-being in the place where they reside can afford better education, have access to health services and do not need to have large families in order to secure old-age income. Marginal and landless rural households are more vulnerable to financial, climatic or physical setbacks that may force them into a vicious circle of postponing investments in the productivity of the land, declining productivity, and declining agrarian income:

*"it is now widely accepted that the links between poverty, high population growth and environmental degradation are circular and mutually reinforcing. Investing in people, which reduces poverty and population growth, is an urgent moral imperative and is essential, in the long run, for arresting environmental degradation. For many of the poor, earning more income or accumulating need assets means mining the scant natural resources accessible to them"* (World Bank 1994b:103)

And yet, this two-dimensional view of deforestation as the result of a rapidly increase in the number of rural poor has a limited theoretical reach in the explanation of migration and agricultural expansion into tropical forests. First, a forest-based livelihood is hardly something to look forward to. During the first years after settlement, the terrain is uneven and difficult to cross, accessibility is limited, there are a host of life-threatening illnesses, with no health services to speak of. Rudel (1993) illustrates the physical and psychological burdens of living inside the forest by means of one case of lowland-migrants who, after arriving in the Amazon, called their new settlement *Tristeza*, or sadness. Billsborrow, in the same survey referred to

above, found 66% of migrants responding that their lives had improved in the Amazon, mainly because they now worked land they considered their own (83 percent of the migrants came from haciendas in the highlands). However, they had not colonized the forest on their own, but settled near a road opened by an oil company. The transportation services offered by this road enabled 85% of these migrants to produce for the market (Billsborrow 1997). In other words, in these large, inhospitable rainforest tracts, the entry of poor people seeking a livelihood hardly ever takes place in isolation from larger capital-driven interventions, such as road construction. The completion of the Belem-Brasilia highway in 1959, for example, attracted tens of thousands of settlers. By 1978, the population along the road had risen to 2.5 million, up from 100,000 10 years before (Caufield 1982). Such major road construction, logging or mining projects also help to explain the 'fits and starts' characterizing clearing progresses in large forest areas. The clearing pattern would be more gradual if it were only the result of a steadily growing number of poor rural youngsters gravitating towards the forest frontier (Rudel 1993). Poverty and increased population pressure thus have a more direct influence on the deforestation of small forest fragments in the vicinity of agricultural areas, where land scarcity is felt, than on large, inaccessible bodies of rainforest. The investments in roads, transportation and credit required to build up a forest-based livelihood on inaccessible, heavily forested land are beyond the capacity of most individual migrant households.

Poverty can be more adequately related to forest migration and clearing if it is linked to the overall sociopolitical context of income inequality and state interventions. Rudel proposes a theory that is based on the dual concepts of 'immizerization' of the poor and 'growth coalitions' between elite groups and state institutions. The first concept is based on the fact that many tropical countries are characterized by a combination of economic stagnation and rapid population growth. Where this occurs, industrial and urban areas cannot absorb all the rural out-migrants. Immizerization then intensifies, as a growing number of job-seekers lowers wages. When this is combined with high and structural socioeconomic inequities, poor people have few alternatives but to seek a livelihood in unoccupied forests. However, people with minimal or insufficient access to key economic means such as land and capital, are hired by companies, or by richer fellow migrants, as wage labourers. In many developing countries, members of the elite have direct access to members of the legislative and bureaucratic institutions. In what Rudel calls a 'growth coalition' with the elite, the State mobilizes public funds for the construction of roads, in order to stimulate the economy through private investments in these areas. This, in turn, facilitates the entry of labourers and the mobilization of forest products and lands for immediate economic purposes.

Rudel's theory comes close to the kind of alternative causal chains that case studies can produce, alongside the more conventional approach of comparative statistical analysis focusing on one or a small number of factors. The concept of a growth coalition between the State, business and the wealthier citizens may be seen as a crude version of a deforestation *actors' field*. This perspective turns the State into the principal decision taker (called the 'lead institution' by Rudel), companies and rich farmers into allies of the State in the attainment of its economic growth objective, and marginalized people into the workers engaged in converting forests into land uses with more short-term, tangible economic benefits.

Once migrants have settled inside the forest, Rudel observes, the pattern of economic differentiation prevailing in their place of origin is replicated. Citing the *colono* system (Roberts 1975), they argue that migrants who settle inside the forest first tend to hire those who follow, and who naturally have a less favourable pick of land to develop into farms. The fields of the last migrants, located at a greater distance from the road, are not fully developed,

as these people are busy working as wage labourers on the lands of the pioneers, often in exchange for personal loans. Eventually, pioneers may even be able to leave the management of their first farms entirely in the hands of those who followed them, and open up a new farm deeper inside the forest, for example in response to further road construction. Hence, "*success breeds success in tropical deforestation*" (Rudel 1993:22), and not the poorest but the better-off migrants are the prime movers in forest clearing. To keep this process going, state or corporate enterprise must take the lead in achieving their common economic growth objective by constructing farm-to-market roads. The waves of forest migration that follow each time these roads are opened or extended inward may explain the staggered nature of forest clearing in Latin America. These theoretical insights, gained during the study of a deforestation case in the Ecuadorian Amazon, where an oil company hired a staff of 90,000 for oil exploration, are also relevant for the deforestation actors' field of the Sierra Madre.

We must therefore conclude that uncontextualised poverty - or wealth, for that matter - has little explanatory value in tropical deforestation. In a continuously integrating world economy, the former continues to coincide with the latter: while the buying power of national and international markets creates a continuous demand for food, timber, oil and minerals, rural poverty continues to be a common feature of the countries exporting those raw materials, compelling marginal farmers to follow companies and pioneer settlers into the forest. Especially in the case of large forest bodies at a great distance from markets, tropical deforestation is a sequential process whereby migrants venture into areas made accessible by large-scale extractive activities which are often oriented towards national and international markets. I will now briefly examine a number of views on the role of large-scale tropical timber extraction in explaining tropical deforestation.

### 2.2.3 Corporate timber production and trade

#### INTERNATIONAL TIMBER TRADE

Large-scale mechanized logging and other forms of corporate resource extraction are often cited as the principal cause of tropical deforestation (EIA 1996; Hurst 1987; Plumwood and Routley 1982; WRM 1990). In 1992, 139.9 million m<sup>3</sup> of tropical hardwood sawn and veneer logs were produced in member countries of the International Tropical Timber Organization (ITTO), around half of which was destined for the export market. In 1982, more than 70% of all tropical hardwood timber was produced by six countries: Indonesia, Malaysia, Philippines, Papua New Guinea, Brazil and Ivory Coast. A further eight countries bring the total to 90%: Colombia, Ecuador, Gabon, Ghana, Nigeria, Costa Rica, Burma and Thailand. Ten years later, all African producers except Ghana and Togo reported significant declines in log production, as did the Philippines, Papua New Guinea, Thailand, and Ecuador (ITTO 1993:9). By 1994, 80% of the global production of tropical timber was produced by Malaysia, Indonesia, Brazil and India (Barbier *et al.* 1994).

Based on a regression analysis of the relationship between timber production and forest clearance, Barbier *et al.* (*ibid*:279) conclude that "*industrial roundwood production was positively related with forest clearance in the tropics for the 1980-1985 period - i.e., increasing levels of industrial roundwood production leads to higher rates of forest loss*". However, according to the authors, this does not mean that placing restrictions on the international trade in tropical timber, including "*environmental initiatives to reduce tropical timber imports...to 'save the tropical forests'...*" (*ibid*:285), will help to bring about more sustainable forest management in the tropics. On the contrary, they argue, any tax, ban, quota restriction or other 'market failure' limits the profitability of the forestry sector, thereby discouraging private

enterprise from investing in improved forest management. In the perspective of these and other authors (Bourke 1997; Vincent 1992), an unrestricted trade in tropical timber would enhance the profitability, and thus the sustainability of the logging industry:

*"By adding value to forestry operations, the trade in tropical timber products could act as an incentive to sustainable production forest management - provided that the appropriate domestic forest management policies and regulations are also implemented by producer countries"* (Barbier *et al.* 1994:286).

In my view, the validity of this analysis is limited, first, by its reliance on economics alone. Naturally, profitability is a key condition for sustainability; in any sphere of enterprise, companies have little reason to safeguard the future of an activity that does not produce comparatively attractive short-term returns on their investment. On the other hand, past experience offers few cases - in the forestry sector - where these investments were made by concessionaires managing profitable timber extraction and trade licenses in the tropics. In other words, profitability may be a necessary condition, but it is certainly not a sufficient condition to bring about a longer-term orientation in the tropical timber industry. Almost without exception, this industry continues to be characterized by restricted access, rent capitalism<sup>1</sup> (Yoshihara 1988), informal and insecure tenure, and a strong imbalance between government claims on natural resources and government capacity to manage these resources (Southgate 1989:8). But even if the industry were not marred by imperfections such as these, it remains to be seen whether an unregulated international trade in tropical timber would slow down or accelerate tropical deforestation, for the following reasons:

- 1) Major timber producers of the 1970s, such as the Philippines, Malaysia and Indonesia, have been criticized precisely for not charging high enough fees for the extraction of timber from public forest lands. The windfall profits that concessionaires were able to make in this "bonanza atmosphere" (Repetto 1990:21) sparked a timber boom throughout the tropics, but especially in the rich rainforests of Southeast Asia, and invited grab-and-run participation in the industry by people with little or no expertise in forestry.
- 2) An unrestricted global timber trade stimulates countries with comparatively minor forest areas - and thus little influence on timber prices in the world market - to deplete their forests without any indication of approaching scarcity. This allows processing industries to buy cheap timber from the international market or directly from other countries following the same path. Pursuing this argument a bit further, prices would only begin to rise once a shrinking global forest cover was no longer able to supply global demand. By then, the world's forest area would have been reduced to a smaller area than that needed for functions other than timber production.
- 3) The increasingly transnational character of forest industries takes away the need to respond to local resource scarcity. Following the example of transnational companies from industrialized countries during the colonial and post-colonial periods, logging companies from the Philippines, Malaysia, Korea and Indonesia have already gained access to large rainforest concessions in new frontier areas in Papua New Guinea, the Congo basin and the Guayana shield.
- 4) In spite of its unquestioned profitability, the timber industry often serves as a means to accumulate capital for investment in non-forestry enterprises (Schwartz and Friedland

<sup>1</sup> The term rent refers to the "difference between the economic value of a government favour and what the recipient of that favour actually pays for it to the government, and/or to his benefactors in government" (Yoshihara 1988:68). Rent capitalism occurs when political leaders use their influence to provide relatives or business associates with protection from foreign competition, concessions, licenses, monopoly rights or government subsidies.

1992; Rice *et al.* 1997). Tropical hardwoods are a commodity with a long-term investment horizon. On the basis of business considerations alone, capital investments in a slow-growing fixed asset with little alternative uses but timber production are unlikely to become a more attractive business proposition than investments in, say, industrial shares, currency, or consumer-oriented industries. Moreover, these investments cannot be liquidated until near the end of the investment horizon, when the trees have reached their commercial size. The problem of a long-term investment horizon is confounded by the uncertainty surrounding the commonly practised leasehold tenure of companies on public land.

Since the 1970s, using the growing influence of the mass media on public opinion and politics in Western market economies, conservationists and non-governmental organizations have been able to raise the level of awareness among consumers concerning the environmental impact of logging and mining activities in the tropics. As a result, the demand for tropical hardwoods in Western markets has fallen (Udanga 1991), and the common cry in timber markets is "*too many products chasing too few orders*" (Adams 1996:18). To regain the moral acceptability of their product among consumers, timber-producing countries and companies have become increasingly interested in ways of communicating their environmental policy to consumers. The recent drive towards the certification of tropical timber not only offers consumers a quality standard that rewards long-term planning on a per-concession, or per-country basis; it also gives producers a new option to escape from the longstanding glut in prices for tropical timber in the international market. For governments and industry in the South, certification is an opportunity to show environmental commitment without sacrificing the freedom to put natural forests to economic use. In this manner, it is hoped, the international trade in hardwoods extracted from natural stands of tropical moist forest can become an instrument to stimulate sound forest management practices in the production of tropical timber.

#### ROADS AND LOGGING TECHNIQUES

In theory, the mixed natural forest concessions of the tropics are managed under a selective logging system, intended to enhance the growth and yield of commercial timber by improving the forest structure and species composition. The selective extraction of timber from natural old-growth forests 'wakes up' the climax vegetation, by opening the top-crown canopy, allowing more light to penetrate to the lower canopies and thus facilitating the development of seedlings and young trees. In practice, less than one-eighth of one percent of all tropical production forests reach the stable condition of sustained-yield management after the first selective cut (Rice *et al.* 1997:35).

An exhaustive critical assessment of the practical validity of this theoretical rationale is beyond the scope of this initial overview. Sections 4.4, 5.2.2 and 7.3.2 examine the technical aspects of the Philippine selective logging system, and how it was applied in the Sierra Madre, in more detail. Here it will suffice to note, first, that this approach often stems from a view of forests as uninhabited national economic assets, rather than as part of nature, or as the home of forest people. Second, the selective logging concept provides the above mentioned 'growth coalitions' between national governments and corporate enterprises with a scientific rationale for an activity which, in most cases, turns age-old ecosystems into private goldmines. Investments in the long-term viability of natural tropical timber concessions are hardly rational in financial terms, first, because of the slow growth of the main commodity produced - tropical hardwoods (Cruz 1982) - and second, because of better economic opportunities in other sectors of most developing economies, where capital is scarce and interest rates are high (Rice *et al.* 1997).

In the most common institutional setting where selective logging takes place, *i.e.*, through large-scale timber extraction licenses granted by national governments to privately owned logging companies, the chances for a favourable growth and yield of residual forest stands are largely set by two technical variables in the logging operation, *viz.* road construction and the level of sophistication in the planning and implementation of the actual felling of the trees. The management implications of constructing roads between population centres and rainforests have already been discussed. Once traditional forest peoples have become legally alienated from their ancestral resources, the distant, urbanized government officials now managing those lands have difficulty in monitoring the transport of people and goods along these roads, let alone in restricting forest access to people directly associated with the company and within the period that the company is permitted to operate. In the exceptional cases where that level of control is indeed achieved, there may be some doubt about the social desirability and sustainability of the means used.

The second variable, the management of the logging operation itself, encompasses a wide range of technological options to minimize deforestation. Research has been devoted to logging and extraction techniques that minimize damage to residuals, the forest floor and the soil by using different transport vehicles (*e.g.*, caterpillar tracks instead of tyres), or by minimizing the density and extent of the network of logging roads through the use of high lead cables and even helicopters in timber extraction (Chua 1996). An example of efforts aimed at more sophisticated selective timber extraction systems is the CELOS management system currently in use on pilot sites in the Guayana shield and in the 'Mil Madereira' concession in Amazonas state, Brazil (Sarre *et al.* 1997:3). CELOS, first developed in Surinam by De Graaf (1991; 1996) of Wageningen Agricultural University may be seen as the computerized optimization of forest management, using the principles of selective logging. The first step forward is to build up a GIS-based forest inventory, which contains the coordinates and key characteristics of all trees and their location in the concession. An optimization model provides extraction rates, felling and skidding directions per tree and other silvicultural treatments necessary to arrive at the optimal productivity of the computerized forest ecosystem. Because of the tight fit between the forest model and the real stand on the ground, CELOS-based prescriptions have a high degree of precision and reliability. Extracted volumes are smaller than in unregulated timber concessions. If all felling and skidding is carried out in accordance with the prescriptions of the model, damage to the residual stand becomes a function of logging intensity (*i.e.*, volume extracted per hectare).

The instrument of timber certification aims at creating a *win-win* solution for tropical deforestation, which allows the large-scale extraction of timber from natural forests to continue, while saving these forests from further degradation and loss. While certification and market incentives are likely to stimulate governments and the timber industry to adopt more careful forest management systems, such as CELOS, the following factors restrict the likelihood of these systems being replicated outside the scientifically supervised field trials where they are currently practised. First, there is the element of cost. Unlike these experimental concessions, which are subsidized by international aid and 'green' investment funds in Western countries, the bulk of logging operations is carried out by ordinary private enterprises for purposes of profit maximization. The establishment of a computerized database of the forest stand, combined with the more restrictive, long-term extraction regimes compared to conventional, less regulated logging systems, would lower the immediate profitability of corporate logging operations (Rice *et al.* 1997). Moreover, there is little security that future returns on these investments will accrue to the investor, since most tropical timber concessions are only temporary rights to extract natural resources from public land.

Second, in many cases, the policies and institutions through which governments of tropical forest countries supervise conventional logging concessions have proved ineffective (see section 2.2.4). The monitoring and evaluation of more sophisticated management prescriptions will pose even greater demands on government resources and capabilities to see to their proper implementation. National and local institutions representing the public interest must have a legal mandate - and credible authority among private stakeholders - to oversee the actual implementation of operations plans and to take punitive measures against violators. Unless that basic condition is met, old practices of unregulated logging, concealed behind the window dressing of management plans, will continue to take place, and the practical role of well-intentioned technological innovations will remain as ephemeral as that of their less sophisticated predecessors.

Third, a careful logging system, such as CELOS, causes lower levels of damage and disturbance than conventional logging operations, but over a larger area. Lowered extraction intensity means that concessions must be expanded, if the investments required are to be economically feasible. In addition to ecological impacts, such a large-scale requirement also has sociopolitical dimensions, since logging concessions often take place in areas also claimed by local users, including indigenous forest communities.

#### Box 2.1 Solomon Western Islands Fair Trade (SWIFT)

In cooperation with the United Church of Papua New Guinea and the Solomon Islands, forest-based groups in the Western province and the province of Choiseul in the Solomon Islands have been developing alternatives for the large-scale logging industry, which rapidly expanded in the islands after 1988. One of the main goals of the initiative was to ensure that a larger share of the market value of the extracted timber would accrue to forest-based communities. In the early nineties, the SWIFT company was established to handle the marketing of timber produced by these communities. Since it offers a considerably higher price per tree, forest communities are encouraged not to offer their lands and resources to corporate logging companies, but to join the SWIFT company and handle the management of their forests themselves. After being trained in fields such as forest inventory, the preparation of management plans, monitoring and evaluation, and timber processing, participating groups can apply for loans to invest in necessary equipment and facilities. The company as a whole, including its Dutch subsidiary SWIFT Hout bv, is owned by the 300 participating groups, who together manage 800,000 hectares of tropical moist forest. ICCO, a Dutch co-financing organization and the Rabobank, a cooperative bank, together financed the establishment of the Dutch branch.

The company adheres to the strict regulations qualifying timber for certification by the Forest Stewardship Council, and in February 1997 the company was deputized by the FSC to monitor and evaluate adherence to the certification criteria by its own producer groups. The SWIFT initiative is supported by the Dutch branch of the World Wide Fund for Nature, Friends of the Earth the Netherlands and Novib.

Sources: ICCO leaflet, April 1997; SWIFT folder 1997; Article "Solomonseilanders roeien bomen met pen en papier" Esther Hansen Løve in *de Volkskrant*, 20/5/97, page 2.

Finally, the high level of technical sophistication characteristic of the computerized management systems poses a barrier for effective participation by local people. Technically less sophisticated and smaller-scale initiatives, such as the SWIFT programme in the Solomon Islands (see Box 2.1), build upon the capabilities of local communities to manage forest resources in a sustainable way, ensuring that communities earn a greater share of the market value of their timber. This would appear to offer a more reliable socio-economic foundation for the wise use of tropical forests in the longer term.

#### 2.2.4 Government policies and -institutions

The importance of governments as actors in tropical deforestation is reflected in the fact that 80% of the world's closed-canopy tropical moist forests are located on public lands (Lanly 1982) and are thus the property of the governments of the countries involved. Nevertheless, in my view, the conclusion that "throughout the world, governments largely determine how forests should be used" (Repetto 1988:16) overestimates the capability of government institutions in the developing world to control the appropriation of public resources by private actors, both local and international. A relevant assessment of the role of governments in tropical deforestation must transcend the level of policy *content*, and analyse the *process* through which these are conveyed and implemented at the interface of government officials and others in the actors' field. I will follow that same sequence here.

Cernea and Bromley (1989, cited in Southgate 1989:7) argue that environmental degradation is, in fact, a manifestation of an institutional crisis. According to this view, this crisis arises from a pronounced imbalance between the government claims on the forest on the one hand, and the resources and capabilities to manage these resources on the other. However, taking the example of major tropical-forest countries like Brazil, Indonesia and Malaysia, the argument that governments of developing nations are still too poor to be able to afford forest conservation flies in the face of the impressive economies these countries have been able to make. In fact, only the poorest of the world's major tropical-forest countries, the Democratic Republic of Congo did not experience rapid deforestation in the past few decades.

The problem that most of the world's tropical moist forests are managed by ineffective, poorly funded, understaffed and powerless institutions is, therefore, not only the result of an absolute lack of resources, but also of a low priority given to the objective of sustainable forest management (see also section 1.2). To these governments, tropical forests are, first and foremost, potential market commodities which can buy economic progress and political stability.

In a cross-country statistical analysis of economic indicators and deforestation, Kahn *et al.* (1995) found a significant correlation between developing countries' relative rates of deforestation in the period 1965-1985, and their public debt service as part of GNP or total export earnings per one million inhabitants. In the 1980-1985 period, in particular, developing countries experienced both rapid deforestation rates and marked increases in public and foreign debts (*ibid*:118). A possible explanation for this correlation, in their view, is that the governments of developing countries had to sell tropical timber in the international market in order to earn foreign exchange for debt service payments. On the basis of this explanation, the authors predict that a 10% debt relief for tropical forest countries could result in a 3% reduction in deforestation rates. Inman (1991), however, arrives at the opposite conclusion, maintaining that the influx of foreign capital during the 1970s actually sped up tropical deforestation rates, by enabling developing country governments to construct infrastructure. A decade later, when a large public debt had been built up, economic crisis and forced austerity in public spending slowed down deforestation rates in the tropics. In that interpretation, debt relief - unless linked to specific conservation activities - could even result in increased forest degradation and loss. Thus revenue scarcity at the level of national governments offers neither an adequate explanation nor effective solutions for tropical deforestation (Pearce *et al.* 1995).

Gillis and Repetto (1988) and Bautista (1990) summarize the problematic influence of a number of policies which commonly guide private access to public rainforests, in the tropics as a whole and in the Philippines in particular. They point to the following problems:

- The temporary nature of timber licenses, granting private businesses with exclusive leaseholds access to large forest tracts. The investment horizon in mixed natural forests or

Second, in many cases, the policies and institutions through which governments of tropical forest countries supervise conventional logging concessions have proved ineffective (see section 2.2.4). The monitoring and evaluation of more sophisticated management prescriptions will pose even greater demands on government resources and capabilities to see to their proper implementation. National and local institutions representing the public interest must have a legal mandate - and credible authority among private stakeholders - to oversee the actual implementation of operations plans and to take punitive measures against violators. Unless that basic condition is met, old practices of unregulated logging, concealed behind the window dressing of management plans, will continue to take place, and the practical role of well-intentioned technological innovations will remain as ephemeral as that of their less sophisticated predecessors.

Third, a careful logging system, such as CELOS, causes lower levels of damage and disturbance than conventional logging operations, but over a larger area. Lowered extraction intensity means that concessions must be expanded, if the investments required are to be economically feasible. In addition to ecological impacts, such a large-scale requirement also has sociopolitical dimensions, since logging concessions often take place in areas also claimed by local users, including indigenous forest communities.

#### **Box 2.1 Solomon Western Islands Fair Trade (SWIFT)**

In cooperation with the United Church of Papua New Guinea and the Solomon Islands, forest-based groups in the Western province and the province of Choiseul in the Solomon Islands have been developing alternatives for the large-scale logging industry, which rapidly expanded in the islands after 1988. One of the main goals of the initiative was to ensure that a larger share of the market value of the extracted timber would accrue to forest-based communities. In the early nineties, the SWIFT company was established to handle the marketing of timber produced by these communities. Since it offers a considerably higher price per tree, forest communities are encouraged not to offer their lands and resources to corporate logging companies, but to join the SWIFT company and handle the management of their forests themselves. After being trained in fields such as forest inventory, the preparation of management plans, monitoring and evaluation, and timber processing, participating groups can apply for loans to invest in necessary equipment and facilities. The company as a whole, including its Dutch subsidiary SWIFT Hout bv, is owned by the 300 participating groups, who together manage 800,000 hectares of tropical moist forest. ICCO, a Dutch co-financing organization and the Rabobank, a cooperative bank, together financed the establishment of the Dutch branch.

The company adheres to the strict regulations qualifying timber for certification by the Forest Stewardship Council, and in February 1997 the company was deputized by the FSC to monitor and evaluate adherence to the certification criteria by its own producer groups. The SWIFT initiative is supported by the Dutch branch of the World Wide Fund for Nature, Friends of the Earth the Netherlands and Novib.

Sources: ICCO leaflet, April 1997; SWIFT folder 1997; Article "Solomonseilanders rooien bomen met pen en papier" Esther Hansen Löve in *de Volkskrant*, 20/5/97, page 2.

Finally, the high level of technical sophistication characteristic of the computerized management systems poses a barrier for effective participation by local people. Technically less sophisticated and smaller-scale initiatives, such as the SWIFT programme in the Solomon Islands (see Box 2.1), build upon the capabilities of local communities to manage forest resources in a sustainable way, ensuring that communities earn a greater share of the market value of their timber. This would appear to offer a more reliable socio-economic foundation for the wise use of tropical forests in the longer term.

#### 2.2.4 Government policies and -institutions

The importance of governments as actors in tropical deforestation is reflected in the fact that 80% of the world's closed-canopy tropical moist forests are located on public lands (Lanly 1982) and are thus the property of the governments of the countries involved. Nevertheless, in my view, the conclusion that "throughout the world, governments largely determine how forests should be used" (Repetto 1988:16) overestimates the capability of government institutions in the developing world to control the appropriation of public resources by private actors, both local and international. A relevant assessment of the role of governments in tropical deforestation must transcend the level of policy *content*, and analyse the *process* through which these are conveyed and implemented at the interface of government officials and others in the actors' field. I will follow that same sequence here.

Cernea and Bromley (1989, cited in Southgate 1989:7) argue that environmental degradation is, in fact, a manifestation of an institutional crisis. According to this view, this crisis arises from a pronounced imbalance between the government claims on the forest on the one hand, and the resources and capabilities to manage these resources on the other. However, taking the example of major tropical-forest countries like Brazil, Indonesia and Malaysia, the argument that governments of developing nations are still too poor to be able to afford forest conservation flies in the face of the impressive economies these countries have been able to make. In fact, only the poorest of the world's major tropical-forest countries, the Democratic Republic of Congo did not experience rapid deforestation in the past few decades.

The problem that most of the world's tropical moist forests are managed by ineffective, poorly funded, understaffed and powerless institutions is, therefore, not only the result of an absolute lack of resources, but also of a low priority given to the objective of sustainable forest management (see also section 1.2). To these governments, tropical forests are, first and foremost, potential market commodities which can buy economic progress and political stability.

In a cross-country statistical analysis of economic indicators and deforestation, Kahn *et al.* (1995) found a significant correlation between developing countries' relative rates of deforestation in the period 1965-1985, and their public debt service as part of GNP or total export earnings per one million inhabitants. In the 1980-1985 period, in particular, developing countries experienced both rapid deforestation rates and marked increases in public and foreign debts (*ibid*:118). A possible explanation for this correlation, in their view, is that the governments of developing countries had to sell tropical timber in the international market in order to earn foreign exchange for debt service payments. On the basis of this explanation, the authors predict that a 10% debt relief for tropical forest countries could result in a 3% reduction in deforestation rates. Inman (1991), however, arrives at the opposite conclusion, maintaining that the influx of foreign capital during the 1970s actually sped up tropical deforestation rates, by enabling developing country governments to construct infrastructure. A decade later, when a large public debt had been built up, economic crisis and forced austerity in public spending slowed down deforestation rates in the tropics. In that interpretation, debt relief - unless linked to specific conservation activities - could even result in increased forest degradation and loss. Thus revenue scarcity at the level of national governments offers neither an adequate explanation nor effective solutions for tropical deforestation (Pearce *et al.* 1995).

Gillis and Repetto (1988) and Bautista (1990) summarize the problematic influence of a number of policies which commonly guide private access to public rainforests, in the tropics as a whole and in the Philippines in particular. They point to the following problems:

- The temporary nature of timber licenses, granting private businesses with exclusive leaseholds access to large forest tracts. The investment horizon in mixed natural forests or

- forest plantations often lies beyond the validity of these licenses, creating uncertainties that discourage a long-term view on the part of the licensee. In the Philippines, the average period during which licensees actually held onto their concessions was only 9-10 years, while the actual term of the lease was 25 years, renewable for another 25 years. According to the author, "*the early voluntary return of leased lands may reflect the capacity of license-holders to exhaust the standing timber within their concession area, as well as their lack of interest in replanting and sustaining yield*" (Bautista 1990:78). The privileged, non-competitive nature of the licensing system aggravated the wasteful use of forest resources.
- Forest revenue policies, intended to enable governments to capture the public share of the value of the natural forest stand, were generally inadequate. Bautista (1990) calculated that during the 1960-1985 logging boom in the Philippines, forest charges accounted for less than 5% of wholesale value. De Los Angeles (1982) demonstrated that logging companies made a 137% profit in domestic log sales, and 264% for exported logs. The common policy of setting forest charges on the basis of extracted volumes alone encouraged high grading and did not encourage concessionaires to adopt more careful felling, yarding and hauling techniques (for an examination of this issue, see section 5.2.2).
  - Tenure policies that recognize the claims to ownership of those who cleared the land of its natural forest vegetation. This general principle, which applies in nearly all tropical settings, rewards forest clearing, and even acts as an incentive for speculative land clearing (Utting 1994:238). Tenurial insecurity, on the other hand, contributes to an unsustainable use of land and resources by discouraging private investment in the long-term productivity of the land, whether for tree-growing companies or for migrant farmers (*ibid*:243; Lynch 1992; Dorner and Thiesenhusen 1992)
  - A fourth area of policy concerns the rural areas in the vicinity of tropical forests. Faced with limited employment opportunities in manufacturing, services and processing industries, and slow or ineffective land reform, many poor and landless people have few feasible alternatives to logging and forest clearing as a means of making a living. Two-thirds of the increases in crop production in the Philippines between the mid-sixties and the mid-eighties were achieved by means of agricultural expansion into the forest frontier (Bautista 1991:10).
  - Finally, there is the category which includes logging bans, log export bans and protectionism-inspired tariffs levied on unprocessed forest product imports. Southgate (1989), Gillis and Repetto (1988) and others argue strongly against the effectiveness of such policies (see 5.2.2). In Ecuador, for example, a log export ban made the internal timber market entirely dependent on agricultural colonists for its supply (causing a rapid increase in chainsaw imports). In other cases, log bans led to economically non-rational investments, such as the construction of processing plants - in order to remain in the timber business despite a ban on exports of raw logs - or to the displacement of large-scale mechanized logging and its negative environmental impacts on surrounding countries where such a ban was not yet in place.

A great deal more could be said about the influence of forest policies, and the role of weak forest institutions, and weak governance in general, in the global degradation and loss of tropical moist forests. Instead, I have opted to examine the role of forest policies and actors only after providing a more detailed description of the Sierra Madre and its forest policy context. Chapters 5 and 6 examine the background and implementation of Philippine forest policies in detail. In my description and analysis of particular policies and institutions, and discrepancies between the formal content of particular policies and their interpretation in the

field, I will draw upon additional theory in the fields of development administration and political science. Taking into account the above lessons from other country cases and comparative studies, I will examine whether there are additional insights to be gained from a perspective that disassembles the encompassing term 'government' into the actual actors that represent the State at the various levels where policies are formulated and implemented.

## 2.3 Contribution, approach and methodology of this study

### 2.3.1 Background, aim and objective

It is clear from the previous sections that considerable scientific work has been devoted to describing, analyzing, explaining and thereby helping to solve the global environmental problem of the loss and degradation of tropical moist forests. And yet, as deforestation proceeds unabatedly in most tropical countries, only a few elements of a commonly accepted theory on the causes of and the solution to this problem appear to have risen above the level of debate:

- In most cases, notably in large contiguous forest tracts, large-scale corporate extractive activities trigger the deforestation process. In the densely stocked dipterocarp forests of Southeast Asia, the first corporate activity was usually large-scale mechanized logging. Plantation establishment, oil exploration, state-sponsored transmigration and the construction of hydroelectric cum irrigation dams are other examples of pioneer activities ('lead agents').
- The construction of roads and the removal of the heaviest biomass by logging companies facilitates the conversion of residual forests by migrants from nearby rural population centres.
- Common features of rural society in developing countries, such as rapid population growth, poverty and a limited range of livelihood opportunities, stimulate the movement of people into accessible forest frontiers.
- Government policies either explicitly stimulate the conversion of forests into other land uses, or appear to provide a sound legal framework for forest protection, but fail when it comes to implementation.

Beyond these general points of agreement, consensus ends. This leaves us with such basic questions as: Does secure land tenure enable migrants to start making investments in sustainable land uses, or will the possibility of gaining private titles to public land also encourage land speculation and speed up forest migration? Does road construction into forest lands complicate conservation efforts or are roads a necessary condition for more sustainable, market-sensitive land uses? What can policy reform do in an administrative context, where local government officials constantly need to weigh their loyalty to the public interest against personal security and progress? Further scholarly work is required to find more definite answers to these and other questions on tropical deforestation. Billsborrow and Geores argue for an explanation of forest migration and deforestation at a lower level of aggregation, preferably the household or farm level, where decisions on resource use are made and where *"fully multidisciplinary collaboration in both the data collection in the field and in the analysis - involving ecologists and social scientists altogether - can be most useful and is most needed"* (1994b:132). In the conclusions of his deforestation study in the Philippines, Kummer also recommends the conduct of more detailed studies on the complex issue of deforestation:

*"The almost complete lack of rigorous studies of tropical deforestation at the national level or below seriously hampers our ability to make any general statements regarding tropical deforestation or, indeed, to conceptualize the process adequately"* (Kummer 1992a: 141)

During my stay in the Philippines between 1989 and 1995, as coordinator of the Cagayan Valley Programme on Environment and Development (CVPED), I gradually - and more or less accidentally - discovered the importance that developments in mainstream society had for people and forests of the Sierra Madre mountain range. In December 1989, when I arrived, the new administration of Mrs Corazon Aquino had just survived one of the most serious military coup attempts since the 1986 EDSA Revolution, which ended two decades of authoritarian rule by the Marcos regime. The timber- extraction and timber-processing industry, despite having lost its close ties with the office of the President, continued to operate at full speed in Cagayan Valley. It was only after 1991, when the newly appointed regional executive director of the Department of the Environment and Natural Resources (DENR) in Cagayan Valley forged an alliance with the Philippine army, that corporate logging went into decline here.

Another significant development in mainstream society was the rapid growth of the Philippine NGO community, which led to a fundamental reorientation within forest-related legislation; this generated international assistance to facilitate a turnaround towards community-based forest management and the recognition claims to ancestral domains in the uplands. This coincided with the growing economic importance of the agricultural sector and its affiliated service businesses. Lowlanders who built up capital in the corporate logging industry responded to its declining social acceptance by investing in these sectors. By the end of my term, I witnessed the establishment of new poultry and pig-raising bio-industries in the region, culminating in the establishment, in 1997, of a large integrated stockfeed and livestock production facility in Echague, the former tobacco capital of Isabela. Seeing the increasing number of hybrid maize varieties and chemical fertilizers in the uplands, I realized that a new phase in the longstanding history of mobilizing forest lands and resources for lowland development had begun.

While some of the studies mentioned earlier in this chapter do indeed feature links between deforestation and policy developments or demographic changes in mainstream society, there is a relative paucity of integral case studies focussing on a specific deforestation case and its wider political, sociocultural and economic context. Deforestation studies carried out in the Philippines have thus far focused on national-level policies and economics (Bautista 1990, 1994; Boyce 1993), and national and provincial statistics (Kummer 1992; 1995). In addition, the analyses of Vitug (1993) and Broad and Cavanagh (1993) offer detailed inside accounts of the politics involved in the Philippine logging industry and the associated social inequity and environmental degradation respectively. The latter study is essentially a compilation of local accounts by Palawan, Bataan and Bukidnon, Mindanao, and others, so that no detailed study of a local, or regional deforestation case has thus far been conducted in the Philippines.

The Cagayan Valley continues to be a near *terra incognita* within Philippine studies. With the exception of the early monographs written by Spanish Friar Julian Malumbres (1918) and Edilberto de Jesus's standard work on the Spanish Tobacco Monopoly (1980), very little scientific work has been published on this region, or on the Sierra Madre mountain range. Therefore, in addition to making a contribution to the general body of knowledge on tropical deforestation, the present study also aims to lay the groundwork for future research projects to be conducted in the region. A fourth and final rationale to opt for this particular focus was its compatibility with my other responsibilities as CVPED coordinator. I will return to this point in my discussion of the research methodology.

The overall aims of this study are to contribute to a better understanding of the deforestation problem in the Sierra Madre, and to facilitate the development of more effective strategies for the protection and sustainable use of natural forests in the Cagayan Valley Region. The question of whether the findings in the Cagayan Valley case are relevant for the

explanation and solution of tropical deforestation in other contexts can only be answered through comparative studies, a task which is beyond the scope of this research. Conversely, it is possible to see the relevance of certain general theoretical elements, such as those discussed earlier in this chapter, for the clarification of deforestation in the case of the Sierra Madre.

The theoretical objective of the research is *to establish causal links between the use of lands and natural resources in the forest lands and the socioeconomic and political context of lowland society in Cagayan Valley*. A methodological objective of the research is to experiment with the use of the 'problem- in-context (De Groot 1992) as the theoretical framework for the interdisciplinary approach which this theoretical objective demands.

### 2.3.2 Research questions

The central question that this study aims to answer is:

**"What was the influence of the political and socioeconomic context of Cagayan Valley on the activities that were the direct cause of the deforestation of the northern Sierra Madre in the period 1950-1995?"**

To answer this question, the following sub-questions are addressed:

*First, on background and problem analysis*

- 1) What are the factual and normative dimensions of the tropical deforestation problem?
- 2) What has been the rate and pattern of deforestation in the Philippines and the northern Sierra Madre since 1950?

*Then, the actor-oriented chain of explanation, which starts inside the forest:*

- 3) Which activities lead directly to the degradation and clearing of tropical moist forest in the northern Sierra Madre; who carries out these activities, what motives do they pursue in doing so, and what options do they have in pursuing these motives?
- 4) Which actors outside the Sierra Madre exert influence on these activities? What are their motivations and options?
- 5) What relevant laws and policies does the Philippine government pursue regarding the management of forest lands and resources?
- 6) How do local government officials, both appointed and elected, participate in the implementation of these laws and policies in Cagayan Valley

*Next, in a more system-oriented style of discovering underlying causes:*

- 8) What are the most influential historical origins of the contemporary role of government officials in forest management?
- 9) What is the role of changes in population density, access to farmland, and access to credit in contemporary migration to the Sierra Madre?

*And finally, a number of future oriented questions:*

- 10) How does the increasing cultivation of commercial crops, such as hybrid corn, on upland farms in the Sierra Madre relate to the political and economic interests of government actors, banks and other lowland-based interest groups?
- 11) What are the implications of the growing importance of commercial farming, in this socio-economic context, for future forest cover in the Sierra Madre?

The structure of the dissertation reflects the sequence in which the material pertaining to these questions is treated. The first chapter defined the area and distribution of the world's tropical forests, approximated the rates at which they have declined in recent times, and identified a normative framework in the light of which tropical deforestation may be defined as problematic. The following chapter (3) zooms in on the extent of the Philippine deforestation

problem, then introduces the Cagayan Valley Region and presents findings on changes in total forest cover and the distribution of various forest cover classes in the northern Sierra Madre between 1950 and 1990. Chapter 4 describes the primary activities directly responsible for these changes, and analyzes the motives behind these activities and the actors involved. Chapters 5 and 6 describe relevant government policies with regard to these activities, the bureaucratic and political context in which these policies are implemented in the region, and analyze the causes of distortions in policy implementation. The different positions of, on the one hand, appointed officials in the Department of Environment and Natural Resources and, on the other hand, elected officials representing the groups and individuals whose interests are potentially affected by forest policy, play a central role in this analysis. Chapter 7 explores the historical origins of the state-facilitated corporate logging industry in the Philippines. The last two chapters take a closer look at the causes of forest migration and of the increasing production of cash crops, particularly hybrid corn, in upland farms in the Sierra Madre. The book concludes with a synthesis of the insights gained in this study.

### 2.3.3 Approach, methodology and limitations

*"...documenting interactions of people...with the tropical forest...and making these interactions intelligible by showing the situations in which they occur." (Vayda et al . 1980:188)*

## METHODOLOGICAL FRAMEWORK

The questions at the heart of this research require a conceptual framework that facilitates an interdisciplinary approach. To establish factual changes in forest extent and cover, for example, theory and skills from the disciplines of geography and forestry are essential. Insights into biology, ecology, hydrology and economics are important if we are to answer questions on the problematic nature of deforestation. Explanatory research into the human activities causing the problem draws from theories and methodologies employed in both the social and bio-physical sciences. Only when these disciplinary questions have been studied as a single cohesive object of research will it be possible to speak of an interdisciplinary dissertation. The problem-in-context (De Groot 1992) offers a conceptual framework that will help to define problem-relevant monodisciplinary questions and structure them into an interdisciplinary whole. De Groot defines interdisciplinarity as:

*"More than one discipline working on an empirical or normative science problem, at a case-study or more theoretical level, leading to a result that is significantly more than the sum of the disciplinary contributions." (ibid:40)*

I will confine myself here to a brief explanation of how the Problem-in-Context method approaches environmental problems and organizes interdisciplinary studies on their nature, causes, and solutions. This will allow me to introduce the key concepts used in this study. For a full discussion of Problem-in-Context (PiC), the reader is referred to the original source.

Environmental problems, or disturbances in the relationship between people and the environment, are social, not individual problems. Hence, the environmental impacts of a particular human activity are only defined as environmental problems *"once larger social units (groups of people, organizations, institutions) consider these impacts so negative as to question the desirability of that activity, the intensity or scale at which it is carried out or the technology employed in it"* (Udo de Haes 1989:23). Following this definition, the description and analysis of particular environmental problems require research into both their factual and normative dimensions. Fig. 2.2 shows how PiC operationalizes this basic definition of environmental



problems, then introduces the Cagayan Valley Region and presents findings on changes in total forest cover and the distribution of various forest cover changes in the northeast Sierra Madre between 1970 and 1990. Chapter 4 describes the primary activities directly responsible for

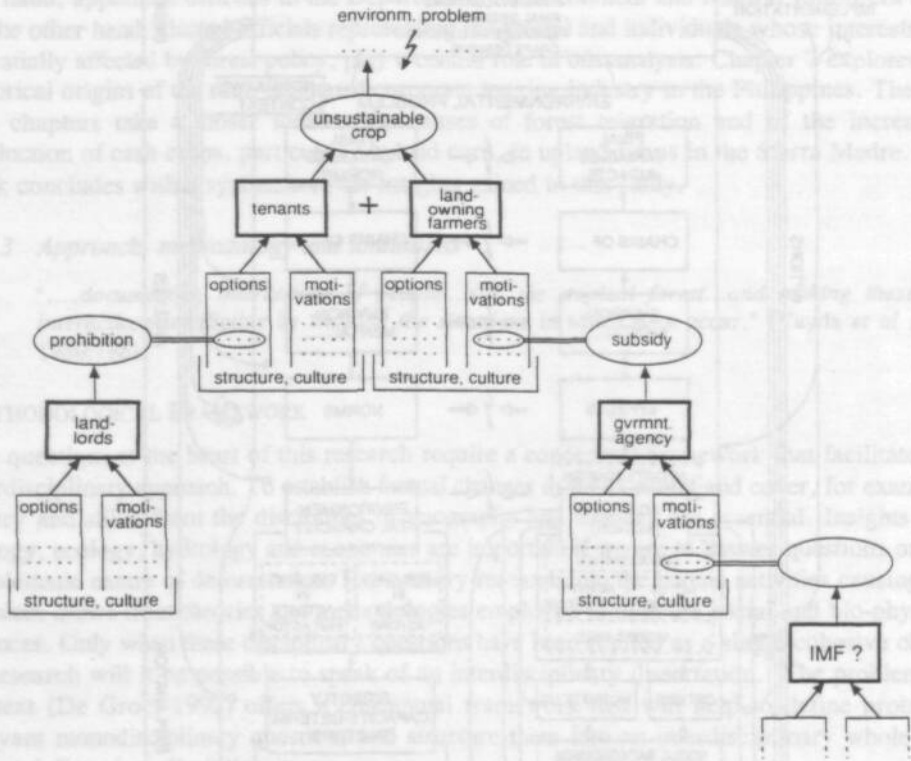
**Fig. 2.3 An example actors field** (Source: De Groot 1992:318)

Chapters 5 and 6 describe relevant government policies with regard to these activities, the bureaucratic and political context in which these policies are implemented in the region, and analyze the causes of differences in policy implementation in different portions of, on the one hand, agricultural activities in the Sierra Madre and on the other hand, in the

2.2.3 Approach

METHOD

The central idea of this method is to create a conceptual model that facilitates an understanding of the complex interactions between different actors. For example, the model might show how the increasing population in the Sierra Madre led to the increasing production of cash crops, which in turn led to the increasing production of cash crops. The book concludes with a discussion of the implications of the findings for policy-making.



"More than any other conceptualization, the actor-network approach, or a case-study or multi-theoretical level, leading to a reconceptualization of the nature of the discrepancy distribution." (De Groot 1992:318)

I will analyze the role of the actors in the actors field of the Cagayan Valley. Context method approaches to environmental problems are designed to understand the actors, their roles, interests, and strategies. This will allow us to understand the key concepts used in this study. For a full discussion of Problems in Context (PIC), the reader is referred to the original source.

Environmental problems, or discrepancies in the relationship between people and the environment, are social, not technical problems. Hence, the environmental impacts of a particular human activity are only defined as environmental problems "once larger social units (groups of people, organizations, institutions) consider these impacts so negative as to question the desirability of that activity, the manner in which it is carried out or the technology employed itself" (Tobias & Paine (1987: 23). Following this definition, the description and analysis of particular environmental problems require research into both their factual and normative dimensions. Fig. 2.2 shows how PIC operationalizes this basic definition of environmental

problems as fact-value contradictions (the flashes in the diagram) into two causal chains: on the left is the empirical chain of impacts, on the right the normative chain of tolerable or desired values related to these impacts. Both chains can be constructed in an upward direction, *i.e.*, starting from a particular human activity, for example overgrazing, and working towards the final norms and impacts that define its problematic nature, for example economic and biodiversity losses. If conducted the other way around, the analysis starts from a final variable, *e.g.*, the protection of biodiversity from the impact of global warming. From here, we move downward towards the intermediary variables of greenhouse gas concentrations and ultimately to the human activities causing their emission, such as motorcars, forest burning or paddy rice cultivation. These activities then have a factual side (*e.g.*, actual or predicted rates of burning) and a normative side (*e.g.*, the allowable rate of burning). The latter is called the environmental capacity, that is, the capacity of the environment to process or deliver what a particular activity demands from it.

The normative definition and analysis of the environmental problem is followed by an explanation of the social and biophysical causes of each problematic activity. Action-in-Context, the PiC component for the explanation of the social causes of environmental problems, begins with the identification of actors involved in this activity. De Groot defines actors as "*social entities are actors with respect to a certain action if they exercise a significant decision making power on that action*" (*ibid*:310). Primary actors carry out the problematic activity themselves (*e.g.* the forest migrant), secondary and tertiary actors are those people, groups or institutions that influence the options and motivations of these primary actors (*e.g.* the forestry service).

In the case of the Sierra Madre, where the majority of forest migrants arrived as logging company employees, the question arises of whether they or their employers are the primary actors in the deforestation problem. One might argue that these forest-based company workers did not autonomously decide to enter the forest in order to make a living from timber-cutting, but rather were sent there by people outside the forest and were in fact on their payroll. On the other hand, almost from the moment they entered the forest, labourers became forest migrants with alternative options (upland agriculture, gathering of non-timber forest products) designed to generate cash income. Traders, an important category of people with regard to the last subquestions in this study, present a similar challenge to the 'actor' concept. Do traders really have "significant decision-making power" as regards the products delivered to them by lowland farmers and forest migrants, or are they merely being compensated for communicating market prices to producers, in order to meet demand with supply? In that perspective, trader demand for hybrid corn is the translation of an increased consumer demand for particular products, *e.g.*, for meat and dairy products. Traders, then, have too little decision-making power to even be considered actors in the deforestation problem or the underlying processes. A similar argument could be made for politicians, who are essentially doing what voters elected them to do, or for field officials paid to implement policies designed by others. In fact, following this line of reasoning, all actor-oriented approaches in the social sciences could be "abstracted away" into a systems-oriented, structural approach. Considering the micro-level of this study and the added insights to be gained from a perspective that recognizes the decision-making capacity of all parties with personal or institutional stakes in the resources of the Sierra Madre, I will interpret the actor concept generously. Actor-ranking starts at the cutting site, and goes on until we reach anonymous groups like the urban consumer, or the world market, in other words, factors that influence options and motivations in the actors' field.

The clarification of activities in terms of social causes is complemented with a natural science explanation of the capacity of the environment to support that particular activity: if

actual timber extraction is higher than the natural sustained yield, what ecological, biological or other biophysical factors determine this environmental capacity, and can these factors be manipulated? What are the more structural biophysical characteristics of this area that place structural constraints on interventions in land use or timber yield (climate, geology)? The questions in this study do not require extensive research into such ecological questions; this does not mean that I consider research in these areas as less relevant. My attempt, in Chapter 4, to explore the sustainability of the three activities most directly responsible for deforestation reveals the paucity of essential ecological data, without which the design of practicable alternatives to these activities is far from efficient.

Thus, this case study entails a fully developed Action-in-Context explanation of tropical deforestation in the northern Sierra Madre. Causal chains of interacting actors together form the so-called *actors fields* (see fig.2.3): these are built up by identifying and describing the primary activities and actors of relevance for deforestation in the Sierra Madre. To understand why these actors carry out these activities, their motives are researched, as well as the range of alternative options by means of which these motives might also be pursued. Questions pertaining to the reasons why, as we have seen, primary actors choose the problematic activity in preference to other options lead us to secondary activities and actors. Following this basic principle of *progressive contextualization*<sup>2</sup> (Vayda 1983) actors' fields are built up by continuing this process through further inquiry into the options and motives of secondary, tertiary and subsequent actor groups. As relevance leads us farther away from the primary actors, lists of options and motives become less exhaustive. Each element of the causal chain may require deeper, probably monodisciplinary, studies to understand its precise influence. For example, if forest migrants claim they do not make investments in soil and water conservation because of a lack of tenurial security over the land, the issue of tenure (or of cultural or economic influences on land use) may require further inquiry.

Structural factors that influence options and motives perceived by the actors themselves, such as economic inequalities, political context or historical influences may be researched more deeply as they are encountered. The same holds true for possible alternative options that we, as outsiders, may see as relevant for the problematic activity, but which are not yet seen as such by the actors' themselves. This process of alternating analysis and explanation at the overall level of the actors field with detailed selective studies of particular elements, steered by problem relevance, is a major attraction of the Problem-in-Context approach. Instead of trying to capture deforestation, or the context in which it occurs, within a predefined model or system with certain socioeconomic, biophysical and other sub-systems, PiC uses elements of a deforestation context as they are encountered, provided they can be clearly linked to problematic activities. To maintain the focus of the contextualization, I construct the actors' fields step by step, from a first sketch to a more detailed representation of particular relevant details. Time and resources determine whether one proceeds from a first sketch of the actors field for a problematic primary activity to a more detailed study that may require inputs from a smaller number of disciplines.

---

<sup>2</sup> "Progressive contextualization involves a focus on significant human activities or people-environment interactions and the explanation of these by placing them within progressively wider or denser contexts" (Vayda 1983:265)

## INSTITUTIONAL SETTING AND RESEARCH METHODOLOGY

*The Cagayan Valley Programme on Environment and Development (CVPED)*

Between December 1989 and January 1995, I resided in Cagayan Valley, as coordinator of the Cagayan Valley Programme on Environment and Development (CVPED), operated jointly by Leiden University (RUL) and Isabela State University (ISU), the Philippines. The aims of this collaboration were to:

- contribute to the growth of environmental science as an interdisciplinary field of research and education for developing countries
- to contribute to the research and education capabilities of RUL, notably the Programme for Environment and Development of the Centre of Environmental Science, and the ISU College of Forestry
- to stimulate and participate in projects contributing to the sustainable development of the Cagayan Valley region and to the safeguarding of its natural heritage.

Partnership was a leading concept in the management and implementation of the programme. The organigram gave both parties an equal say in matters of project management at all decision taking levels, so as to ensure that both partners could see their ambitions reflected in the activities of the joint programme. Each annual plan of operations had to address the research and education agendas of both institutions. For CML, the main output from the programme was measured in terms of the students supervised and the theoretical gains, preferably through international publications. ISU had a more practical orientation, and here the programme was seen as a vehicle for its own institutional development and as a means to intervene in the deforestation process. The ability to create and accept compromises was the key to discovering compatibilities between the expectations of the two parties with respect to their partnership. Consequently, neither CML as an institution, nor I as the Dutch coordinator of the programme, could pursue a straightforward problem-oriented research activity, structured exclusively according to the Problem-in-Context framework. In the same way, the ISU College of Forestry could not gear the project fully to its own priorities in forest utilization, silviculture along a systems-oriented approach. We decided to focus our research activities on the Sierra Madre, rather than on the Cagayan Valley Region as a whole, and to take the deforestation of these mountains as our central environmental problem.

One of the main activities of CVPED was the conduct of joint research projects by teams of Filipino and Dutch graduate students. At this level, too, research partners had to arrive at a negotiated middle ground of proposals which had often been bred in contrasting academic traditions. As the initiative to set up joint research teams often originated in the Netherlands, the ISU students often still had to be selected and their research proposals developed, while the Dutch students had already arrived in Cagayan Valley. During the fieldwork, the Dutch students did not have access to the services of an interpreter, but depended on the willingness of their counterparts to translate for them. The Filipino students, often several years older and with some years of experience in government agencies and the private sector, could not always be persuaded to accompany their Dutch counterparts into the forest for prolonged periods of time. The Filipino students, in their turn, found it difficult to deal with their often impatient and straightforward counterparts (Van den Top and Araño 1992; Persoon 1997)

The Joint Agreement for the establishment of the programme was signed only a few months before my arrival in the Philippines. The first years of my term and that of my fellow coordinator Dr. Roberto R. Araño, were therefore devoted largely to developing the CVPED as an organization, establishing internal management procedures and solving problems

associated with the cooperation between people of different cultures, disciplines and paradigms. To establish working relations with line agencies, local government authorities and local NGOs in the conduct of the research, it was also necessary to communicate our identity to these partner organizations, both inside and outside the region, and to establish working relations with them. The Cagayan Valley, and the Sierra Madre in particular, was then still considered a stronghold of the New People's Army. In order to conduct research work here, extensive consultations with military and local government authorities were necessary. Both to promote awareness of the programme and its activities, and to generate feedback from a wider audience of scientists and policy makers, we organized Work Conferences in 1991 and 1994. Both conferences had a considerable spin-off in terms of the institutional and development objectives of the joint programme. The first such conference took place in 1992, when a considerable portion of the northern Sierra Madre was included in the list of priority sites covered by the National Integrated Protected Areas System (NIPAS). A financial grant from PLAN International in that same year enabled CVPED to build the first phase of an Environmental Information Centre for the Cagayan Valley Region. Four years later, the EIC was developed into a full-fledged training facility, when the Netherlands' Ministry of Foreign Affairs charged a consortium of local organizations led by PLAN international to implement a five-year project to enhance the protection and sustainable use of the Northern Sierra Madre NIPAS site, comprising some 330,000 ha of dipterocarp, mossy and mangrove forests and coastal ecosystems along the Pacific shores of the Sierra Madre. In 1997, CVPED and PLAN received another one million US\$ dollars for the USAID project for community-based action and research in the regeneration of grassland and residual forest areas. The programme commemorated its tenth anniversary during a third conference, organized together with PLAN, in September 1998.

#### *Data-gathering, data-processing and write-up*

As will be clear from the above, CVPED was not a pure research project, especially during the initial years of creating its institutional basis and generating wider interest for the conservation opportunity represented by the Sierra Madre As a result, the research output of the programme depended largely on the joint student research programme; until October of 1994, the month after our second Work Conference, my fieldwork inside the Sierra Madre forest had been confined to visits to the research locations of the students. My permanent presence in Cabagan made it possible to personally supervise all fieldwork of the more than 40 Dutch students and 25 Filipino counterparts who participated in the CVPED joint research between 1990 and 1994. This also enabled me to develop the research programme in line with my own learning in the field, and to check whether interesting findings in one location were also encountered in other areas. During my years as programme coordinator, many of my field visits had to be confined to a few days, so students often stayed in the field for considerable periods of time. This gave them an intimate exposure to the activities taking place there. Since the students came from various scientific disciplines, their participation presented a unique opportunity to build up an integral case study. Much of my own interdisciplinary interest and background, dating from my studies in Tropical Land and Water Use and Management at Wageningen Agricultural University, was nourished by the supervision of MSc students from just such a variety of disciplines.

I have tried to maintain maximum clarity about the contributions that individual student researchers have made to the information contained in this book. Wherever data originate from student reports, this is indicated, so that it is always clear where the balance between my own findings and those of the students lies. In addition, the methodology used in the individual

studies can always be retraced in this manner. Through the close cooperation between Filipino and Dutch students and supervisors, student findings have been closely and repeatedly examined in the course of our research, during presentations at research seminars in Cabagan and Leiden, and during the writing of their reports. After the first year of comparing and analyzing the data and findings presented in the student report, a four-week stay in Cagayan Valley in 1996 enabled me to re-visit some of the locations where students conducted their research, to verify their observations and observe the changes that had occurred since their fieldwork there.

My position, mobility and relatively long stay in the region gave me the time and opportunity to meet a wide range of secondary and tertiary actors, to discover which of them could be relied upon, and to build up a long-term relationship of trust with them. While my stays inside the Sierra Madre remained limited during my term as coordinator, my 'fieldwork' took place in the offices and homes of policy makers and agency officials in the lowlands, during meetings of the Regional Development Council, at the birthday celebrations of the Governor and Congressman, and late-night working sessions with colleagues at the University. The many perspectives of forest use that I was exposed to in this manner continuously overthrew earlier hypotheses and added new questions about the people and processes propelling deforestation. In this manner, the set of questions contained in this study evolved between 1989 and 1994, as can be seen in the various versions of my research proposal that I developed during this period. The last three months of 1994 were dedicated almost entirely to interviews with key informants, fieldwork in the Sierra Madre and the lowlands, and the testing and execution of a survey on the role of informal credit in upland and lowland farming. Research assistants completed the survey during the following year, after my return to Leiden. Between February 1995 and March 1996, I developed a preliminary dissertation outline and wrote draft versions of the various chapters. A great deal of time was also spent on a literature study focussing on tropical deforestation and the sub-themes covered by this study, such as the forest policies and public administrative system of the Philippines, its social history (with special reference to that of the Cagayan Valley), as well as studies on land reform and informal credit from other parts of the country. I became a member of a group of PhD students at the Centre for Asian Studies in Amsterdam (CASA), which proved to be an energetic forum for the mutual exchange of insights on the various dissertation outlines, draft chapters and papers.

In the course of writing this dissertation, I produced a number of papers for conferences relevant to my study. These papers, two of which have thus far been published, each reflect the stage of development that this book was in at the time the papers were written. My paper for the second Philippine Studies Conference, held from April 13-15 1994 at SOAS in London, represents a first sketch of the context in which deforestation in the Sierra Madre takes place, and highlights the problematic interaction between administrative and elected government officials in the implementation of forest policies (Van den Top 1994). The EUROSEAS conference, held in Leiden in June 1995, led to an article which may be seen as the first effort to capture the entire argument which is constructed in this dissertation. This article draws attention to the interests of lowland actors in gaining access to common property resources in the uplands, and examines the reasons behind the inability of the Philippine state to isolate itself from these interests (Van den Top 1998). Eight months later, I presented the historical dimensions of contemporary deforestation during the fifth International Conference of Philippine Studies in Hawaii. This article, published a year later (van den Top 1997), is the initial synthesis of Chapters 7 and 8 of this dissertation, but was written before I travelled back to the Philippines in March 1996 for a final one-month period of fieldwork in Cagayan Valley. After the Conference, I spent two weeks studying the literature at the Hamilton Library of the

University of Mañoa, Hawaii and several days at the National Archives in Washington, D.C. The following two years, between June 1996 and June 1998, were dedicated to final data analysis and the write-up of this dissertation.

A few words are now in order regarding the geographical information component of the present research. My role in the production of the spatial images and tables of deforestation patterns in the Sierra Madre between 1950 and 1990, lay in the design of the questions to be answered by the analysis, and in the supervision of GIS students and experts engaged in processing an idea into the accurate data you will find in the next chapter. The idea behind this component of my study was to add an extra dimension to the commonly accepted variable of forest conversion as a deforestation indicator. As I explained in Chapter 1, the consequence of that limited view is that extractive activities are no longer directly associated with deforestation. In reality, however, the deforestation process is a continuum that starts with extraction and ends with the replacement of degraded forests by other land use; in the words of Ewel (1978, quoted in Kartinawata and Vayda 1984:119) "*to say that deforestation results from the action of the peasant farmers is analogous to saying that the vulture which struck the lethal blow killed the dying horse*".

The students were asked to compare aerial photographs of the Sierra Madre taken between 1949 and 1952 (scale 1:40,000) with a second series made between 1980 and 1981 (scale 1:60,000), and SPOT satellite images produced by the Swedish Space Agency in 1987. The SPOT data were interpreted on the basis of their printed image, and did not involve the use of digital analytical methods. Existing land-use maps, topographic maps provided by the National Mapping and Resource Inventory Authority (NAMRIA, 1:250,000, Nrs 2504, 2506, 2508) were used as reference maps for the interpretation. The 1950-1990 period is well suited to a study of the influence of forest product extraction on forest cover, as very little forest migration took place at this time and forest degradation may therefore be attributed almost exclusively to extractive activities.

The first part of the study covered the Western slopes of the Sierra Madre, and used five forest quality classes in the interpretation (Clement and Van Dijk 1994). The most important variable determining the classification was the percentage of forest cover, but the interpretation also took into account whether this forest cover had been disturbed by road construction, whether there were signs of erosion, the percentage of forest cover that was recovering from slash-and-burn farming, and the degree to which natural forest had been replaced by fruit trees and plantations. The second study, conducted in 1995, opted for a singular classification method, in which the sole variable was tree crown cover (Roest 1995). Interpretations pertaining to the Western slopes were now integrated into the interpretations of the Pacific slopes of the Sierra Madre, producing an overall insight into changes in crown cover during the period 1950-1990. In late 1997, CML provided a small grant for GIS assistance in the completion of the analytical work to be done using these basic data. Together with Mr. Paul Langeveld (Intcompas Inc., Amsterdam), comparative overlays were made of the 1950, 1980 and 1990 maps, after these had been resampled into new vector files, based on UTM geographic references. At this point, we had three vector maps with 14 classes of vegetation cover, including mossy forest, mangroves, and several cover percentages of dipterocarp forest. These maps were rastered into 1 ha grid cells, and reclassified into the 6 types of vegetation cover shown in the legends. Forest cover change maps were then made by comparing the values for all grid cells between 1950, 1980 and 1990, resulting in the deforestation maps presented in Chapter 3. The only areas that have been compared are those analyzed in all three years; these represent 750,000 of the approximately one million hectares of forest still found in the Sierra Madre in 1990. Changes in forest crown cover were specified by forest cover class, providing

an accurate spatial image of how much forest was lost and how much was degraded to lower forest cover classes during the period studied. Other map themes, such as the road map and the location of timber concessions were also digitized, offering preliminary possibilities to link changes in forest cover to the construction of logging roads, and the management of specific concession. More information on the resulting maps and images is provided in Chapter 3 (section 3.4).

#### *Limitations and relevance of this study*

The main limitation of this research probably lies in its breadth, both spatially and thematically. In essence, it entails a case study on a regional scale that aims to develop an overall insight into how deforestation in the Sierra Madre is related to the wider context of socioeconomic and political change in lowland society. As for the spatial dimensions, the Cagayan Valley Region is an area approximately the size of the Netherlands, with a wide variety of ecological, social and political landscapes. My observations and interpretations pertaining to the area as a whole are therefore not exhaustive and are no doubt biased towards the situation in Isabela province, where the CVPED programme is based. For logistical reasons, the distribution of student studies over the region has likewise been to some extent biased towards this province. Moreover, my closest contacts with many of the lowland-based actors described in this book also developed in the province and town where I lived. Nevertheless, I am confident that the processes described in this research are fairly typical of the Cagayan valley region as a whole. Moreover, Isabela represents the greater part of the forests contained in the Sierra Madre, as well as nearly half of the region's inhabitants, and may be considered the economic and political centre of Cagayan Valley. The administrative capitol of Tuguegarao, Cagayan, where all the regional offices of central government line agencies are located, is only 35 kilometres from the town of Cabagan, where CVPED is based. Often this made it possible to relate developments in Isabela to those in Cagayan and the other provinces of Region 02.

The challenge to maintain an interdisciplinary perspective in this case study made it necessary to gain an understanding of issues to which I had had only a limited exposure before this study. My training in Tropical Land and Water Use and Management at the Wageningen Agricultural University helped me to deal with the agronomy of upland farming and carabao logging. However, as I tried to answer questions related to fields such as historiography, development administration and economics, I was forced to maintain a descriptive emphasis and limit my own theory-building to the application of theories developed by others, applying them to this particular case. As a whole, however, the study maintains a fairly straightforward social science focus, with an emphasis on the qualitative socioeconomic, historical and political causes of deforestation. Less attention is paid to the bio-physical and spatial aspects. Where possible I try to substantiate important qualitative insights with quantitative data.

The overall aim of this research was to contribute to our understanding of the tropical deforestation problem by developing a detailed regional-level study, which focuses on the role of non-forest society on developments in the forest lands. Some of the elements of the comprehensive perspective that such a study produces require further research. One such element is the access to, and management of, informal credit in relation to the livelihood strategies of poor rural households. In Chapters 8 and 9, I present a preliminary thesis on the role of this element in forest migration and the production of cash crops in upland farms. However, the quantitative evidence underlying this thesis calls for in-depth follow-up studies to confirm, modify or reject my analysis. Other areas where more research is necessary concern the role of field officials in the implementation of government policy; while my conclusions regarding 'accommodated access' in Chapter 6 appear to be supported by the findings of

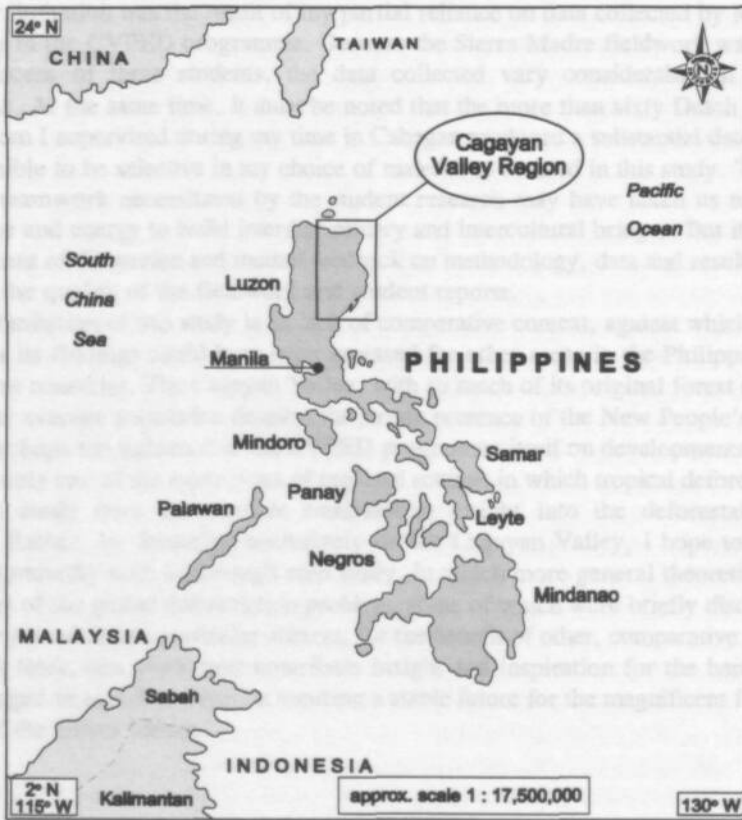
Bloemink (1990), Buizer (1993), Hoekstra (1992), Huigen (1997), Noordhuizen (1996) and Van der Werf (1993) in Cagayan Valley, they are crucial enough to the policy process to deserve further verification. And finally, my historical chapters may also be seen as a first effort to establish an overall image of the environmental history of Cagayan Valley. A larger investment of time and energy is required in the area of local history, through archival work and direct interviews with old people, priests and scholars in the region, in order to verify my interpretation of the influence of historical legacies in contemporary resource use in the Cagayan Valley Region. In fact, one contribution that a study like this can probably make to science, outside of integrative environmental science theory, is the discovery of relevant new topics for further study.

Another limitation was the result of my partial reliance on data collected by MSc students participating in the CVPED programme. Because the Sierra Madre fieldwork was part of the training process of these students, the data collected vary considerably in quality and completeness. At the same time, it must be noted that the more than sixty Dutch and Filipino students whom I supervised during my time in Cabagan produced a substantial database, which made it possible to be selective in my choice of material to be used in this study. The joint set-up and the teamwork necessitated by the student research may have taken its toll, in that it required time and energy to build interdisciplinary and intercultural bridges. But it also created an environment of discussion and mutual feedback on methodology, data and results, positively influencing the quality of the fieldwork and student reports.

A final limitation of this study is its lack of comparative context, against which the broader relevance of its findings could have been assessed for other areas in the Philippines or other tropical forest countries. The Cagayan Valley, with so much of its original forest cover still in place, its low average population density, the strong presence of the New People's Army until 1995, and perhaps the influence of the CVPED programme itself on developments in the area, is of course only one of the many types of regional settings in which tropical deforestation takes place. This study does not provide comparative insight into the deforestation process worldwide. Rather, by focussing exclusively on the Cagayan Valley, I hope to provide the scientific community with a thorough case study, in which more general theoretical elements on the causes of the global deforestation problem, some of which were briefly discussed in this Chapter, are placed in one particular context, for the benefit of other, comparative studies. And last, but not least, this study may contribute insight and inspiration for the benefit of those directly engaged in activities aimed at securing a stable future for the magnificent forests - and people - of the Sierra Madre.

Blomquist (1970), Butler (1991), Hoekstra (1992), Holguin (1997), Noveckii (1996) and Van der Werf (1993) in Cagayan Valley, they are critical enough to the policy proposal to deserve further verification. And finally, my historical chapters may also be seen as a first effort to establish an overall image of the environmental history of Cagayan Valley. A larger investment of time and energy is required in the area of local history, through archival work and direct interviews with old people, priests and scholars in the region, in order to verify my interpretation of the influence of historical legacies in contemporary resource use in the Cagayan Valley Region. In fact, one contribution that a study like this can probably make to science, outside of interdisciplinary environmental science theory, is the discovery of relevant new topics for further research.

**Map 3.1 Philippines, geographic location**



## Meeting the Sierra Madre deforestation problem

### 3.1 Travelling North

On a rainy day like this, our overland trip from Manila to Cabagan will take even more than the usual twelve hours. We will probably be slowed down in the Dalton pass, the narrow passage that separates Cagayan Valley from the National Capitol Region. After passing San Jose, Nueva Ecija, we come around the first bend heading up into the mountains. Soil from the adjacent slopes covers the concrete roadway. In tracks where the concrete has not yet been covered by mud we can see how heavily cracked the road is, especially on the opposite side. Robert explains that this is because trucks are fully loaded on their way to Manila, bringing grain, logs and lumber from Cagayan Valley to the capitol, returning empty to the unpopulated and poor northern provinces. In the bends in the road, the embankment is being slowly eaten away by the silt-loaded water of the river. Reconstruction works go on continuously to re-route the road, repair bridges and resurface the largest cracks. One of the signboards saying "Caution: road under repair" keeps us waiting for hours, as the single lane that is still to be concreted, and over which traffic in both directions now has to pass, is blocked by a sixteen-wheel truck. In trying to take a sharp bend, the rear wheels of its trailer have caused the collapse of the soaked slope. Part of the top layer of cargo carried by the truck, bags of rice, has slid from the trailer, revealing the second commodity that was hidden underneath: reddish brown lumber. Below, mud slowly creeps down from denuded slopes, covering parts of the irrigated terraces lying near the river. Robert jokingly asks me "do you take sugar in your coffee?", for that is what the river below reminds us of as its brown waters rush by.

#### 3.1.1. Philippines, facts and figures<sup>1</sup>

- The Republic of the Philippines is an archipelago consisting of more than 7,100 islands, with a total land area of 300,000 km<sup>2</sup>; 92% of this land area is contained in the 11 largest islands. The northernmost 'Batanes' island group lies approximately 240 km south of Taiwan, while the southern most 'Tawi Tawi' group lies only 24 km from Borneo (See map 3.1). With its 141,395 km<sup>2</sup>, the Luzon island group is the largest of the Philippines - roughly the size of England - followed by Mindanao with 101,999 km<sup>2</sup> and the Visayas (Samar, Negros, Panay, Leyte, Cebu, Bohol and Masbate), Palawan and Panay together comprising 56,606 million hectares. At 34,600 kilometres, the Philippine coastline is the world's longest, exceeding those of Greece and the United States together.
- The climate is generally hot and humid, but with strong spatial and temporal variations; Northeastern Luzon has two climate types: type 3, with a short dry season between November and May and type 4, with an even distribution of rainfall through the year. Rainfall is brought by two main monsoons, the Northeast monsoon, which brings in cool winds from the Asian mainland during winter, and the southeast monsoon which brings warm, humid air and heavy rainfall between June and September. In 90% of the country, at least 1780 mm of rain falls annually. Temperature ranges between 20 and 35°C, with an average of 33°C
- The country lies within the 'Pacific Rim of Fire', a belt where 80% of the world's active volcanos are found and a considerable share of all earthquakes take place; it is situated on the Philippine fault and near the Northwestern Pacific, where many typhoons originate. Not surprisingly, the Philippines is more frequently hit by natural disasters than any other

<sup>1</sup> Sources: Bankoff nd; NSO 1995; PNA 1996-7; Van der Veen 1997

country. Between 1900 and 1991, more than 700 natural disasters (typhoons, earthquakes, volcanic eruptions, droughts, floods and landslides) were recorded here (Bengco 1993, cited in Bankoff nd:6). Every year, some 20 typhoons pass the archipelago, especially the northern parts of the country (between 11 and 13° N). Mindanao and the Visayas, where the largest corporate agricultural plantations are, were also hit in 1991 and 1995. In July 1990, the Philippines experienced its heaviest earthquake this century, the two shocks registering 7.7 and 8 on the Richter scale. A year later, it was hit by the world's largest volcanic event to take place this century, with the eruption of Mt. Pinatubo. Other recent volcanic eruptions were those of Mt. Taal (in 1965) and Mt. Mayon (1984).

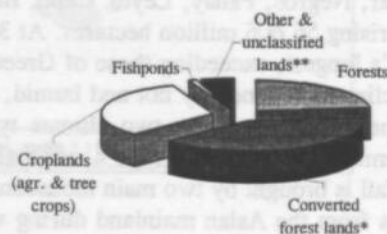
- Formally, the Philippines gained independence from the United States on July 4, 1946. However, the official date for Independence Day is June 12, 1898, when General Emilio Aguinaldo signed the official manifesto declaring the first Philippine Republic, and agreeing to its temporary administration by the United States (Constantino 1991).
- Between 1990 and 1997, the Philippine population grew by approximately 2% per annum - down from 2.5% in the 1980s and 3% in the first decades after independence - reaching 70.6 million in 1997. In that same year the average population density rose to 253 persons/km<sup>2</sup>. The fertility rate is 3.7, life expectancy 66 (male) and 70 (female). The literacy rate (1990) is 93.5%. Urbanization rose from 32% in 1970 to 37% (1980) and 43% (1990). In 1996, 56% of the Philippine population resided in urban areas (PNA 12/6/97)
- The country has a 24-member Senate and a 199-member Congress with representatives from its 15 administrative regions and 76 provinces. The local autonomy of the political subdivisions (provinces, cities, municipalities and *barangays*), as well as their entitlement to an equitable share of the proceeds from the utilization and development of national wealth are recognized by the 1986 constitution, and operationalized by the 1991 Local Government Code. The Cordillera and Muslim Mindanao regions enjoy administrative autonomy within the Philippine nation-state.
- Gross National Product in 1992, at current prices, was 1,374,588 million Pesos, or US\$ 55 billion. In 1992 sectoral contributions were as follows: services 45%, Industry 33%,

**Table 3.1 Philippine land use (1987)**

Category	area (km <sup>2</sup> )	% of total
Forests	71,046	23,2
Converted forest lands*	119,579	39,1
Croplands (agr. & tree crops)	97,287	31,8
Fishponds	3,022	1,0
Other & unclassified lands**	14,689	4,8
Total	305,623	100,0

Source: Swedish Space Corporation 1987, cited in ADB 1988:80

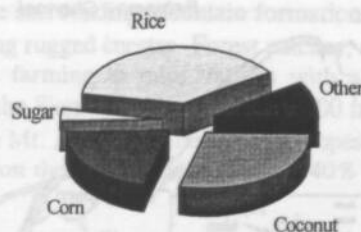
- \* includes an estimated 25,000 km<sup>2</sup> of inhabited upland areas (grasslands and brushlands) classified as A&D (see \*\*Includes quarries, riverbeds, built-up areas, lakes and marshy land, coral reefs, silted lakes etc.



agriculture, forestry and fisheries 22%. Per capita income in 1992 was 21,329 pesos, or approximately US\$ 850 at 1992 prices and exchange rate. The income distribution pattern of the Philippines ranks among the most inequitable in the world; between 1956 and 1985, the richest 20% of the population consistently earned more than half of the country's total income, compared to 3% for the poorest 20% (Boyce 1993).

**Table 3.2 Distribution of croplands (Philippines)** (Source NSO 1995)

Crop	Area (million ha.)	% of total
Coconut	2,8	29
Corn	2	21
Sugar	0,3	3
Rice	3,7	38
Other	0,9	9
Total Cropland	9,7	100



... As our trip finally continues, we pass people sitting under makeshift roofs and in small houses alongside the Highway, smiling and waving at us. They do not seem to be the least worried about the safety of their shelters, built precariously close to the edge of the rushing river. On the opposite side of the road we see their newly opened piece of land. It has not yet eroded; the cabbages and corn look green and healthy on the dark soil. Thin wooden poles for the construction of houses are for sale here, as well as bundles of firewood, charcoal, orchids and other products collected from the remaining patches of forest around us. We need to drive extra carefully in places where people have settled along the road; their children are as playful as they are numerous; a little boy sits on top of his small, wooden imitation of a logging truck; three teenagers ride a cart which is tied to a smoke-belching truck slowly creeping uphill. The free ride is not just a lot of fun: the cart carries three drums of water...

### 3.1.2 Profile of the Cagayan Valley Region<sup>2</sup>

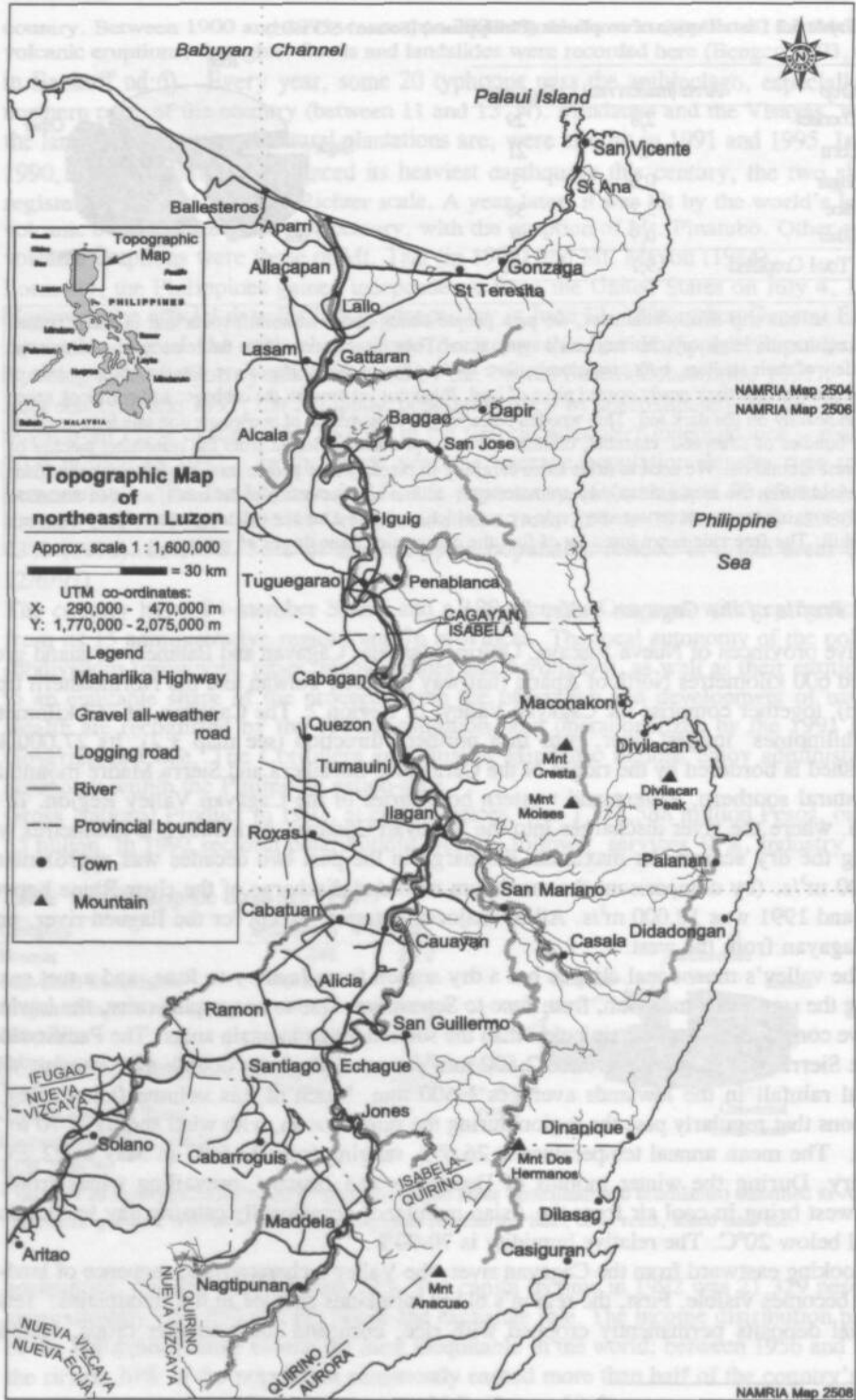
The five provinces of Nueva Viscaya, Quirino, Isabela, Cagayan and Batanes, an island group located 600 kilometres North of Aparri (halfway between Taiwan and the Northeastern tip of Luzon), together comprise the Cagayan Valley, or Region 2. The Cagayan, at 353 kilometres the Philippines' longest river, runs in a northern direction (see map 3.2). Its 27,000 km<sup>2</sup> watershed is bordered by the ridges of the Caraballo, Cordillera and Sierra Madre mountains, the natural southern, eastern and western boundaries of the Cagayan Valley Region. In the North, where the river discharges into the Babuyan Channel, its mouth is 2 kilometres wide during the dry season. Its maximum discharge in the past two decades was approximately 14,500 m<sup>3</sup>/s. (by comparison: the maximum recorded discharge of the river Rhine between 1976 and 1991 was 10,000 m<sup>3</sup>/s. All its major tributaries, except for the Ilaguen river, enter the Cagayan from the west.

The valley's monsoonal climate has a dry season from January to June, and a wet season during the southwest monsoon, from June to September. Due to orographic rains, the lowlands receive considerably less precipitation than the surrounding mountain areas. The Pacific slopes of the Sierra Madre receive around 2,500 mm per year, its peaks double that amount, while annual rainfall in the lowlands averages 1,600 mm. Much of this volume falls during the typhoons that regularly pass the region during the rainy season, with wind speeds of 70 to 230 km/h. The mean annual temperature is 26.6°C, ranging from 32.6°C in May to 22.2°C in January. During the winter months of December and January, prevailing winds from the northwest bring in cool air from the Asian mainland, occasionally causing day temperatures to fall below 20°C. The relative humidity is 70-90%.

Looking eastward from the Cagayan river, the Valley's characteristic sequence of land-use types becomes visible. First, the region's oldest farmlands situated in the floodplains: fertile, alluvial deposits permanently cropped with rice, corn and some smaller crops, including

<sup>2</sup> Sources: CVPED 1992, NEDA 1991, Maus and Schieferli 1989, Oosterberg 1997

Map 3.2 Topographic map of northeastern Luzon



peanuts and tobacco. Then, the rolling plain and plateau areas, level to gently sloping dryland farms and grasslands bordering the lower slopes of the surrounding mountain formations: the hill lands have a more pronounced undulation, including rugged cuestas. Forest patches, shrubs and grasslands dominate here, with some wet-rice farming in mini valleys with alluvial deposits. And finally, the forested mountain lands of the Sierra Madre, rising to 1500 metres, exceeded by only a few peaks, such as the 1852-metre Mt. Anacua. The western slopes of the Sierra Madre mountains are more gentle than those on the Pacific side; overall, 40% of the region's lands have a slope steeper than 30%.

**Table 3.3 Cagayan Valley land use (1988, hectares)**

(Source: NEDA 1991)

Total land area, Region 2	2,684,062
Total agricultural lands	822,558
- Croplands	768,600
Riceland	479,125
irrigated	349,438
rainfed	100,169
upland/terrace	29,518
Cornland	238,579
- Rivers/reservoirs	9,352
- Built-up areas	44,606
Total forest land	1,852,755
- Timberland*	1,296,417
production forest*	948,177
protection forest	210,929
watershed reservation	101,591
other forest lands**	35,720
- Pastures	550,838
- Mangroves	5,500
Mineral lands	491
National parks	8,258

\* corrected for inconsistencies in original data

\*\* Military, civil reservations, wilderness areas

...As we pull over to have lunch in Santa Fe, I count the sixtieth truck loaded with lumber that we have encountered on our way up north since early this morning. A ply wood "Notice of Particulars" attached to one of the logs says that the truck carries 35 cubic metres of Red Lauan, or Philippine Red Mahogany and that the shipment's origin is the UTLI concession in Sta Ana, Cagayan. Belching clouds of black smoke, the old truck struggles uphill through these bare mountains, carrying its precious load towards Manila....Going north, we pass the grasslands of Nueva Viscaya. The paths that the cows always follow give the viewer the impression that the people of this province neatly comb the grass on the hills every day. Fire has blackened some of these grasslands, while on others, fresh young grasses have begun to sprout after the fire. As we reach the boundary of Isabela Province, the road is temporarily surrounded by a dense tree-like vegetation. The signboard at the side of the road says that this is a Reforestation Project of the Department of Environment and Natural Resources. I ask the driver to stop the vehicle. Looking through the first rows of *Ipil Ipil* trees, I can see three elderly people working hard in the sun, clearing the slopes of their last vegetation. Small piles of leaves and branches are burning here and there. Two huts with roofs made of grass have been built inside this part of the Reforestation area. Some of the people see that we are watching them and wave at us, smiling...

#### THE CAGAYANOS

Considering its 2.7 million hectares (roughly 70% the size of the Netherlands), Cagayan Valley has a small population of only 2,536,035 persons (1996). With an average population density of 94 persons/km<sup>2</sup>, Cagayan Valley is the Philippines' second most sparsely populated region,

after the neighbouring Cordillera Autonomous Region. The population is distributed over the various provinces of the region as indicated below:

**Table 3.4 Cagayan Valley Population, by province and mother tongue** (Source: NSO 1990)

	Batanes	Cagayan	Isabela	Quirino	Nueva Viscaya	Region 02	% of total
Ilokano		557,442	744,915	87,158	189,132	1,578,647	67.6
Ibanag		111,481	162,280			273,761	11.7
Yogad			15,445			15,445	0.7
Tagalog		22,341	91,358	5,617	21,576	140,892	6.0
Gaddang			9,878			9,878	0.4
Itawis		110,803				110,803	4.7
Malawag		11,285				11,285	0.5
Ilongot				2,173		2,173	0.1
Ivatan	14,065					14,065	0.6
Ifugao				12,149	17,417	29,566	1.3
Inibaloy					13,406	13,406	0.6
Local dialects					31,768	31,768	1.4
Other	908	14,852	54,676	6,958	27,267	104,661	4.5
<b>TOTAL</b>	<b>14,973</b>	<b>828,204</b>	<b>1,078,552</b>	<b>114,055</b>	<b>300,566</b>	<b>2,336,350</b>	<b>100.0</b>
area (sq km)	209	9,003	10,665	3,057	3,904	26,837	
pop. density (p/km <sup>2</sup> )	72	92	101	37	77	87	

The population is unevenly distributed over the total land area of the Region: 82% of the population live in the provinces of Cagayan and Isabela, most of them in the lowland towns and barrios near the Maharlika Highway, along the banks of the Cagayan river. This, combined with the region's low urbanization rate of 25%, means that the scarcity of land is greater than the average population densities in table 3.4 would suggest. Essentially, the Cagayan Valley is divided into an intensively used and quite densely inhabited 20-kilometre strip along the river, surrounded by a much larger, scarcely populated, area of grasslands, brushlands, and forests stretching to the Cordillera mountains in the west and to the region's Pacific shores in the east. The coastal towns of Palanan, Maconakon, Divilacan and Dinapigue recorded a population of 23,274 during the 1990 census, approximately 1% of the region's total population.

Overall population growth declined to 1.5% between 1990 and 1996, but marked spatial variation occurs here as well: the population of the isolated Batanes islands declined by 1.09% per year between 1990 and 1996, while that of the largely forested province of Quirino, carved out of Nueva Viscaya in 1971, grew most rapidly - by 2.53% per year - during the same period. Quirino is the 'frontier province' of Cagayan Valley; still heavily forested and only a short distance from the province of Ifugao, in the Cordilleras; the province experiences increasing in-migration by land-seekers from that area. The fact that the majority of the region's population speaks Ilokano points to a history of immigration of the area as a whole. While not all Ilokano-speaking Cagayanos can still call themselves GI's ('Genuine Ilokanos', full-blood Ilokanos born in the Ilokos provinces), Itawi, Ibanag and other indigenous groups have clearly become cultural minorities in their own homeland. The same can be said of nomadic Negrito groups living in the Sierra Madre mountains, too small in number and too

difficult to reach to be included in the census. The migration history of the region is discussed in more detail in Chapter 8, in relation to contemporary migration into the Sierra Madre.

...Moving on, the Sierra Madre mountains come into view; blue-green, a sharp ridge towering over rolling pastures and the endless cornfields in the floodplain of the Cagayan River, which meanders its way north, and is closely followed by the concrete road that we are on. Every time we cross a bridge over the river or one of its tributaries, we see riverbeds filled with gravel and sand. Signboards saying "Road under repair" show that the river has still not settled on its current course. There are bulldozers near the river, loading gravel into the yellow trucks of the Provincial Government...Inhabitants of a small settlement along the road hold up fish, birds, chicken, mushrooms and a whole range of other "edible" products, hoping to sell one or two to the travellers driving by. We stop the vehicle when we see someone offering a large monitor lizard. The powerful animal is tied to the branch of a tree, dangling upside down and looking perfectly helpless; we settle for a price of 200 pesos. When we unwind the ropes around the animal's legs and he suddenly jumps back to life and violently regains the freedom we wanted to give it. Robert jokes that the people will be happy because they can catch it again tomorrow and still eat it, even though they've already sold it!...

### THE FORESTS OF THE NORTHERN SIERRA MADRE

The Sierra Madre mountain range is 1,200 kilometres long, stretching from the northeastern tip of Luzon to the province of Laguna in Southern Tagalog, crossing several provincial and regional boundaries. The Northern Sierra Madre is the part of this elongated mountain range that lies within the administrative boundaries of the provinces of Nueva Viscaya, Quirino, Isabela and Cagayan. Dipterocarp tropical moist forests are still the dominant vegetation in this part of the Sierra Madre. Dipterocarpaceae are tall, slow-growing tree species that flower only once every five to seven years. Their seeds have only a brief germination period, and because of their relatively heavy weight do not fall more than 50 metres from the mother tree (Jakobs 1981). Around 50 species of Dipterocarpaceae are found in the Philippines. In climax-form, these mixed lowland tropical rainforests have a top canopy which reaches a height of 30 to 50 metres, plus two more storeys of trees underneath. Under these three storeys, bush-like vegetation, rattans, lianas and the wide buttresses of the trees dominate. Minor openings such as those caused by lightning recover naturally, as dipterocarp seedlings will develop under moderate light conditions. Larger openings give a comparative advantage to secondary species, that grow faster in un-shaded conditions. Thus opening up too large an area in a dipterocarp forest causes a shift in species composition, away from the original commercial species and towards the secondary species.

Until 1996, the eastern slopes of the Sierra Madre could not be reached from the valley side by road transport<sup>3</sup>. The absence of a lateral road across the mountains leaves travellers from the coastal areas with only two options: one is a time-consuming and risky boat-trip via the northern town of San Vicente, Cagayan, or via Baler, Aurora, in the South. The other option - a faster but more expensive alternative - is to travel with the sole airline company that plies irregularly between the airport of Cauayan and the Palanan airstrip. Taking the six-seater plane to the Pacific side, one is treated to magnificent views of the Sierra Madre forest. During the first twenty minutes, as the plane slowly gains altitude, the wide belt of grasslands between the green paddies and the forest lands is visible. Reaching the lower elevations of the western slopes, a patchwork of clearings and pockets of residual forest comes into view, criss-crossed

<sup>3</sup> During my most recent visit to the region in January 1998, I was informed that in 1996 the Isabela provincial government had funded the opening-up of a seven-kilometre stretch of forest that used to separate logging roads between the towns of San Guillermo and Dinapigue, on the Pacific coast. My informants could not tell me whether this first lateral road was already being used for public or commercial transport.

with logging roads that reach all the way to the highest ridges. Moving farther eastward, the vegetation changes into medium-cover forest that bears traces of landslides and surface erosion in places where logging roads were cut. Beyond the top ridge, an uninterrupted sea of green present itself, rolling down towards the blue Pacific and its sandy shore. Within the contiguous forest tract on the eastern slopes and parts of the western slopes of the Sierra Madre, the following forest types can be distinguished (Danielsen *et al.* 1994: Ridsdale 1991)

- 1) In the southern part there are **beach forests** whose species have adapted to sandy or rocky soil, and are similar to those in other beach forests in the Philippines, such as *Casuarina eguiseifolia*, *Terminalia catappa*, *Barringtonia asiatica*, *Casualpina nuga*, *Erythrina variegata* and *Crinum asiaticum* (IPAS 1992, cited in Danielsen *et al.* 1994)
- 2) **Mangrove** vegetation is found at Bicobian and port Dimalansan, near Maconacon, as well as in smaller pockets near inlets and river mouths, including the mouth of the Palanan river. Aerial photograph interpretations identified only 1,000 ha of mangroves on the Pacific shores of the northern Sierra Madre in 1990, compared to 2,300 ha in 1950.
- 3) Two types of 'bonzai' forest are located in a north-south coastal strip between Dinapigue and Maconacon:
  - 3<sup>a</sup>) **Limestone forest**: these occur on limestone outcrops and contain many endemic species, often stunted, semi-deciduous and adjusted to the nutrient-poor soil conditions where they occur. The area south of Palanan is believed to be the largest intact area in Northern Luzon of this forest type, the flora of which is only just becoming established in the Philippines.
  - 3<sup>b</sup>) Other than their stunted, less dense appearance, and the fact that they have adapted to the high metal content and low fertility of the ultrabasic rocks on which they occur, very little is known about the **ultrabasic forests** of the Sierra Madre, or the Philippines for that matter. Indicator species from comparable sites in Palawan and Zambales have not been seen in the forests here, while the presence of the palm *Heterospate brevicaulis* and some rare Rubiaceae indicate that this area may well contain new species.
- 4) **Lowland evergreen forests** occur from the lower elevations up to 750-1000 metres, dominated by dipterocarp species such as Red Lauan (*Hopea negrosensis*), Tangile (*Shorea polysperma*) Mayapis (*Shorea squamata*) and Palosapis (*Anisoptera thurifera*). By far the largest area of intact old-growth and high-cover secondary stand is found on the Pacific slopes; those on the western side have all been repeatedly logged and partially cleared, with the exception of some minor pockets on inaccessible ridges (see also 3.4).
- 5) Lower **montane and mossy forests** are found above 750-1000 metres; in montane forests, trees are shorter than in the lowland evergreen vegetation, but species like almaciga (*Agathis philippinensis*) can still reach heights of 30 metres or more. Other common species are *Lithocarpus* sp., *Rhododendron* sp., *Schefflera* sp. and *Vaccinium* sp. Trees are shorter on the exposed Pacific side, and often covered with mosses and epiphytic ferns, due to the generally moist and cool conditions here.

Very little botanical and faunal inventory work has been carried out in the Sierra Madre to date. In 1990 and 1991 an exploratory biodiversity survey was carried out here by a consortium of local and international organizations, including the Philippine Department for Environment and Natural Resources, the Danish Ornithological Society, Leiden University Rijksherbarium, the Arnold Arboretum of Harvard University, the University of the Philippines, Conservation International, Birdlife International, CVPED and several other organizations. This survey produced a preliminary estimate that the area is likely to contain at least 60% of the Philippines' overall biodiversity and a number of new plant species (CI 1991).

**Table 3.5 DENR forest-data on Cagayan Valley** (Source: DENR, 1991)

Total forest lands	1,723,759 *
Old Growth Dipterocarp	365,000
Logged-over Dipterocarp	605,400
Mossy	102,200
Mangrove	5,500
Parks & military reservations	120,461
Grassland/brushland	525,198

\* NEDA (1991) uses a considerably higher figure (see table 3.3)

The data presented in table 3.5 were used for the preparation of the Regional Master Plan for Forestry Development, by the Department of Environment and Natural Resources in 1991, and are based on an international cooperation project between the German and Philippine governments, the RP-German forest inventory. Between 1983 and 1988, this project carried out extensive nationwide ground surveys and used photogrammetry and satellite imagery to produce new forest maps for the Philippines as a whole, as well as a compilation of forest statistics by Region and province (FRI 1988). The most recent national survey, based on aerial photograph interpretations, by the USAID-funded Natural Resources Management Project, corresponds rather well with these data, setting the total forest area of Cagayan Valley at 996,000 hectares; however, only 257,850 hectares was classified as old-growth dipterocarp forest. The results of aerial photograph and SPOT-satellite interpretations carried out within the framework of this research are presented in section 3.4.

The Northern Sierra Madre is one of the ten priority sites under the National Integrated Protected Areas System (NIPAS), legislated by the Philippine government in 1992. In 1996, the Netherlands Government granted 5.7 million dollar to a local consortium of governmental and non-governmental organizations for a five-year project which included detailed ground surveys of the area and surroundings of what was formerly known as the Palanan Wilderness. This area, defined by a 45-kilometre radius from the town of Palanan, Isabela, was declared a protected area by Presidential Decree in 1979. On the basis of the new ecological boundaries established by the project, a management plan will be prepared for the sustainable use and protection of the more than 330,000 ha of forest lands, mangroves and coral reefs in the Northern Sierra Madre Nature Park.

...Our trip is delayed in Cagayan Valley's lone city of Santiago. The Maharlika highway, originally built as a by-pass road around the old town centre, now finds itself again passing through a bustling, congested commercial centre. However, businesses have moved away from the old town centre to the road, where potential customers pass by or stop over on their way to other destinations. On both sides of the road we see eateries, service centres for cars, chainsaws and other engines. Near the public market, which local government officials decided to move from the old town to the highway, at least 30 buses of varying age and size occupy the shoulder and right lane of the road, surrounded by young men calling people to join their trips to Aparri, Tuguegarao, Manila and a host of other destinations. The single most important reason for our slow passage through Santiago are its thousands of tricycles. With an admirable combination of skill and guts, drivers manoeuvre their unit through a throng of vehicles resembling tin cans, which are packed with passengers and merchandise. The spectacle of this sea of moving vegetables, bags of rice, pigs, and dogs, with paws strapped backwards on their backs, not only offers passers-by an unexpected crash course in Philippine ingenuity, but also a practical example of the "Eat my Dust" device painted on one of the sidecars in bright, happy colours. The air is heavy with the noise, heat, smoke and dust of this bustling urban centre...

#### REGIONAL ECONOMY

Cagayan Valley is one of the Philippines' poorest regions. In 1988, the Gross Regional Domestic Product stood at 2.4 billion pesos, resulting in an annual per capita income of less

than 1,000 Pesos (at 1972 prices). Agriculture, forestry and fisheries contribute more than half of GRDP (table 3.6).

**Table 3.6 Cagayan Valley regional economy:  
Value added by sector (1988, x 1000 Pesos)**

	1988	% of RGDP
Regional GDP	2.432.386	
Agriculture, Forestry and Fisheries	1.339.373	55,1
Manufacturing	97.779	4,0
Other industry	42.452	1,7
Construction	135.078	5,6
Services	817.704	33,6

The agricultural sector itself relies almost entirely on two crops, rice and corn, to which 94% of its farmlands are devoted. Only 6% of the Region's farmlands produce the so-called high-value crops (NEDA, 1991), such as fruit trees, vegetables, nuts or *ube* (yam, used in ice-cream production). In spite of harbouring more than half a million hectares of grasslands, Cagayan Valley continues to be an importer of meat and other basic food items like eggs, vegetables and fish. Only 23% of the region's fish consumption is produced locally (NEDA 1991).

The National Economic Development Authority points to the region's physical characteristics - surrounded by major mountain formations - and its small, poorly maintained road network as a key cause of the economic stagnation. Until 1995, the two-lane Maharlika, or Japan-Philippines Friendship highway was the only paved road connection between the northernmost towns of Aparri and Manila. This route includes the 50-kilometre Dalton Pass between San Jose, Nueva Ecija and Sta Fe, Nueva Viscaya. Until the early 1990s the region was cast back into isolation during many a rainy season, as landslides, collapsing road sections and bridges, and the ensuing repair works rendered Dalton point impassable for several weeks on end. Since then, however, the road situation has improved considerably, thanks to the complete rehabilitation of the Dalton Pass, the Northern Maharlika and the road connecting Cagayan to the boundary of Ilokos Norte. Until recently (see note 3) there was no possibility for land transportation between the valley side and the Pacific coast, in the absence of a lateral road across the Sierra Madre.

The insignificance of the industrial sector in Cagayan Valley is also related to the region's role as a granary of the National Capitol Region, where commercial grains are shipped out to feed the population (which derives 40% of its rice from Cagayan Valley), and the livestock are kept in large-scale bio-industries in central Luzon and southern Tagalog. Since the mid-1990s, however, small-scale bio-industries, mostly broiler farms and piggeries, are also sprouting in the region. The Jaka group of companies established a major agro-industrial plant in Echague, Isabela, modelled on the large integrators in Bulacan and Laguna, where fertilizer, stockfeeds and livestock are produced in one facility. In addition to these industrial investments, there is another sign that the Regional economy may be picking up momentum: the regional economy grew by 8.1% per year from 1993 to 1997, outpacing the national economic growth rate of 6.7% in the same period (PNA 19/4/97).

The extent and quality of the region's mineral reserves have not yet been adequately explored, but the presence of significant volumes of extractable cement, copper, and other precious metals has been established by the Philippine Bureau of Mines. Until the mid 1990s, mining

activities in the region were confined to the small-scale extraction of guano from caves in the Sierra Madre and sand and gravel from the Cagayan river and its tributaries. The government's current policy aimed at stimulating foreign investments in the development of mining concessions throughout the Philippines will boost the mineral industry in the decade to come. Two major hydroelectric dams (Magat and the Ilaguen dam currently under construction east of San Mariano, inside the Sierra Madre) provide an adequate supply of electricity, although the distribution infrastructure continues to be affected by the regular occurrence of typhoons.

Other conditions likely to facilitate economic expansion in the years to come are the recent improvements in the local peace-and-order situation - Cagayan Valley has always been perceived as a stronghold of the New People's Army - as well as the improving road and energy infrastructure, and a host of development initiatives by local governments. The Isabela provincial government, for instance, is trying to attract foreign capital for the establishment of an Industrial and Tourism Estate in Bicobian Bay, on the Pacific side of the Sierra Madre. Cagayan has started the development of a Free Economic Zone, styled after the special investment zone in Subic bay, near Port Irene on the northern shores of Cagayan.

...Evening falls within an hour. As we are travelling further up North, the sun colours the landscape in shades of pink, purple and orange, carabaos placidly carry their owners back home after a day's hard work in the fields. I am surprised to see a huge concrete building rising up behind a lake; it is built along the highway, away from population centres in the middle of the vast denuded hills. Large brass characters on the impressive front of the building form the words *Pamahalaang Panlalawigan ng Isabela*<sup>4</sup>. I ask the driver what these words mean. He smiles and says: "you ask our Governor. Some call him the King of Cagayan Valley, because he controls the Solid North vote. A man who can deliver 2.5 million votes is well taken care of by the President..."

#### LOCAL GOVERNMENT

Each of the five provinces of Cagayan, including the Batanes islands, which have a population of only 14,000 (less than the small fishing town of Sta Ana), are administered by a governor and the provincial offices of the 18 different line agencies. These agencies, such as the Departments of Public Works and Highways, Agriculture, Public Works and Environment & Natural Resources, used to be the main instruments of state government at the local level. Since the enactment in 1991 of the Local Government Code, central government power, authority, responsibilities and resources have been devolved to lower-level state institutions, i.e., the provinces, cities, municipalities and *barangays*, or villages. Elected governors, mayors and barangay captains are supported by elected councils. The line agencies generally have regional, provincial, municipal, district or, in the case of the DENR, community offices that may cover several municipalities. The regional directors are presidential appointees, while those under them are - at least formally - career officials.

The Philippines has a system of political representation by district; the boundaries of these electoral districts, which are administered by the powerful Department of Interior and Local Government, do not necessarily coincide with those employed by the other line agencies. Until the 1995 elections, Isabela sent four members to the House of Representatives, Cagayan three (in the 1998 elections each gained one more seat, when the towns of Santiago and Tuguegarao voted in favour of city status), while the other three provinces have one each. The 1987 constitution prevents elected officials from serving more than three consecutive 3-year terms (not counting the 1986 elections). The structure of the Philippine government is examined in

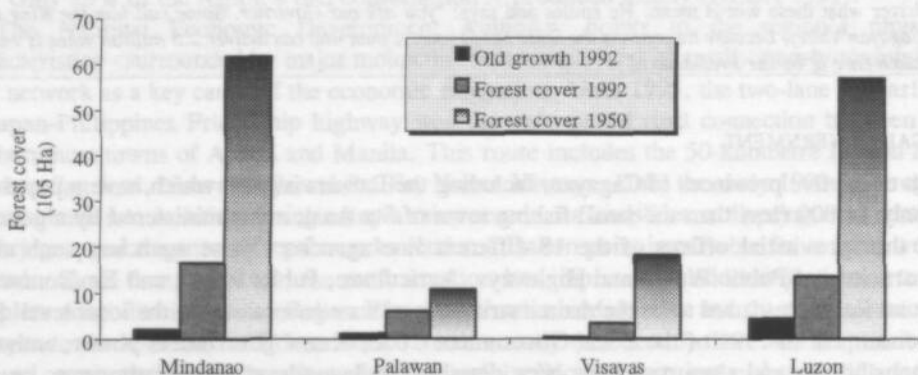
<sup>4</sup> Office (capitol) of the Province of Isabela.

more detail in Chapters Five, Six and Seven, which describe the forestry laws and policies it pursues, and analyze how these policies were implemented in the Cagayan Valley region during the study period.

### 3.2 The Philippines: from timber exporter to timber importer

The Philippines is the first major log-producing country in Asia whose natural forest resources have reached the point of near-depletion. In the early 1950s, the Philippines was Southeast Asia's largest timber exporter, joined by Malaysia a few years later and by Indonesia around 1965 (Laarman 1988: 155). Recorded national log exports peaked at an all-time high of 8.7 million cubic metres in 1969, generating foreign exchange earnings of over 300 million US dollars. In the same year, logs and lumber were the biggest single export-earner for the country, delivering 33% of total exports (WRI 1988)<sup>5</sup>. By 1987, this share had fallen to 5% (Putzel 1992a). Between 1987 and 1994, the number of corporate logging concessions in the country fell from 154 to 31, producing 800,000 m<sup>3</sup> of timber annually (Overhoff 1997). Currently, the Philippines is the world's number eight importer of tropical hardwoods, spending 165 million US dollar per year to buy 700,000 m<sup>3</sup> of logs in the international market (ITTO 1997, PNA 1998)<sup>6</sup>.

Fig. 3.1 Regional distribution of Philippine forest cover (1950-1992)



<sup>5</sup> These figures do not entirely capture the considerable volumes of timber illegally cut for internal and export markets during the logging boom. A comparison of Japanese import records and Philippine export records shows that by 1980, the volume of logs smuggled out of the Philippines exceeded the officially recorded volume by 100% (Porter and Ganapin 1988)

<sup>6</sup> Nearly 60 million m<sup>3</sup> (round wood equivalents) of tropical timber products is traded annually in the international market. In 1996 Japan imported 37% of this volume, followed by the European Union (26%), China and the People's Republic of Taiwan (21%), and Korea (9%). Government restrictions on round log exports reduced the share of round logs in the overall volume of tropical timber products traded in world markets from 45% in 1987 to 21% in 1996; sawnwood is around 20%, veneer about 1%, while the share of plywood increased from 27 to 50% in the same period (ITTO 1997).

**Table 3.7 Philippine forest cover and loss, by region (10<sup>6</sup> ha, 1950-1992)**

	Forest cover 1950	% of total 1950	Forest cover 1992	% of total 1992	1992 as % of 1950 cover	Old growth 1992	% of total old growth 1992
Mindanao	61,6	41,8	16,4	41,7	26,6	2,1	26,0
Palawan	10,7	7,3	60	15,2	56,1	1,1	13,6
Visayas	18,1	12,3	3,6	9,1	19,9	0,4	4,9
Luzon	56,9	38,6	13,4	34,0	23,6	4,5	55,5
Total	147,2		39,4		26,8	81	

Sources: Kummer 1992a (1950 data). Aerial reconnaissance survey, NRMP-DAI (1992 data)

Three-quarters of the Philippines' forest cover was lost during the postwar period. Of almost 15 million hectares of natural dipterocarp forest in 1950, only 4 million remained in 1992. A qualitative assessment of these forests shows that the decline was even more serious. In 1934, of the total forest cover of 17.2 million hectares, 10.7 million ha or 62% was of the old-growth dipterocarp type (Bautista 1990). In 1992, only one-fifth of the four million remaining hectares was old-growth forest, while the other 80% were logged-over forests of varying quality. The extent of forest degradation in the past sixty years is accentuated further by the following considerations:

- Most of the remaining old-growth forests are located in inaccessible areas at high elevations, with shallow soils and steep slopes. Biologically rich evergreen lowland rainforests now comprise a smaller portion of the old-growth area than they did sixty years ago.
- Although unlogged, the remaining old-growth forests are more disturbed now than 60 years ago. The use of guns, dynamite, chemicals and burning techniques by local and immigrant hunters has reduced wildlife stocks, as evidenced by the scarcity of hunting products and widespread complaints of a declining catch by local huntsmen.
- Forest degradation and conversion have continued since the 1992 survey.

The situation is not better for other important ecosystems: for example, 75% of the original mangrove forests had been converted into fish ponds and other land uses by 1987 (Baconguis *et al.* 1990, cited in Liu *et al.* 1993). Between 1967 and 1976 alone, the period when large-scale logging and plantation development also decimated large forest areas, the total area of mangroves was reduced from 448,000 to 254,000 hectares, a loss of 4% per year (Porter and Ganapin 1988:39). Dynamite and cyanide fishing, sedimentation, pollution and irresponsible tourism have left only 3.9 to 5.5% of the Philippine coral reefs in excellent condition: an estimated 60- 80 % are in fair or poor condition (Gomez *et al.* 1994). Because of the near-annihilation of the Philippines' old growth forest areas, and the high degree of endemicity of its biodiversity, Norman Myers classified the Philippines as one of the world's ten 'hotspot' areas in tropical forests (Myers 1988, cited in McNeely *et al.* 1990). Some 60% of the country's 167 mammal species, 50% of its 322 resident bird species and 45% of its plant species occur only in the Philippines (CI 1996).

The regional differentiation in table 3.7 shows that 55% of the remaining old-growth forests are in the Luzon island group. The northern Sierra Madre harbours the greater part of these old-growth and high-quality forests. The aerial reconnaissance survey of the USAID-funded Natural Resources Management Project that produced the most recent estimates on the extent and distribution of tropical moist forests in the Philippines, showed that half of these remaining

old-growth forests are in the Cordillera mountain range, west of the Cagayan River, and the other half (257,850 ha) in the northern Sierra Madre. The results of the aerial photographs and SPOT satellite imagery interpretations carried out in connection with this research, and presented in section 3.4 show that half of this area is mossy forest. On the other hand, the Sierra Madre also holds a large area of residual forest with a 60-80% forest cover. Out of the 750,000 hectares of Sierra Madre forest analyzed for this study, almost 300,000 hectares had either a tree crown cover of 80 to 100 percent. Therewith, the northern Sierra Madre holds the largest contiguous area of intact tropical moist forests in Luzon, and one of the largest in the entire Philippines.

### 3.3 Common views on the causes of deforestation in the Philippines

The National Master Plan for Forestry Development (DENR 1990) identifies population pressure as the primary cause of the Philippines' forestry crisis. Showing a graph juxtaposing the growth of the Philippine population - which went from 19.2 million in 1948 to 63.8 million in 1988 - against a line representing the rapid decline in national forest cover during the same period, the document concludes that *"deforestation is directly related to population. Indeed, in the country, forests declined slowly when population density was low, and rapidly when population density was intense"* (NMPFD 1990: 13). Other reports, including the 1994 ADB-funded forestry-sector study of the Philippines also see a *"strong association"* between population growth and deforestation, adding that logging also plays a role, but only via the construction of roads allowing *"the entry of landless migrants who, by converting forest land to agricultural use, hasten its destruction... Even excessively logged, degraded forests have been found to recover and attain full stocking after 20 years, provided the areas are left undisturbed"* (ADB 1994:24).

Indeed, the Philippines went through a period of rapid population growth during this period. Between the 1950s and 1960s, annual population growth rates averaged more than 3%, and remained at 2.7% in the periods 1967-1972 and 1975-1980, making the Philippines Asia's fastest-growing population in Asia during this period (Porter and Ganapin 1988). Kummer's landmark statistical study on postwar deforestation in the Philippines examined relations between forest conversion and a series of other factors, including road density, distance to Manila, 'annual allowable cut' (a measure for the volume of timber extracted by logging corporations annually), population growth and changes in agricultural area for 68 provinces in the Philippines between 1970 and 1980. Absolute changes in forest cover (the narrowest definition of deforestation, cf. section 1.2.1) were found to be significantly correlated with changes in agricultural areas and timber extraction rates. However, when changes in absolute population size, or in population density were regressed against forest losses in the same period, this produced a statistically insignificant  $r^2$  of only 0.05 and 0.02 respectively. The author concludes that

*"the results of this study cannot support the contention of most scholars of tropical deforestation that increasing population is the leading cause of deforestation..."* (Kummer 1992a:126)

Both Kummer and Liu *et al.* (1993) found that the proximity and density of roads correlated significantly with deforestation rates in the various regions of the Philippines. Comparing digitized land-use maps of 1934 and 1988, and combining the differences between these two years with the 1941 road map, Liu *et al.* found that 78% of all forests lying within 1.5 kilometre of a road in 1934 had been cleared by 1988; a comparatively low 39.5% of all forests lying at a distance of 15 to 16.5 kilometres from a road were cleared in the same period. The

second factor that Liu *et al.* found to be positively correlated with forest loss was the ratio between the perimeter and the area of forests: the larger the P/A ratio, the more likely it was to be cleared.

For all three years analysed by Kummer (1957, 1970 and 1980), forest cover was indeed most extensive in the provinces where road density was lowest. However, Liu *et al.* point to the fact that road density in itself is less problematic than the distance between forests and roads: for example, in 1941 the greater part of Mindanao had a relatively small but evenly distributed road network but still experienced considerable loss of forest in the period 1934-1988. Kummer adds a temporal dimension to the road factor, by showing that over time road density becomes less strongly correlated with forest cover. Roads are important in the beginning of what Kummer hypothesizes to be a two-step deforestation process, which starts with large-scale corporate timber extraction and is completed by "*desperately poor people trying to find a place where they can at least feed their families*" (ibid: 91).

Rural poverty and the search for arable land are rooted in part in the highly unequal distribution of farmlands over the population (Leonen 1993). On the basis of government records from a land registration programme set up in preparation for agrarian reform in 1988, 5.8% of all land owners (those reporting holdings of 12 hectares or more) owned 3.8 million hectares of land. In other words, less than 1% of the Philippine population owned half the country's cultivated farmlands. Smallholders who had under 3 hectares each - 66% of all landowners - owned only 16.4% of Philippine farmlands (Putzel 1992b:30).

Kummer briefly mentions the possibility that deforestation may be due in part to market-oriented agricultural expansion into forest areas, but is compelled to leave this aspect aside for lack of quantitative data (Kummer 1992a: 99). The development of large-scale agricultural plantations, which began during the Spanish and American colonial periods (see Chapter 7), caused large-scale conversion of forests into farmlands, particularly in Mindanao. From the late 1960s through the 1980s, favourable IMF conditions and a boom in export commodity prices turned the Philippines into the world's largest exporter of coconut products; 29% of farmlands in southern Mindanao and southern Tagalog, mostly upland areas, is dedicated to coconut (Putzel 1992b:18). Sugar and corn are other major corporate crops planted in upland areas in the Visayas and Mindanao. In chapters 8 and 9 of the present study assess the role of one corporate crop, hybrid corn, in forest migration and upland agriculture in the Sierra Madre.

The last factor cited by most sources on deforestation in the Philippines is the problematic functioning of Philippine government institutions and officials (*e.g.*, ADB 1994; Boyce 1993; Broad and Cavanagh 1993; Hurst 1990; Vitug 1993). Criticism focuses on a variety of aspects, such as the fact that the legal framework perpetuates the public ownership of all lands over 18% in slope, and denies indigenous people and other upland dwellers the tenurial security which is necessary to realize a more participatory and sustainable use of resources (Lynch 1986). In addition, deforestation is promoted by perverse government incentives, such as the licensing system, the low level of forest charges imposed by the government, export restrictions and tax holidays for an inefficient wood industry (Bautista 1990; Gillis 1988; Repetto and Gillis 1988), and documented cases of outright cronyism and political meddling with the bureaucracy (Vitug 1993).

Thus we see the factors discussed in Chapter 2 coming together in the discourse on Philippine deforestation, and with as little consistent proof here as was noted on the global level. The Cagayan Valley appears to be an interesting exception to the overall deforestation trend in the twentieth century; in 1992 the region still had one million hectares of natural forest, covering 38 % of its land area. Despite the proximity of two of the country's most densely populated regions (Ilokos Norte and Central Luzon), and its location near the densely

populated, poor and predominantly rural settlements along the Cagayan river, the Northern Sierra Madre remained largely forested until the early 1990s. However, a more detailed study of forest cover reveals that behind this seemingly stable forest boundary, the relative share of forests with a high percentage of tree crown cover declined considerably during the period when large-scale, mechanized logging operations took place in the Sierra Madre.

### 3.4 forest degradation and loss in the Sierra Madre, 1950-1990

On the basis of aerial photographs interpreted by Clement and Van Dijk (1995) and Roest (1995), the changes in forest cover in the Northern Sierra Madre were determined for the period 1950-1990. The methodology used in the interpretations and in the subsequent GIS-based analysis are discussed in section 2.3.3. The idea of examining changes in forest cover behind the forest boundary arose out of dissatisfaction with the standard but - in my view - problematic FAO definitions of 'forest' and 'deforestation' (cf. Section 1.3.1). On the basis of these definitions, all areas with more than 10% woody vegetation cover qualify as forest, while deforestation only occurs when this last vegetation is removed for other land use. This choice tends to leave the deforestation impact of activities involving incomplete forest removal, such as selective logging, out of the picture. To solve this problem, as I explained earlier, I opted to follow FAO in defining forests as areas with a tree crown cover of 10% or more, but not to confine deforestation to the removal of this last 10%. Instead, I incorporate forest *degradation*, defined as all changes in natural tree crown cover from 100% to 10%, and forest *clearing* (the removal of the last 10%) in my definition of deforestation.

The case of the Sierra Madre provides an opportunity to assess the impact of logging on forest cover in relative isolation from other activities, as large-scale corporate timber extraction was by far the most significant activity in terms of the forest modifications which took place there between 1950 and 1990. For reasons that will be examined in the following chapters, until 1990 forest migration remained confined to a small number of pioneers and logging labourers. Therefore, changes in the total area of different classes of cover may be attributed mainly to the corporate logging industry, including the illegal timber extraction that the issue of timber licenses failed to prevent.

In presenting a brief overview of the most relevant results of these surveys, in the following pages, I will refer extensively to a series of maps, that are placed at the end of this Chapter. The changes taking place over the years are most apparent if the maps are viewed in the sequence in which they appear there. The first map (3.3) shows the differences in the areas covered by the three surveys. The comparative maps (3.6, 3.8, 3.9) have been normalized, *i.e.*, they show only the areas analyzed in all three years. This reduced the total area for which comparative analyses were made to 750,000 hectares, or approximately 75% of the 1992 forest cover of the Northern Sierra Madre. All comparisons include both changes in aggregate area per class as well as changes in the geographical distribution of each class. The forests of the provinces of Quirino, Nueva Viscaya and Aurora were largely left out of the analysis, either because of the absence of aerial photographs or, in the case of Aurora, because they lie outside the Cagayan Valley Region.

The forest cover maps per year (3.4, 3.5, 3.7) show the absolute areas for each crown cover class for the entire area analyzed in each year. Thus after the contour map 3.3, 1950 is presented first, then 1980, then the same map with all the forest concessions in operation during that year, followed by a comparative map for the years 1950 and 1980 (map 3.6). This map, like the other two comparative maps (3.8 and 3.9) is printed in colour, in order to show details of the shifts in tree crown cover classes; aggregate maps, in which these changes are lumped in to 4 categories (stable, improved, degraded and cleared) are shown in maps 3.10 - 3.12.

Map 3.4 shows that out of 966,732 hectares of forest analysed in 1950, almost 600,000 hectares had a forest cover of 60-100%. Close to 200,000 hectares, located mainly on the western slopes and around the coastal town of Palanan, already qualified as low-cover areas (less than 60% crown cover), even though corporate logging was still in its infancy in Cagayan Valley by this time. Some 80,000 hectares had already converted into other land uses, which means that forest migration, utilization and conversion on the more accessible lower slopes of the Sierra Madre started before 1950.

The 1980 forest cover map (map 3.5) covers a total of 786,314 ha, and shows an increase in the share of the low cover class in overall forest cover from 21% in 1950 to 36% in 1980, while the share of high forest cover areas declined by more than half, from 35% in 1950 to 16% in 1980. Map 3.5 also shows the number of corporate timber concessions active in the Sierra Madre during this period, when large scale logging was at its most intense (see Chapter 7). Map 3.6 compares the results of the 1950 and 1980 analyses, and shows that much of the 1980 medium and low cover area was the result of declining crown cover in areas that still had a higher percentage crown cover in 1950<sup>7</sup>. All in all, 38% of the forest degraded to lower crown cover classes during this period (see map 3.10). Only 4.5% of the 1950 forest cover was converted into other land uses during this period. Forest clearing occurred in all tree crown cover classes.

Forest degradation continued in the following ten years. The ratio between high and low forest cover areas declined still further, the former still occupying only 14% of overall forest cover in 1990. The decline in converted forest area (slightly lower than the 1980 figure) is almost certainly caused by the changed contour of the area covered by the 1990 interpretation; as map 3.3 shows, the 1980 areas not covered in the 1990 interpretation are almost certainly converted forest areas, such as the farmlands surrounding the town of Palanan and converted areas near Dapir, Baggao.

In all three interpretations, forests with a 60-80% crown cover occupy between 25% and 30% of the total forest area. However, this does not mean that these areas were in a stable condition, recovering from the selective logging operations carried out during the previous decades. As the comparative maps show, high cover areas degrade into medium cover forests, medium cover forests degrading or being cleared, and lower cover areas regenerating into medium cover forests. Table 3.9 presents these changes in detail, showing how each class developed over the years. Here, we see that about half of the 1980 medium-cover areas remained stable, 35% degraded, and 15% - 36,000 hectares - regenerated into high forest cover areas. Of the 105,000 hectares of forest with 80-100% crown cover still present in 1980, only 47,000 ha had not been logged by 1990. Approximately 100,000 ha of stable mossy forest remained in 1990.

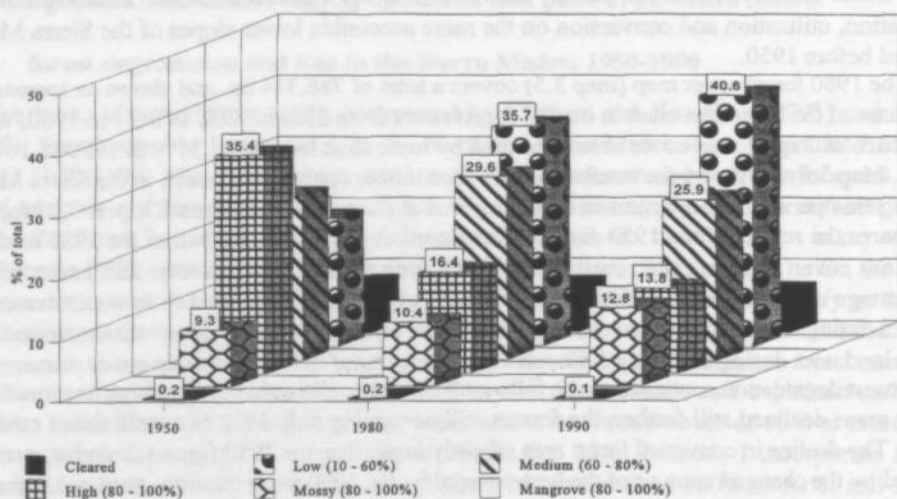
In comparison with the previous three decades, forest conversion accelerated in the 1980-1990 period: 4.3% of total forest cover was cleared during this ten-year period, close to area cleared in the previous thirty years. Still, this is a relatively low forest conversion rate, considering the dense network of roads which logging companies had constructed in the Sierra Madre by the end of this period. One change in the clearing pattern that may be attributed to these roads emerges when we compare the two periods. Between 1950 and 1980, a large proportion of the forest cleared was high- and medium cover forest (see legend of map 3.6). These were presumably cleared by employees of logging companies operating in the vicinity of old growth and good residual stands. Between 1980 and 1990, the construction of logging roads (visible on map 3.7) facilitated the entry of land-seeking migrants onto the lower slopes of the Sierra Madre, where the forest stands are relatively poor. Indeed, as the data in the legend of map 3.8 show, 28,200 ha of low crown cover forest was cleared between 1980 and 1990, compared to 2554

7

The 'classification error' class contains areas that can not be compared due to mutually exclusive classifications in the two surveys (e.g. mangroves in 1959 and mossy in 1980)

hectares of high and medium cover forests cleared.

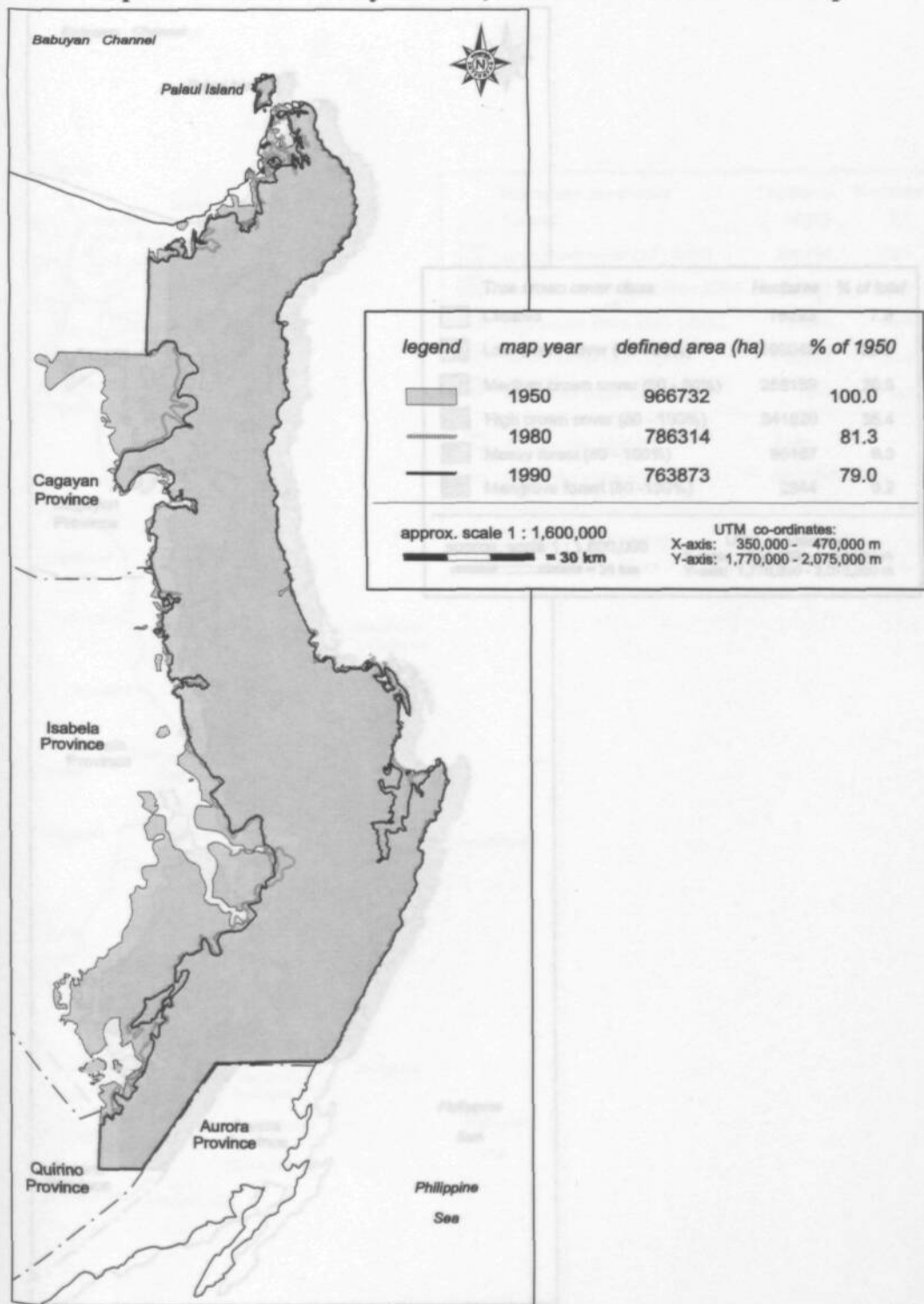
**Fig 3.2 Changes in distribution of tree crown cover classes, 1950-1990, Sierra Madre**



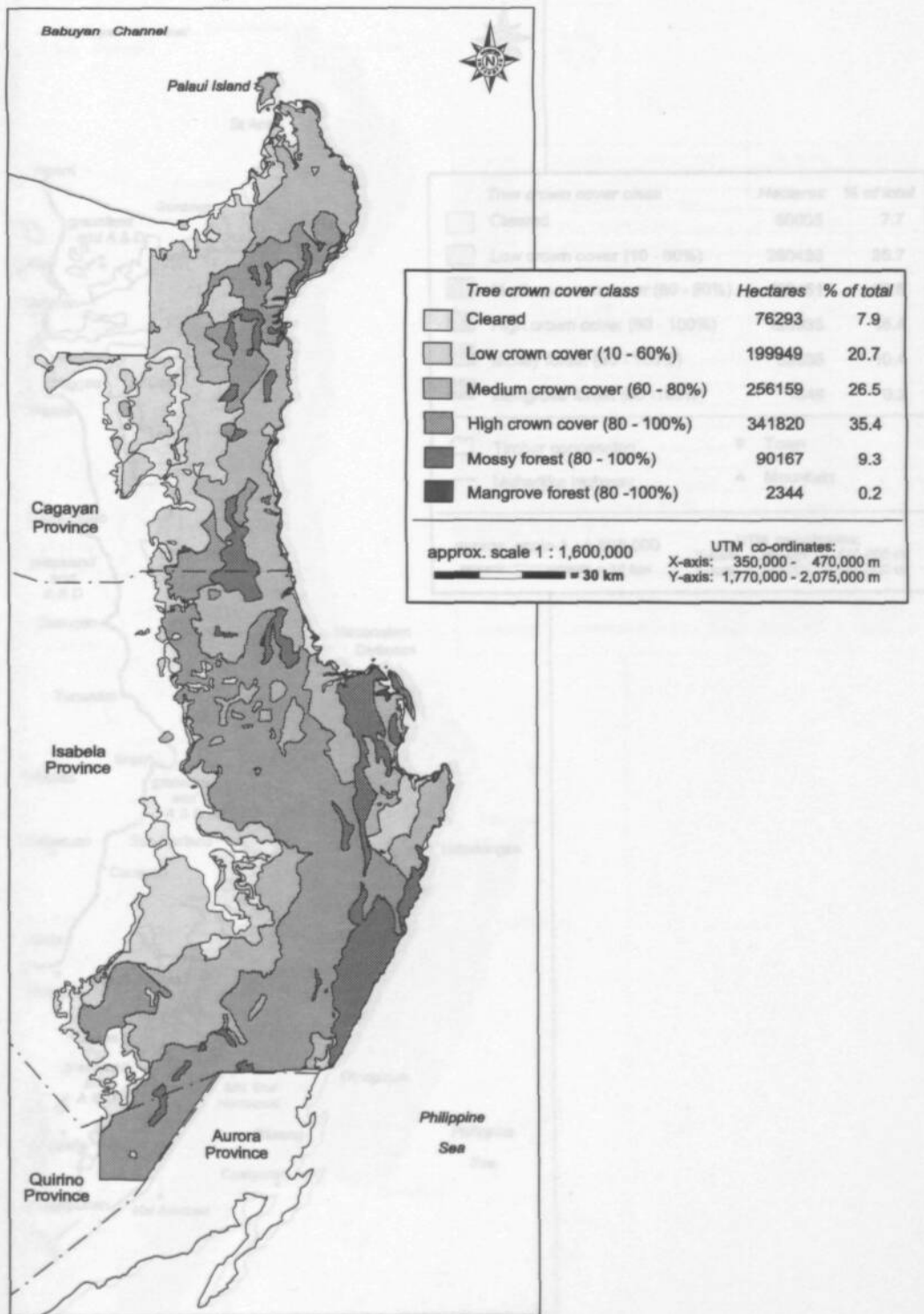
The overall deforestation image presented in map 3.9, and translated into the charts of fig. 3.2 shows that 5.3% of the 750,000 hectares of Sierra Madre forest located in the provinces of Isabela and Cagayan were converted into other land uses between 1950 and 1990. During this period, half the area with high and medium forest cover in 1950 had degraded to lower forest classes in the same period. The total area with a 80-100% forest cover was reduced from over 340,000 hectares, or 35% of the area, to just over 100,000 hectares, a major part of which are recovering logged-over stands on the eastern slopes. The greater part of the stable mossy and montane forests is also found here. The aggregate area 202,982 hectares of montane, mossy and high-cover dipterocarp forests in the Sierra Madre lies below the areas found in the 1992 aerial reconnaissance survey carried out as part of the NRMP project (see section 3.1.2). The difference is due mainly to the fact that Sierra Madre forests in the provinces of Nueva Viscaya and Quirino were not included in the interpretations presented here. Quirino, in particular, still has a high forest cover and may be expected to harbour a sizeable area of good dipterocarp stands. Another source of errors lies in the methodology used in the preparation of the basic maps by (Clement & van Dijk 1994) and Roest (1995). The 1990 interpretation, for example, is based on visual interpretation of a 1987 SPOT satellite image, combined with land-use maps derived from this same source by CVPED in 1992 and the 1992 closed-canopy map (scale 1:250,000) which was part of the NRMP project. The comparative maps reveal that 7-9% of the areas were given incompatible classifications, as a result of this technical limitation.

Having established the factual dimensions of deforestation in the Northern Sierra Madre, the following chapter describes how forest migrants and the indigenous inhabitants of the area make a living. It identifies relevant motives and assesses how these activities are related to the continuous degradation and loss of forests in this area.

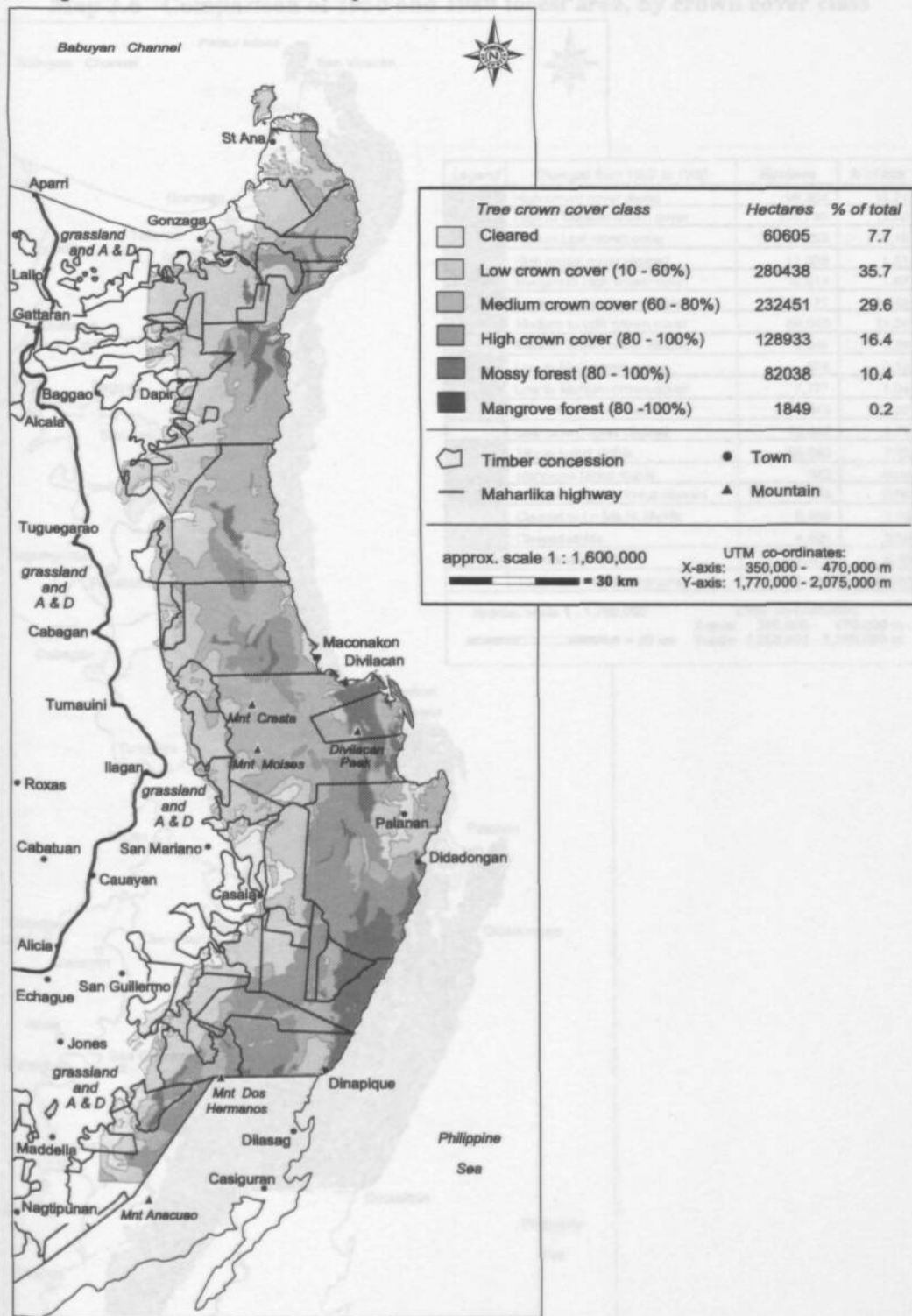
**Map 3.3 Areas covered by the 1950, 1980 and 1990 forest cover maps**



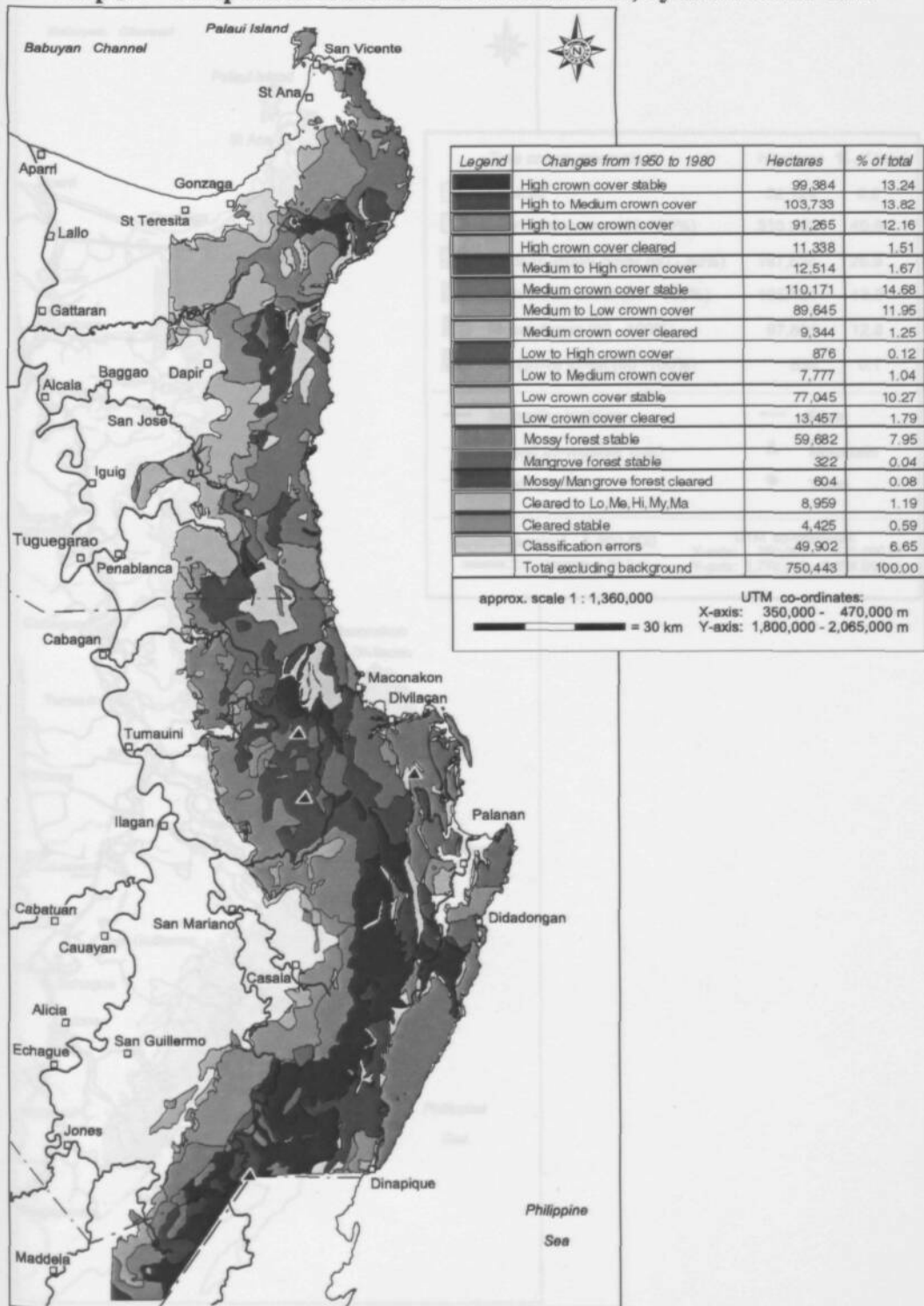
Map 3.4 1950 Forest area, by crown cover class



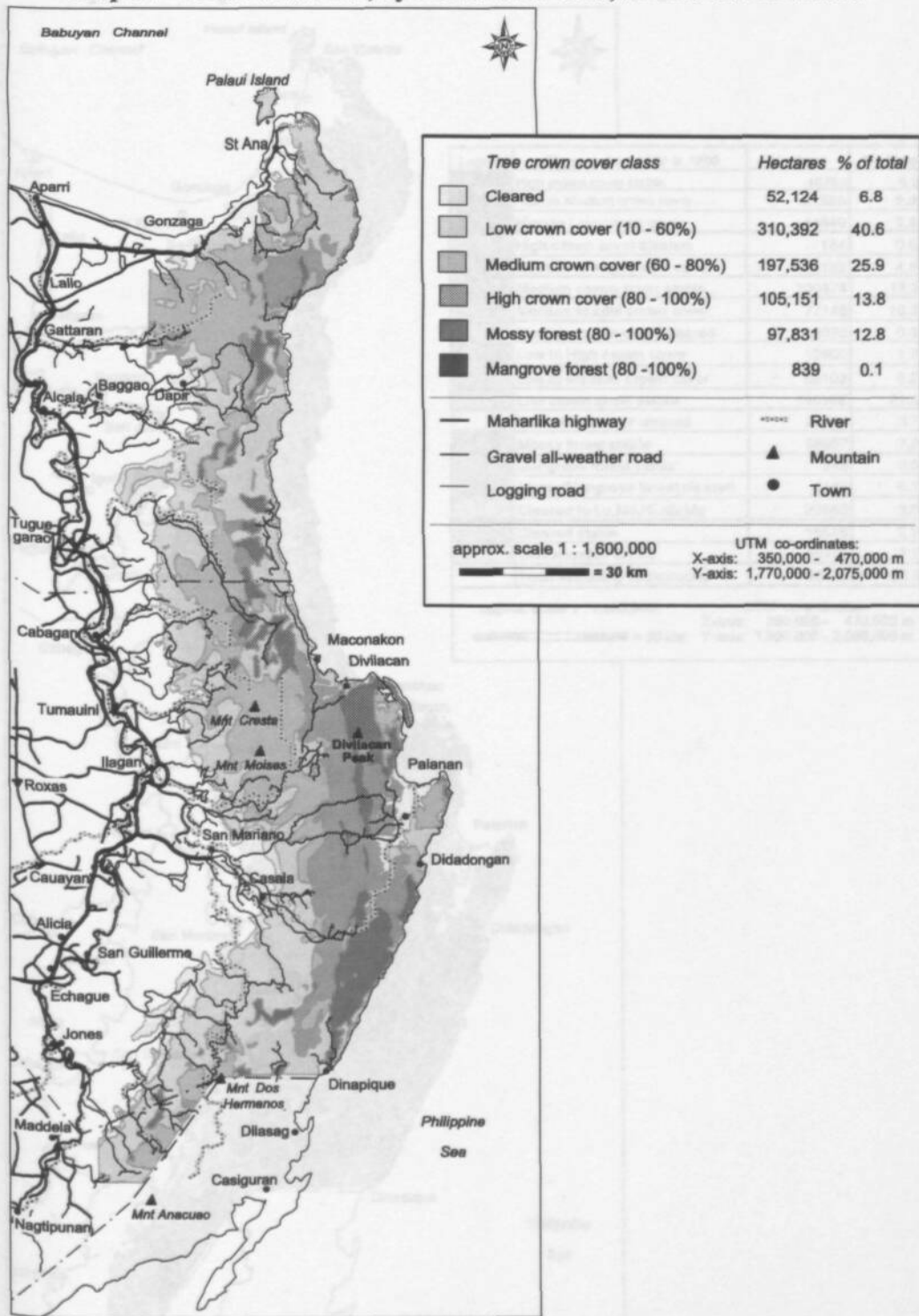
**Map 3.5 1980 Forest area, by crown cover class, and 1982 timber concessions**



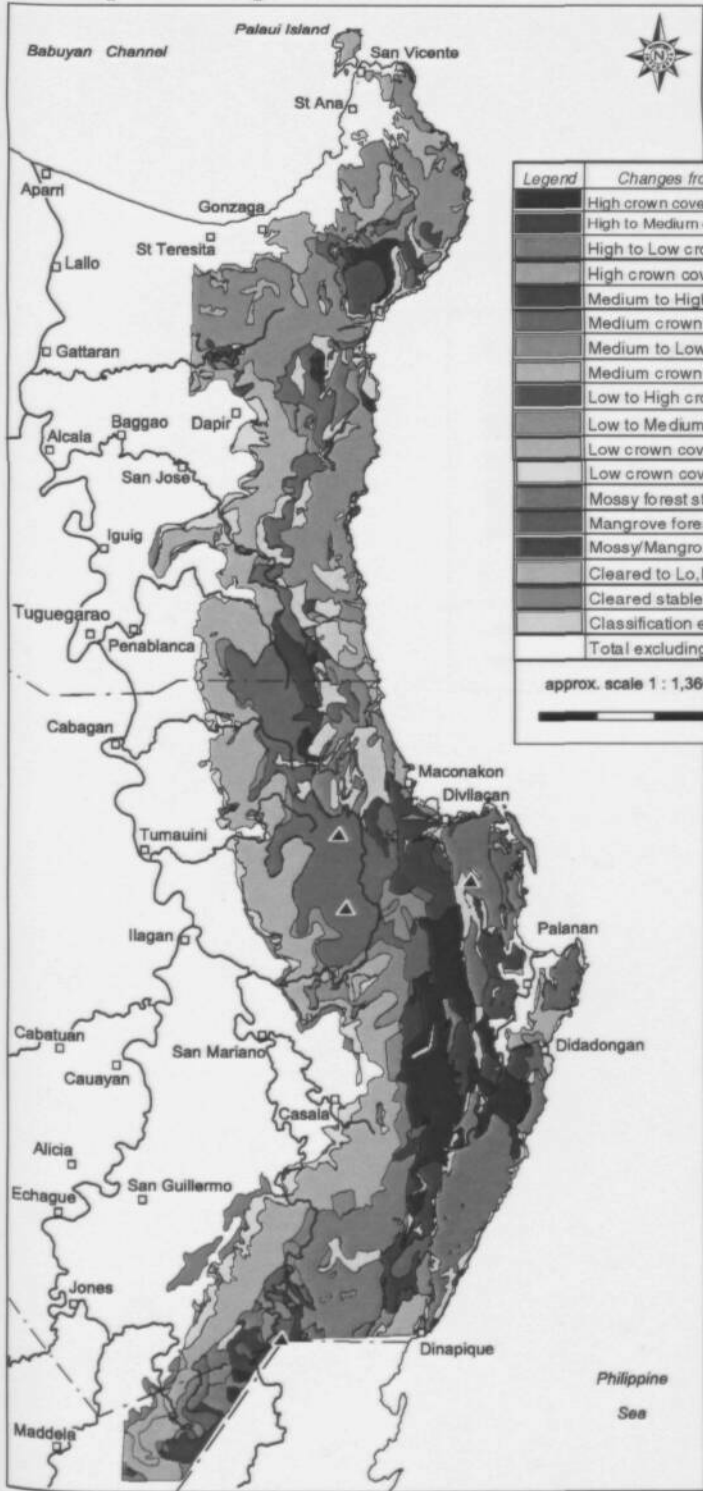
**Map 3.6 Comparison of 1950 and 1980 forest area, by crown cover class**



**Map 3.7 1990 Forest area, by crown cover class, with roads and rivers**



**Map 3.8 Comparison of 1980 and 1990 forest area, by crown cover class**

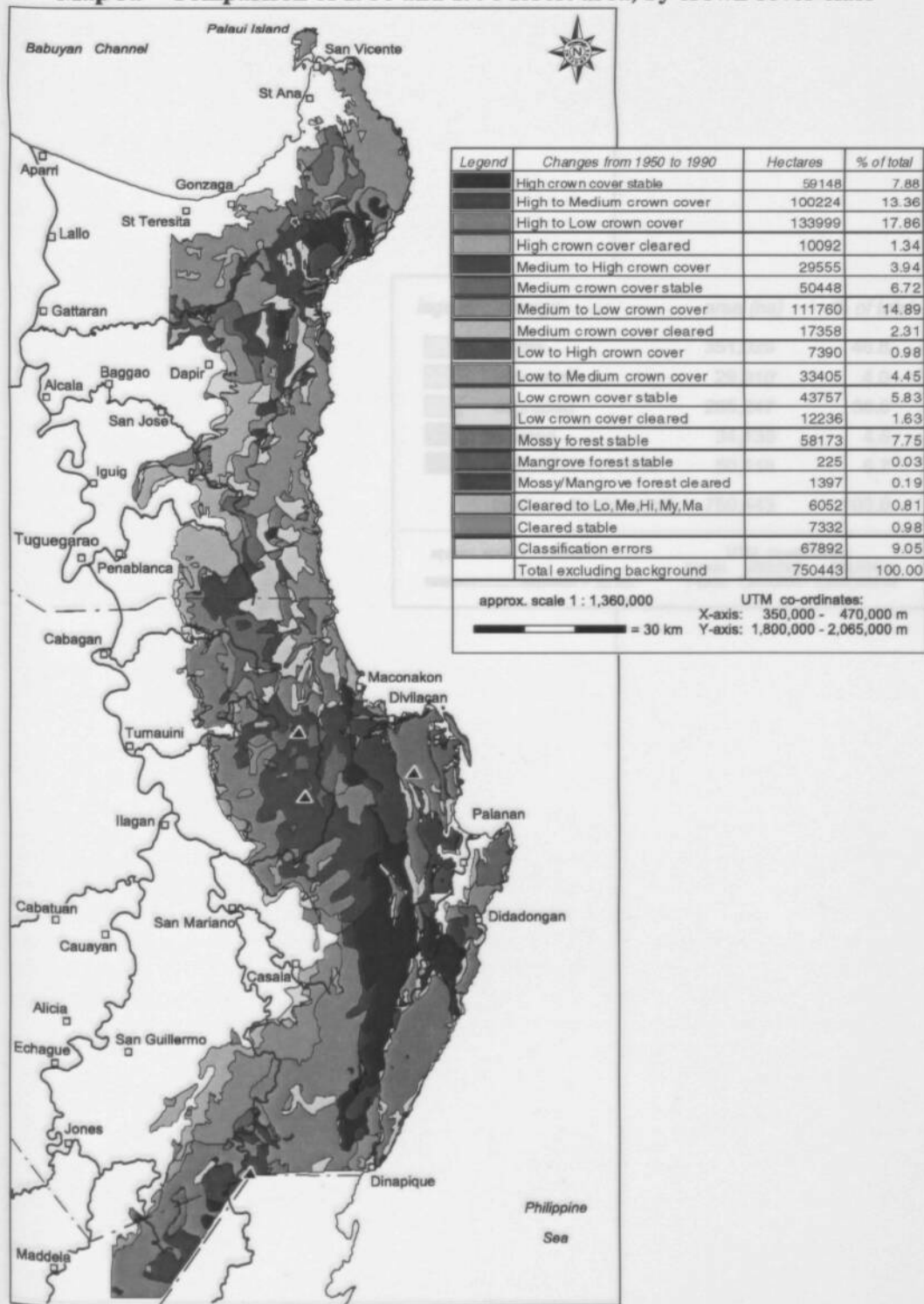


Legend	Changes from 1980 to 1990	Hectares	% of total
[Dark Gray]	High crown cover stable	46783	6.23
[Medium-Dark Gray]	High to Medium crown cover	21555	2.87
[Medium Gray]	High to Low crown cover	44840	5.98
[Light Gray]	High crown cover cleared	184	0.02
[Medium-Light Gray]	Medium to High crown cover	36125	4.81
[Lightest Gray]	Medium crown cover stable	100474	13.39
[Very Light Gray]	Medium to Low crown cover	77145	10.28
[White]	Medium crown cover cleared	2370	0.32
[Light Gray]	Low to High crown cover	12800	1.71
[Medium-Light Gray]	Low to Medium crown cover	62103	8.28
[Lightest Gray]	Low crown cover stable	160168	21.34
[White]	Low crown cover cleared	28201	3.76
[Dark Gray]	Mossy forest stable	58957	7.86
[Medium-Dark Gray]	Mangrove forest stable	249	0.03
[Medium Gray]	Mossy/Mangrove forest cleared	1145	0.15
[Light Gray]	Cleared to Lo, Me Hi, My, Ma	22653	3.02
[Medium-Light Gray]	Cleared stable	16515	2.20
[White]	Classification errors	58176	7.75
Total excluding background		750443	100.00

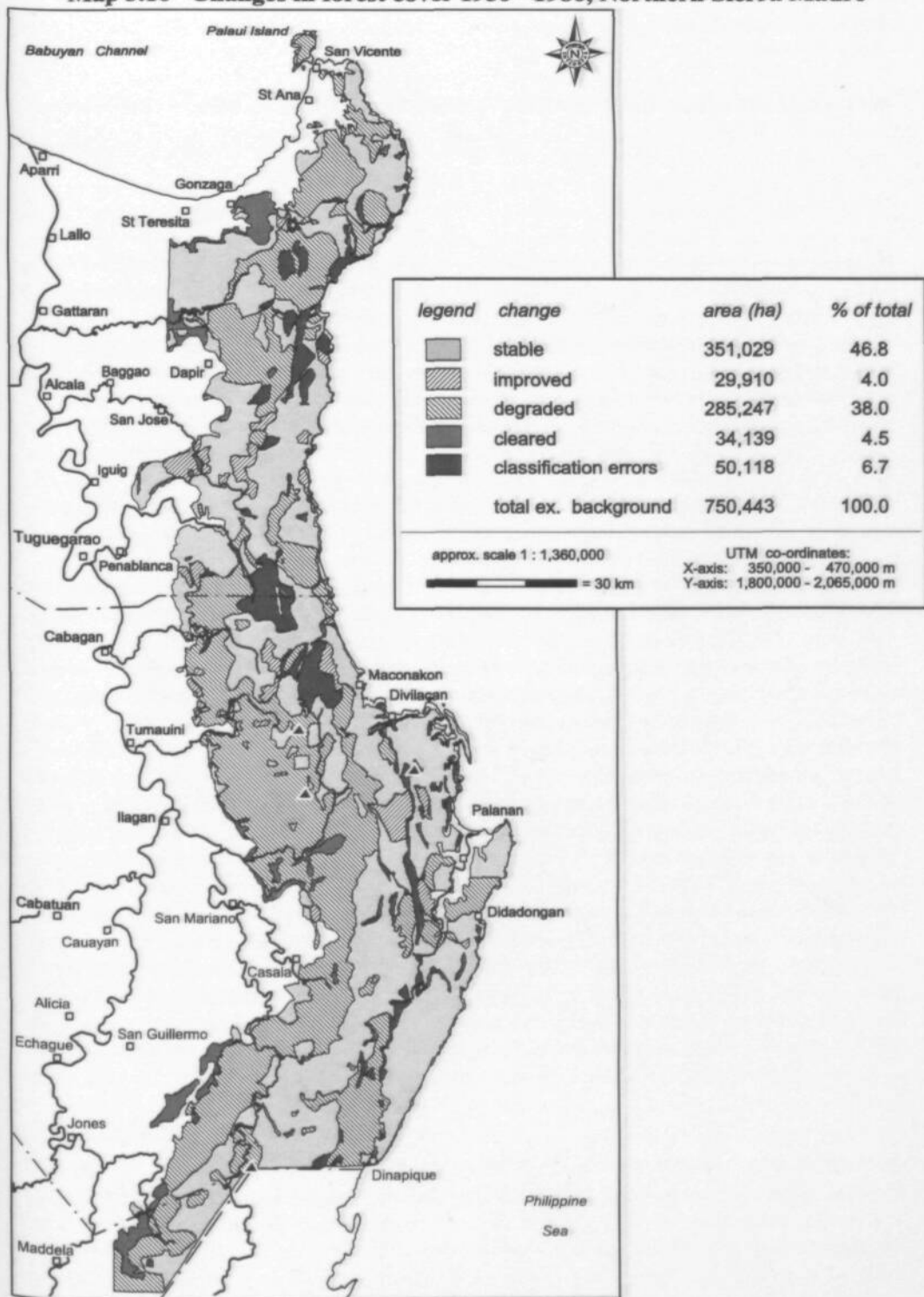
approx. scale 1 : 1,360,000      UTM co-ordinates:  
 X-axis: 350,000 - 470,000 m  
 Y-axis: 1,800,000 - 2,065,000 m

— = 30 km

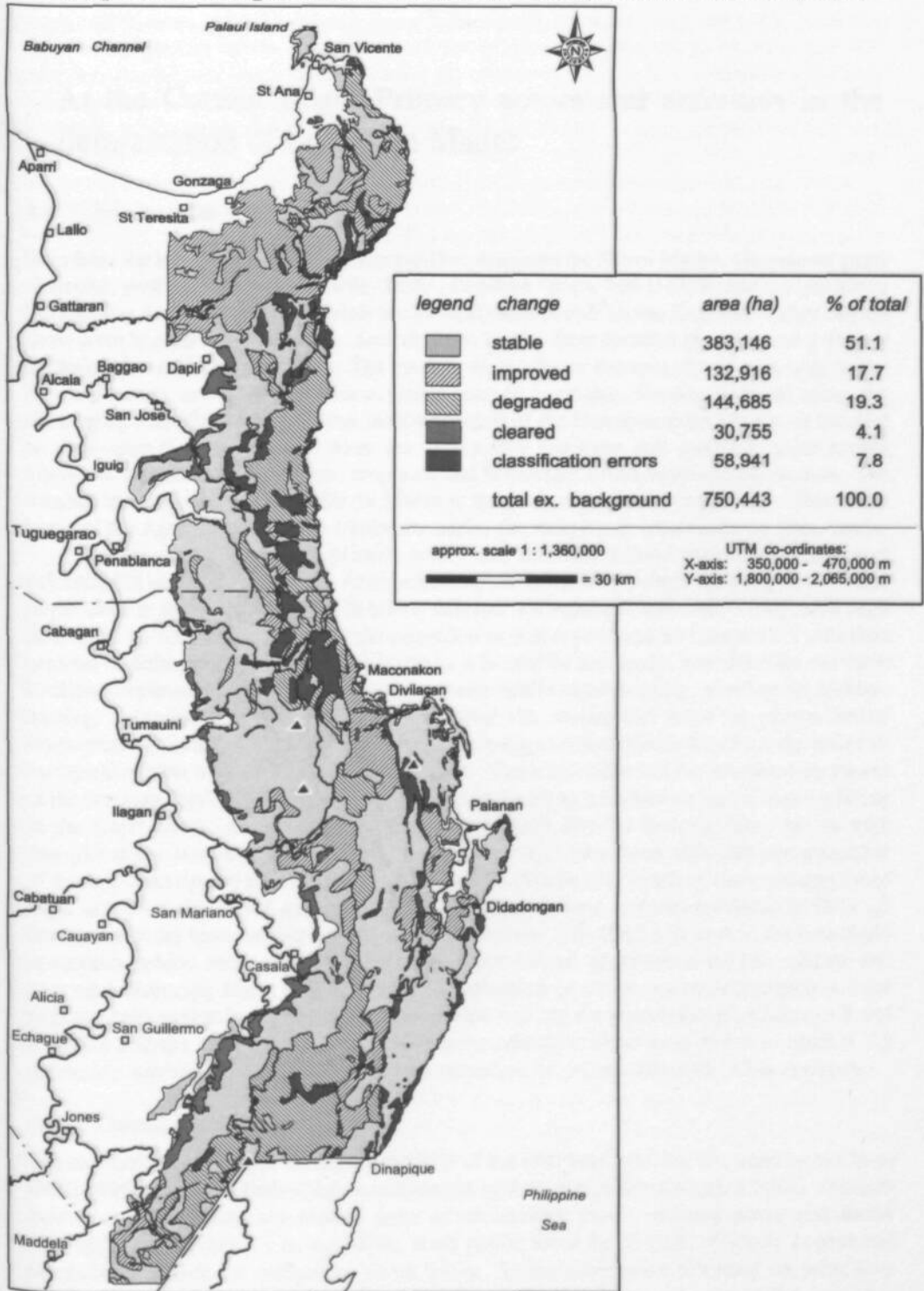
**Map 3.9 Comparison of 1950 and 1990 forest area, by crown cover class**



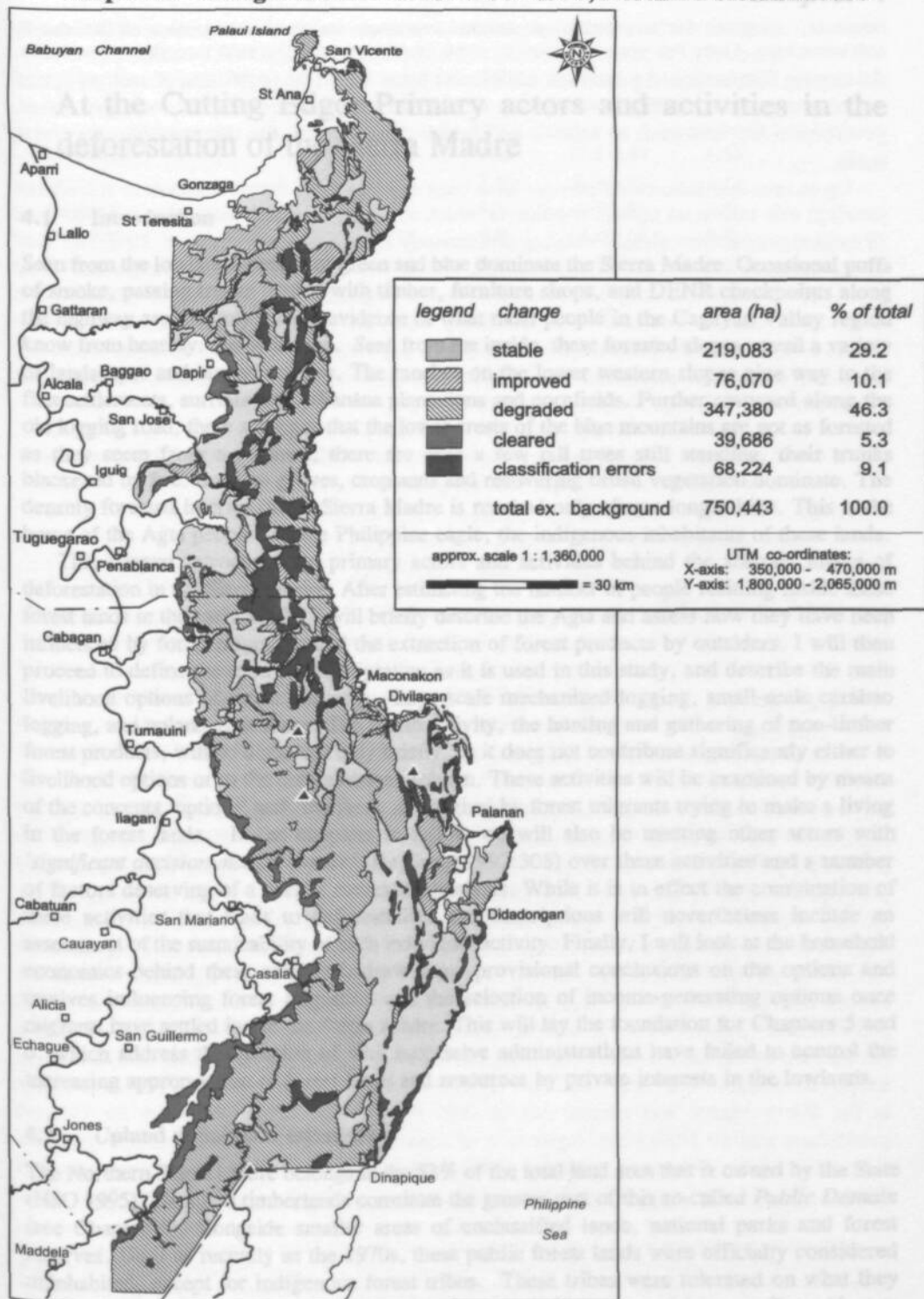
**Map 3.10 Changes in forest cover 1950 - 1980, Northern Sierra Madre**



**Map 3.11 Changes in forest cover 1980 - 1990, Northern Sierra Madre**



**Map 3.12 Changes in forest cover 1950 - 1990, Northern Sierra Madre**



## At the Cutting Edge. Primary actors and activities in the deforestation of the Sierra Madre

### 4.1 Introduction

Seen from the lowlands, shades of green and blue dominate the Sierra Madre. Occasional puffs of smoke, passing trucks loaded with timber, furniture shops, and DENR checkpoints along the highway are the only visible evidence of what most people in the Cagayan Valley region know from hearsay: deforestation. Seen from the inside, these forested slopes unveil a variety of landscapes and human activity. The ranches on the lower western slopes give way to the first settlements, surrounded by banana plantations and cornfields. Further eastward along the old logging road, there are signs that the lower crests of the blue mountains are not as forested as they seem from a distance; there are only a few tall trees still standing, their trunks blackened by fire. Bamboo groves, croplands and recovering brush vegetation dominate. The densely forested interior of the Sierra Madre is reached only after a longer hike. This is the home of the Agta people and the Philippine eagle, the indigenous inhabitants of these lands.

This chapter introduces the primary actors and activities behind the abstract image of deforestation in the Sierra Madre. After estimating the number of people residing inside these forest lands in the early 1990s, I will briefly describe the Agta and assess how they have been influenced by forest migration and the extraction of forest products by outsiders. I will then proceed to define the term forest migration as it is used in this study, and describe the main livelihood options of forest migrants: large-scale mechanized logging, small-scale carabao logging, and upland agriculture. The fourth activity, the hunting and gathering of non-timber forest products, will be discussed only briefly, as it does not contribute significantly either to livelihood options or to the deforestation problem. These activities will be examined by means of the concepts 'options' and 'motives', as weighed by forest migrants trying to make a living in the forest lands. In the chapters to follow we will also be meeting other actors with 'significant decision-making power' (De Groot 1992:308) over these activities and a number of factors deserving of a deeper contextual analysis. While it is in effect the combination of these activities that leads to deforestation, the descriptions will nevertheless include an assessment of the sustainability of each individual activity. Finally, I will look at the household economics behind these activities, draw some provisional conclusions on the options and motives influencing forest migration and the selection of income-generating options once migrants have settled inside the Sierra Madre. This will lay the foundation for Chapters 5 and 6, which address the question of why successive administrations have failed to control the increasing appropriation of forest lands and resources by private interests in the lowlands.

### 4.2 Upland population estimates

The Northern Sierra Madre belongs to the 53% of the total land area that is owned by the State (NSO 1995); classified timberlands constitute the greater part of this so-called *Public Domain* (see Chapter 5), alongside smaller areas of unclassified lands, national parks and forest reserves. Until as recently as the 1970s, these public forest lands were officially considered uninhabited, except for indigenous forest tribes. These tribes were tolerated on what they themselves regarded as their ancestral land, as long as their presence did not conflict with state

interests, such as the extraction of natural resources or the construction of necessary infrastructure. Over the years, however, rural families have migrated into the forest lands, developing farmlands and permanent settlements there. When the population of such an upland settlement reaches 1,000, the minimum number of people to qualify for barangay status, government services such as schools and health clinics follow the migrants into the forest lands.

Up to now few nationwide surveys have been carried out on forest occupation and upland farming; one source on upland population which is often quoted estimates that by 1985 over 17 million people were already residing permanently in the uplands (Cruz *et al.* 1992:18). Half of this number lived in the public domain, and of these, 6 million were indigenous forest tribes, which places the estimated number of forest migrants nationwide at 2.5 million (Cruz *et al.* 1986, cited in Doedens 1992:10). In my view, the Cagayan Valley data used in these studies overestimate the percentage of the regional population living in the uplands. Table 4.1 compares the upland population of Cagayan Valley as estimated by Cruz *et al.* with total population data from the National Statistics Office:

**Table 4.1 Estimated upland population (Cruz *et al.* 1986) compared with population census (NSO 1995) Cagayan Valley.**

(in thousands)	1950*	1960	1970	1975	1980	1985**
Upland pop (Cruz <i>et al.</i> 1986)	402	592	893	971	1.129	1.470
Total Pop (NSO 1995)	669	1.045	1.462	1.653	1.919	2.130
Upland pop as % of Tot.	60	57	61	59	59	69

\* 1948 census

\*\* linear interpolation between 1980 and 1990 census data

The data used by Cruz *et al.* imply that between 1950 and 1985 some 60% of the regional population were living in upland areas (*i.e.*, lands with over 18% slope), or close to 1.5 million people by 1985. The authors arrived at their data by estimating the proportion of the population of each municipality living in the uplands, and then applying this percentage to the municipal census data. This high estimate may also be due to the fact that the provinces of Ifugao and Kalinga Apayao were still part of the Cagayan Valley administrative region at the time of the survey. Nevertheless, since all population centres and prime agricultural lands are located near the banks of the Cagayan River, this figure obviously overestimates the upland population of Cagayan Valley to such an extent that the overall reliability of all the estimates put forward by the same authors regarding the total number of people residing in upland areas is open to question. The first - and thus far only - comprehensive survey of forest occupants in the Sierra Madre was carried out in 1987 by a joint project set up by the German government and the Philippine Department of Environment and Natural Resources (the 'RP-German' project). The survey recorded just under 66,000 forest occupants in the provinces of Quirino, Isabela and Cagayan, or 2.7% of the region's population (GTZ 1990, see Table 4.2).

**Table 4.2 Inventory of 'forest occupants' in the Sierra Madre (GTZ 1990)**

	No of Households	Total No of Household Members	Av. HH size	Area Occupied (ha)	Area per HH (ha)
<b>QUIRINO</b>	<b>7,385</b>	<b>21,108</b>	<b>2.86</b>	<b>12,872.09</b>	<b>1.74</b>
Diffun	5,667	13,018	2.30	8,046.27	1.42
Nagtipunan	1,718	8,090	4.71	4,825.82	2.81
<b>ISABELA</b>	<b>4,994</b>	<b>22,514</b>	<b>4.51</b>	<b>14,589.75</b>	<b>2.92</b>
Cabagan	669	3,010	4.50	1,542.74	2.31
Maconacon	370	1,941	4.50	1,010.10	2.73
Ilagan	1,302	6,165	4.74	4,182.05	3.21
Roxas	217	543	2.50	539.88	2.49
Cauayan	1,369	5,734	4.19	4,838.87	3.53
Santiago	1,067	5,121	4.80	2,476.11	2.32
<b>CAGAYAN</b>	<b>4,627</b>	<b>21,635</b>	<b>4.68</b>	<b>10,816.84</b>	<b>2.34</b>
Alcala	2,100	9,645	4.59	5,067.89	2.41
Aparri	507	1,590	3.14	874.71	1.73
Solana	285	1,293	4.54	766.33	2.69
Tuguegarao	1,735	9,107	5.25	4,107.91	2.37
<b>TOTAL REGION 02</b>	<b>17,006</b>	<b>65,257</b>	<b>3.84</b>	<b>38,278.68</b>	<b>2.25</b>

The aggregate area of occupied forest land recorded by the RP-German survey is close to the 39,676 ha of forest land converted into farmland between 1950 and 1990, according to the results of the aerial photograph and satellite imagery interpretations presented in the previous chapter. On the other hand, the figures in the RP-German survey are consistently below census records on the number of inhabitants of selected upland settlements in the Sierra Madre (see table 4.3). Only 640 forest households were recorded in San Mariano, for example, while this town administers over 200,000 hectares of forest lands, nearly all of which have been repeatedly logged since the mid-1950s. The vast majority of the municipality's citizens (over 5000 households) moved to the uplands after 1950<sup>1</sup>. One reason why the RP-German survey did not register all of these migrants as forest occupants may have been that by the time of the survey, the lands these people occupied was no longer forested or publicly owned. Most probably the survey did not include those who lived inside the Sierra Madre but did not belong to its indigenous forest tribes, or those who were farming denuded, patented or titled lands along the valley floors in the uplands. What may also have played a role is the fact that at the time of the survey in 1987, access to forest communities was constrained by the presence of the New People's Army in the Sierra Madre. For the same reason, many migrants temporarily left the Sierra Madre during the 1980s.

<sup>1</sup> Not all upland barangays of San Mariano were formed after 1950; topographical maps of the Cagayan Valley produced as part of the 1918 census already show the presence of human settlements in de forest lands of this municipality, such as the barangays of Del Pilar and Tappa. Their early development is probably related to their role as stopover points for traders plying the foot trail between San Mariano and another old settlement on the Pacific slopes of the Sierra Madre, the town of Palanan. Administratively, both San Mariano and these barangays belonged to Palanan until San Mariano became a town, after independence. Baggao, Cagayan, which lies in the vicinity of another passable 'saddle' in the Sierra Madre range, already had a barangay called Imurung inside its forested hinterlands.

**Table 4.3 Registered upland population for selected settlements  
(A comparison of GTZ 1990 and Census 1990)**

Name of Municipality or Upland Barangay	N° of HH (persons) in GTZ 1990		N° of HH (persons) in Census 1990	
Divilacan	128	(665)	425	(2,479)
Dinapigue	4	(19)	371	(2,105)
Palanan	175	(938)	1,066	(5,755)*
Santa Margarita, Baggao	474	(2,376)	691	(3,549)
Dalena, San Pablo	21	(94)	209	(1,191)
Nagtipunan	1718	(8,090)	1,863	(9,460)
Anak, Nagtipunan	102	(520)	184	(862)
San Mariano	640	(3,163)	5,491	(28,904)*
Cassala, San Mariano	79	(375)	205	(1,005)

\*Excluding Poblacion + major lowland barangays

Based on the above considerations, the total resident population of the Northern Sierra Madre (that part of the Sierra Madre administered by the provinces of Nueva Viscaya, Isabela and Cagayan) would be 130 to 150 thousand people, or approximately twice the number recorded in the GTZ survey. Within this group, the indigenous inhabitants of the Sierra Madre have already become a minority; their traditional way of life within the forest was increasingly being undermined by the unrestrained entry of outsiders into their ancestral homeland.

### 4.3 The Agta

The original inhabitants of the Sierra Madre, the Agta<sup>2</sup> (also referred to as Aeta, Ata or Agay) were probably among the earliest people to enter the Philippines (Kroeber 1928, cited in Rai 1990:5). While that hypothesis has yet to be supported by archeological evidence (Griffin 1985), the Agta are known to have lived in the Sierra Madre for at least 4000 years (Rai 1990:45). No comprehensive surveys have been undertaken on the Agta population: 8,000 were estimated to live in eastern Luzon in the early 1950s. In the provinces of Cagayan and Isabela alone, their number was placed at 5,500 in 1986 (RDC 1986, cited in Maus and Schieferli 1989). Of these, 800 to 1,000 live in the town of Palanan, an old trading centre located on the Pacific shores of the Sierra Madre (Griffin 1985). In spite of considerable behavioural and philosophical differences within the group, all the different Agta groups living in eastern Luzon are considered to belong to one culture (Griffin 1996:114).

The Agta living around the town of Palanan were already in contact with missionaries and

<sup>2</sup> In addition to the Agta, the largest number of whom live on the Pacific slopes of the Sierra Madre, indigenous forest communities also reside on the western slopes, such as the Ilongot, or Bugkalot tribes of Quirino and Nueva Visvaya (Rosaldo 1980) and the Kalinga. The latter are scattered groups of lowland origin, who fled the Spanish colonial authorities in the 16<sup>th</sup> and 17<sup>th</sup> century and settled near tributaries of the Cagayan River, notably near the present towns of Baggao and San Mariano (See also Chapter 8). These *Kalingas* (enemies) or *Irrayas* (those upriver) are said to "look just like the Ybanag or Ilokano, but they speak their own language" (Research diary, March 1996). There are similarities between the language of the Kalinga in San Mariano and the Paranan and Agta languages of the eastern Sierra Madre (Griffin 1985:93).

other ethnic groups in the early Spanish colonial period (Headland 1986, cited in Griffin 1996), but contacts with lowland society have significantly intensified during recent decades. Initially, these contacts took place largely at the initiative of the Agta, who would come down from the forest to engage in barter trade with lowlanders, exchanging fish, bush meat, honey and other products for sugar, coffee, rice and other market goods.

Extensive research on the Agta of the Sierra Madre (Griffin 1984; Griffin and Estioko Griffin 1985; Headland 1986) has revealed the protracted sequence of adverse changes that the Agta went through from the moment that outsiders were no longer content to wait for them to bring down their barter products, but began to enter the Sierra Madre at their own initiative. The motives of these uninvited guests ranged from a desire to integrate the Agta into mainstream society through Christianization, and literacy and settlement programmes; the extraction and sale of forest and mineral resources taken from their ancestral domains; and the acquisition of title to lands with potential value for agriculture, mining or tourism<sup>3</sup>. These increasingly intensive intrusions into the Agta homeland undermined the ecological and cultural integrity of their traditional lifestyle.

The products to which barter trade and economic integration exposed the Agta hastened their sociocultural marginalization; in exchange for sugar, alcohol, and cigarettes, the shy and unassuming Agta permitted loggers and migrants to use forests and lands as they pleased. They sometimes asked outsiders to stay away from particular areas, such as ancestral burial grounds, or to spare useful trees that their livelihood partly depended on, such as the *Almaciga* (*Agathis philippinensis*). The resin of this tall tree, better known as Manila copal, was traditionally gathered by the Agta and sold to licensed buyers in the lowlands. *Almaciga* resins are used in the production of varnishes and a host of other industrial products, including tiles, car paints and dentures (Polet 1991:37). Despite a ban on the cutting of this species, requests to spare the *Almaciga* in logging operations were not always respected after alcohol had done its work:

*"The loggers would easily befriend the Agta. You know these people are very innocent and peaceful. Once they had tasted gin, they would soon be drunk and then the loggers could simply cut the trees and leave"* (*Almaciga* licensee, San Mariano, research diary Oct 1990)

This quote captures in a few words the manner in which the rights and culture of the Agta, and other indigenous peoples, were long approached in Philippine society: because of their dark complexion and kinky hair, the Agta became an object of ridicule. Until as recently as the 1980s, they were not included in national population censuses. Their illiteracy and nomadic lifestyle were the official reasons why Government censuses long ignored the many small and dispersed Agta groups (Visorro and Van den Top 1993). They either live in isolation from mainstream society or, in places where they have mingled with lowland Filipinos, serve as helpers, are given Christian names or the family name of their masters, and are regarded more or less as the personal property of those they work for. In the past logging companies also offered employment opportunities to Agta males, both for humanitarian reasons and because of their knowledge of the area. They were hired as surveyors, guards, soldiers, members of the Civilian Armed Forces Geographical Units (CAFGUs), or couriers to communicate with leaders of the New People's Army, which had several military bases

<sup>3</sup> One key informant told me that in 1992 the family of an influential politician in Isabela managed to acquire Honeymoon Island, a small island off the coast of Palanan town, which used to be a sacred ritual ground for Agta marriages. Through a rush procedure in the Bureau of Lands of the Regional DENR Office, the island was first classified as *Alienable and Disposable* and then titled in the name of the family. Several cottages were constructed on what is today known as Escando Island.

deep inside the Sierra Madre Addicted to alcohol and facing the decline of their traditional hunting and gathering practices, Agta men living near the timber concessions were attracted by these new opportunities. It is ironic that they ended up as security guards, safeguarding the equipment of those who were systematically salvaging the ecosystem which had for generations supplied them with a livelihood.

Of the various Agta groups residing in the Sierra Madre, those living on the east coast, roughly between the towns of Divilacan and Dinapigue, were least affected by the process described above. This was due in large measure to a Letter of Instruction issued by President Marcos in 1979, declaring the area within a 45-mile radius of the town of Palanan as a wilderness area (LOI 917, 1979), effectively banning logging and mining activities here. Other factors, especially the absence of a lateral road between these easterly forests and the population centres to the west of the Sierra Madre helped to make this declaration considerably more effective than most other forestry policies, violations of which were the rule rather than the exception during this period (see also Chapter 6). The relatively pristine condition in which this declaration left the forests and marine resources in the area enabled many Agta living in or near the wilderness to maintain the lifestyle of their ancestors, living in simple lean-to shelters and making a living as hunters, fishermen and gatherers of rattan and other forest products. Nevertheless, the Agtas' traditionally high level of economic self-sufficiency has gradually been eroded (Rai 1990:6). As a result of their growing participation in the market economy, agriculture has gone from a minor sideline to a cornerstone of their livelihood. Agtas now develop their own farms through slash-and-burn practices, or work as farm labourers for forest migrants.

As a result of the increasing and more structured penetration of lowland groups into the Agta domain, the degradation of the resources upon which they used to rely and their own growing dependence on the outside world has been accompanied by rising death rates among the Agta. Headland & Headland (1997) even question their survival as a people under the exogenous changes they have faced in recent decades: in spite of a high Total Fertility Rate "with women who live to menopause having an average 7.6 live births each" (*ibid*:82), the number of Agta in Casiguran declined by 43% between 1936 and 1994. Disease (84% of all deaths), a high maternal mortality rate and a relatively high homicide rate resulted in high death rates. Alcoholism, excessive smoking of poor-quality tobacco, and a poor diet, have combined to debilitate the health of the Agta population in the Sierra Madre (pneumonia and tuberculosis together make up one quarter of all deaths among adult Agta). The decline of their numbers has been aggravated by a shortage of women of child-bearing age. Agta girls are in demand as domestic helpers in nearby towns, and many end up as permanent sexual partners or common law wives of non-Agta men, reducing the prospects for Agta men to find a marriage partner (*ibid*).

In view of the present precarious situation of the Agta, the government has recently taken steps to recognize their cultural identity and their rights to ancestral domains; hopefully these will help to stabilize, or even reverse, the process of degradation and decline. On the other hand, less favourable plans have also seen the light, such as those of the Provincial Government to attract Taiwanese investment for the establishment of a Coastal Isabela Industrial and Tourism Estate near Divilacan. The project would consist of a major hotel, golf courses, and industries for the processing of natural resources, including a fish cannery and knock-down furniture factories. The places where the Agta have been best able to maintain their cultural dignity and lifestyle are the least accessible, almost deserted Pacific shores and the forest lands of the Sierra Madre. It is therefore unlikely that the Agta have more to gain from industrial development or further integration into lowland society than from their

tradition of occasional economic exchanges with their neighbours. The restoration of the principle of mutual territorial respect, upon which social and economic relations between the Agta and mainstream society used to be based, is crucial for the future of the Agta as a people. It remains to be seen, however, whether they themselves would opt for such a return to the past, or rather would prefer to continue the process of integration, ultimately becoming full-fledged Filipino citizens.

#### 4.4 Forest migrants: origins and motives

##### 4.4.1 Forest migration: single step or staggered process?

We tend to think of forest migration as a single step: a family decides to leave its place of origin and heads for a destination in the forest lands. They sell whatever they cannot take along (thus creating a financial buffer to overcome the difficult first months of developing the new farm), pack up essential belongings and then, one day, leave for its destination. This model probably applies to the early nineteenth-century migration movements from Ilokos into Central Luzon and to the homesteading pioneers entering Cagayan Valley between 1930 and 1970; the distance between the place of origin and the destination was simply too great to allow a step-by-step procedure (see also Chapter 8).

However, contemporary forest migration to the Sierra Madre is hardly ever such a single step. A protracted series of preparatory moves takes place which ends when the entire household actually takes up residence inside the forest. There is considerable variation in this process among the three broad categories of forest migrants defined in the next section. The relatively short distance between what we will refer to as *source* and *destination* areas facilitates the possibility for migrants to employ this staggered approach. Most forest migrants in the Sierra Madre originally came from the nearby Cordilleras and from the lowlands of Cagayan Valley, and commuting between the place of origin and the forest lands significantly reduces the risk and hardship inherent in the initial phases of forest migration.

In this study the use of the term 'forest migration' encompasses all intermediary steps between this 'commuting' phase and the permanent settlement of the entire household in the forest lands. Whether as logging labourers, gatherers of rattan and bamboo, or as farmers, forest migrants all spend a substantial part of the year (which can probably be estimated at more than 4 months, the length of the dry season) in the Sierra Madre, deriving a significant share of their total income from one or a combination of the activities described in the course of this chapter. The construction of a permanent residence in the Sierra Madre and the arrival of the most members of the household - one or two may have overseas or urban employment - is the ultimate indication that the staggered process of shifting economic reliance from the place of origin to the Sierra Madre has been completed. Investments in the establishment of terraces, plantations or irrigation facilities inside the Sierra Madre also indicate the household's intention to establish a permanent economic base inside the forest lands.

Having clarified the second word of the term forest migration, we must now examine the word *forest*, which may be read as *forest land* in its legal sense, *i.e.*, unclassified lands in the public domain and lands which have been classified as forest lands, as a rule<sup>4</sup> because the slope is in excess of 18% (see also Section 5.2.1). In other words, what qualifies one as a forest migrant is not the land use in the destination area, but its legal status as a publicly owned forest land. Forest migration then means *moving one's household and residence from a source area to the forest lands of the Sierra Madre, including the preparatory phases, in*

4

Other areas are those designated as forest reserve, national park or military reservation

which members of the household spend at least four months per year there, deriving a significant share of total household income from forest lands. This definition not only serves to distinguish people who extract forest products from people who are in the process of settling there, but also to distinguish immigrant forest land residents from others who are native or indigenous to the Sierra Madre. This latter group includes not only the Agta, but also groups which entered the forest lands in pre-colonial and colonial times. Although pre-independence forest migrants were probably driven by motives comparable to those of the pioneer migrants described in the next section, the social, economic and political context of this period differed greatly from that in which post-colonial migrants entered the Sierra Madre. Moreover, the descendants of these early migrants, who were born and raised here, see themselves as native to these lands<sup>5</sup>. Thus I will reserve the term forest migration for people who moved to the Sierra Madre in the postwar Philippines. The year 1950 more or less coincides with the start of the first, small-scale commercial logging activities in the Sierra Madre, which attracted lowland labour towards the forest-based industries and opened up roads, facilitating human settlement and agricultural expansion in the forest lands. This implies that the vast majority of the people who are primary actors in the deforestation process are forest migrant households, defined as "households who started the process of forest migration to the Sierra Madre after 1950, who derive a significant share of their total income from forest lands and whose heads reside inside the Sierra Madre more or less permanently".

#### 4.4.2 Forest migrants: a typology

At first sight, forest communities seem to be "all the same": loosely organized settlements of relatively poor houses, some of bamboo, some with clay walls and *cogon* roofs, others made of cement hollow blocks and with galvanized roofs, but still modest by lowland standards. There are usually a few *sari-sari* stores in these settlements, selling a limited range of products including rice, unrefrigerated soft drinks, instant coffee, sugar, soap, gin and cigarettes. There is also a certain uniformity in the products one sees lying around, waiting for transportation to the lowlands: some square logs, a few piles of bamboo, bananas and, during the harvest months of March and September, large expanses of rice and corn, drying in the sun.

However, beyond these similarities lies a world of such variety that it is difficult to capture the origins and livelihood of forest migrants in a general description. Forest communities are characterized by strong heterogeneity, both internally and from one to the other, and in terms of sociocultural background and economic life. "*Kaingineros*", as they are called, originate from various areas, speak different languages, and have different means of making a living. Some left their place of origin only recently, bringing only their essential belongings, while others arrived decades ago and have accumulated substantial land holdings and wealth, permitting them to enroll children at prestigious schools, such as the University of the Philippines College of Medicine in Manila.

Three broad categories of forest migrants can be distinguished by the context in which they moved to the Sierra Madre. I have labelled them 'pioneers', 'followers' and 'newcomers' (see Table 4.4). With the exception of the most recent forest settlements, in which newly arrived migrants only recently started to develop farmlands and residences, representatives of each category are found in most upland communities. The 1970 cut-off point which separates pioneers from followers is related to the fact that the latter entered during the corporate

<sup>5</sup> To distinguish indigenous from native forest residents, we will adopt the criterion used in the 1993 Ancestral Domain Claims Act, which recognizes claims from groups whose ancestors have lived inside these lands "since time immemorial".

logging period in this area (1970-1990) and were thus often directly tied to a timber license holder or one of his contractors; for them, the opening of farmland long remained a mere sideline, until forest resource depletion or unemployment turned upland agriculture into their main source of income. Pioneers resemble recent 'early newcomers' in terms of their primary land-seeking motive, but they migrated in a context which was more favourable to the realization of these motives. The most recent group of forest migrants, who have entered since the end of the corporate logging era (see Chapters 5 and 7) are in a more precarious position. They do not have access to good lands or to the chainsaw and carabao that followers were able to buy during their term as company employees. Moreover, deeper penetration inside the forest frontier has become more difficult, as logging roads are no longer maintained by logging companies, making it more practical for newcomers to settle near established settlements instead of venturing into unoccupied forest land.

**Table 4.4 Forest migrant categories**

Period of Arrival	Forest Migrant Category	Area of Origin	Primary Migration Motives	Present Sources of Income
1950-1965	Pioneers	- Cordillera - Lowlands region 02	- Prospect of unoccupied prime agricultural land	Lowland farm, <i>sari sari</i> store, plantations
1965-1990	Followers	- Other Logging regions - Ifugao - Lowlands region 02	- logging employment - <i>Salabadiok</i>	Chainsaw, <i>bangkag</i> farm
1990-	Newcomers	- Ifugao - Lowlands region 02	- Livelihood problem in place of origin - Financial help from boss - Invited by pioneer or follower	Fire-and-fallow farm ( <i>uma</i> )

In an analysis of the determinants of economic progress among forest migrants in San Jose, Palawan, Eder (1974) found that the factor 'time of arrival' was not significantly related to their level of socioeconomic success. Instead, personality traits and an element of fortuity seemed to be dominant. My assumption that time of arrival can indeed be linked to other characteristics does not necessarily contradict Eder's finding: many of those who ventured into the unknown forest lands before the advent of the logging boom were characterized by an enterprising personality and, because of their pioneering spirit, found themselves in the right place at the right time to seize the opportunities offered by the arrival of the logging industry. Nevertheless, those equipped with these talents found considerably more opportunities to put these to economic use before and during the corporate logging era than those who arrived later. The following sections will illustrate this finding.

#### (1) THE PIONEERS: ENTERPRISING FARMERS PROSPECTING PRIME AGRICULTURAL LAND

The pioneer migrants entered the Sierra Madre between 1950 and 1970, hoping to find good lands for agriculture. In most upland barangays the ownership of the best farmlands, including irrigated ricefields, was still confined to those who settled there first<sup>6</sup>. Among the pioneers,

<sup>6</sup> One example of an exception to this rule is the barangay of Dimatan, which was originally established inside the forest lands in the 1950s, but was relocated during the height of the, to avoid that migrants might be perceived as NPA

there were traditional upland residents from the Cordillera (from the provinces of Abra, Benguet, Ifugao and Kalinga Apayao), as well as Ilokano lowland farmers from the provinces of Cagayan, Isabela and Nueva Viscaya.

#### Box 4.1 Profile of a Pioneer

"It was in the late fifties, when a few of the 'Adasen' clan of the Tinguian 'tribe' left their homesteads in the uplands of Abra - a province in the Cordilleras - in search of land. Abra was getting overcrowded and for some people the living conditions had become too hard to bear any longer. The work was hard, the area barely accessible and there was an increasing shortage of [agricultural] land.(...) After having crossed no fewer than seven provinces - the captain used to enumerate them when recalling the event - the Adasen were able to find a suitable piece of land in the foothills of the Sierra Madre, in the municipality of Tumauni, Isabela. At first, six Tinguian families and one Ilokano family (from the lowlands) settled here. They have since been followed by kinspeople from Abra. Initially, all were attracted by the availability of land and the desire to make a better life, while others joined through marriage. (...) Those who had just arrived started with nothing; their carabaos had been sold and they had left everything behind. They began to clear the forest and to grow rice, upland rice on the kaingins around *Banig*, the upper part. In the lower part, *Malaping*, the plots were transformed into irrigated rice fields. Through continuous hard work, people succeeded in moving forward. Some succeeded even more than others and could eventually afford a second house in the town of Tumauni.(...) When logging companies entered the area (in 1973, GT), some people protested, but they could not compete with those who had interests in it. The advantage of this development was the opening-up of the area. The logging road became the access road to and from the town proper".(quoted from Ypma 1994:49-54)

By virtue of seniority, economic position and social prominence, pioneer migrants can often be found in local leadership positions, either in elective government posts or as leaders of ethnic groups within upland communities of mixed origin. New migrants who wish to settle in the vicinity of pioneer settlements must ask permission from these leaders, who also decide whether they are allowed to open up farmland. Nowadays, those who succeeded are well-off compared to those in the other categories; their early arrival gave them the first pick of prime agricultural lands inside the mountains, which they turned into irrigated rice (*talon*) and rainfed corn farms. They were young, single adventurers when they left their place of birth, looking for economic opportunities in the Sierra Madre, and they found prime pieces of flat and rolling lands with good agricultural potential, lying in small inner valleys and on gently sloping hills, as well as dark soils, waterfalls, rivers full of fish, and an abundance of tradable forest products like rattan, bamboo, vines, resins and wildlife. Occupation rights to large tracts of land were obtained through trade with the Agta, or were obtained by clearing areas for agriculture. Pioneer migrants still recall how easy it was to convince the Agta to exchange their ancestral rights for a token payment:

*"I used to own this whole valley here, it must be around 10 hectares. When we came here, this land was owned by the Agta. We told them that we wanted peace with them and asked what they wanted so that we could take the land; all that they asked for was two carabaos, and so we gave them our carabaos and they went to a place deeper inside the forest"* (Research diary, Oct 1990)<sup>7</sup>

Surveyors of the Bureau of Forest Development, who entered the forest to delineate logging concessions and annual cutting areas, sometimes assisted the pioneers in obtaining ownership

---

supporters, or get caught in the crossfire of the Army's anti-insurgency campaign. All households were given a 7-hectare *bangkag* field and a residential plot just outside the forest fringe. Even after having been relocated, the households continued to cultivate their lands inside the forest in addition to their new *bangkag* fields.

<sup>7</sup> Baldi (in prep.: 67) reports sales of Agta clearings to lowland migrants in Cagayan, against token prices or without any compensation at all.

titles to these lands<sup>8</sup>; when the logging industry arrived, some pioneers were able to mobilize company equipment, such as bulldozers, to have their lands levelled and turned into *talon* land. The arrival of the logging industry also created new economic opportunities for those already settled inside the forest; eateries and *sari-sari* stores provided company workers with the daily necessities during their prolonged stays inside the forest. Eventually, these mini-stores also became sources of informal credit for later groups of forest migrants.

## (2) THE FOLLOWERS: LOGGING LABOURERS "GROUNDED" THROUGH MARRIAGE OR UNEMPLOYMENT

### Box 4.2 Profile of a Follower

Mr Maximo Tuliao is introduced to us as the founding father of Musinga and as the barangay's first captain. In 1965, he was invited to join two head petitioners, Mr. Gulay and Mr. Tadeo, who wanted to claim titles for un-surveyed lands inside the Sierra Madre. His father, who worked with the Bureau of Lands, facilitated the surveying and titling of the lands. This is how the prime, low-lying lands of Musinga became their property. *"I was born in Aparri, Cagayan in 1928. My mother was an Ybanag, my father an Ilokano, who worked in the Bureau of Lands. In 1940, I fled because of the war and went to Angadanan, where I helped my brother and sister on their farm (probably the Tabacalera hacienda in Angadanan, GT) After the war, I moved over to San Mariano, I was still young and looking for adventure. This place was fully forested then, but logging had already started by the Ever TLA and sawmill. Logging was still done with the two-man barrotsaw at that time, and my life remained very poor; so I was looking for land. I found my wife in San Mariano, in Brgy Gangalan (her name is Duminga Echorre, an Igorot name, probably a daughter of an Igorot father and Ybanag mother, GT). We got married and we had our children and then I found this land here in Cassala and was able to buy 6 ha from a Kalinga for 6000 pesos and one carabao. That was in 1973; our youngest son Georgie was 5 years old then, and he is 28 now, so that was 23 years ago."* Although elderly now, he is still in remarkably good shape, with strong teeth and a lean body, cultivating part of his farm himself with his wife. He takes us around his farmlands, located close to the river and partly irrigated, and proudly shows us his second *kuliglig* (small farm tractor), which he was able to buy after his first crop of hybrid corn, last year. He lives in a relatively isolated spot on the outskirts of the barangay and says he has distanced himself from barangay politics. His three sons are leading figures in the local carabao logging business. (Research diary, March 1996)

Minor commercial timber extraction has been undertaken in Cagayan Valley since the early twentieth century, but it took until the late 1960s for the large-scale, mechanized and corporate logging industry to really take off in the Northern Sierra Madre. The first corporate logging companies brought in skilled labourers from other regions, where mechanized logging operations had started earlier. Soon afterwards, surveyors, bulldozer operators, truck drivers, chainsaw operators and helpers were also hired locally. They gained an even larger share of the employment opportunities offered by the wood industry, because of the common practice among urban timber licensees to farm out timber quotas among local contractors on the basis of royalty payments per boardfoot extracted (See also Chapter 5). Due to the region's prolonged rainy season, logging operations were generally suspended between July and January; during the wet season, the company employees either returned to their families in the lowlands, working in the obligatory reforestation projects of the company, or stayed near the concession area. With the use of their chainsaws, it was not difficult to open up slash-and-burn fields for the labourers. For these migrants, farming initially only served to supplement cash income from the company with rice and vegetables. During the dry season, when the best crop is planted, the demand for paid logging labour also peaked. The second crop, planted at the

<sup>8</sup> The Philippine Land Act specifies that unclassified forest lands under 18% slope can be classified as Alienable and Disposable (see Chapter 5).

end of the wet season, was only an option for those who did not return to the lowlands after the dry season. For most followers, agriculture only began to produce a more significant share of overall income after their main aim in migrating, *i.e.*, cash income, could no longer be realized through timber extraction alone.

The 'follower' category consists mainly of former logging labourers who started as part-time forest occupants and eventually turned into permanent residents. Because of the highly unstable security situation that prevailed inside the Sierra Madre during the 1970s and 80s, rather than establishing new barrios of their own, followers often settled near the houses and fields of the pioneers. They occupied the second-best rolling lands adjacent to the small inner valley floors that the pioneers had succeeded in appropriating. Their employment with the company gradually evolved into the activities presently known as *carabao logging* and *waterlogging*, the extraction of timber by forest residents who owned a carabao or a chainsaw, or both (see Section 4.5). Others engaged in the extraction of non-timber forest products, particularly rattan, which was taken out of the cutting blocks of old-growth forest prior to logging. After 1990, upland agriculture was increasingly geared towards the generation of cash income, the causes and consequences of which are discussed in Chapter 9.

### (3) NEWCOMERS FROM THE NEARBY PROVINCES

This category of forest migrants is probably the most diverse in terms of social and cultural background; there are newcomers who used to be labourers and the employees of entrepreneurs in the lowlands; their bosses either sacked them or offered to assist them in cultivating a commercial crop in the forest. Others still have minor tilling rights in the lowlands, but face a growing disparity between the income they can derive from this activity and the demands of a household with school-age children.

#### Box 4.3 Newcomers from the lowlands: The Ramon family, sitio Ibon, Cagayan

At short distance from one of the best stocks of secondary and primary forest on the western slopes of the Sierra Madre, we meet a group of six people eating corn in front of a temporary shack near a newly opened field. We are invited to visit the *sitio* where these people and two more families live. There is a horse and all around the house there are products drying; the family looks happy, healthy and productive, and they say it was a very good decision to move here. They tell us they are all relatives; the eldest man and woman (50 and 51 years old respectively) are the parents of two of the young men working here, the other two men are first cousins. They came from the nearby lowland barangay of Danguilan, Peñaflanca, where they were also immigrants; the old man has a long history of different jobs before he became a farmer there, 15 years ago, when he gained tilling rights to half a hectare of farmland, paying his *tertia* [share of the harvest, GT] to the landowner every year. One of his sons worked the land of his father, the other one was a driver. "We were so hard up there, we did not own a carabao and we did not have a rich relative; all our relatives just work for their own income too (*sarili, sarili*). Now we do not need them anymore: we had to buy all our food there, here we produce our own, we used to borrow fertilizer and here the soil is good. We were always in debt there, always with the same trader and now, we produce our own ginger, garlic, beans, corn and we can sell it anywhere we want. We cleared things with the captain of Baliuag when we wanted to enter here, and also with our *kumpare* Yañez [the pioneer migrant, GT] and they said, yes, you go there, because the yield is twice that of Danguilan. And the captain of Danguilan also gave us permission to go, all he said was "Be careful, that is a forest area!". But we do not think so, because there is a government programme to give this land to the landless. The DENR already told us if we are from Peñaflanca we can come here and they have already surveyed it for our Stewardship Certificate; each one of us will get 5 hectares." Research diary, March 1996

Encouraged by reports from former neighbours or relatives about free lands in the Sierra Madre, newcomers entered the forest lands expecting to solve a chronic shortfall in income by opening additional farmlands there, either a fallow field or a patch of residual forest.

Romero (1991) reported a group of 20 lowland tenants, who had recently started to clear upland farms to supplement their income. The majority of these newcomers were commuting daily between their forest clearings and their residence in a barangay in the foothills of the Sierra Madre.

#### Box 4.4 Newcomers from the uplands

*'Natadem ti buning ti Ifugao'* (sharp is the machete of the Ifugao...)

The last upland settlement we meet on our way to is called Cagurungan, an Ybanag name meaning "where there are shells in the river", a reference to the marine origin of the limestone layer surfacing here. On our climb up to Dupaya we meet a young boy watering a carabao in a creek. This cool spot is still shaded by the residual trees which surround it, but all the bamboo under the trees has already been cut and piled around the trees, with some dead stalks standing against the trees, to make sure the flames will reach the crowns of these trees during the burning, next month. These migrants came from barrio Santa Cruz, Aguinaldo, Ifugao. Tatung ('Daddy') Hud'ong is the pioneer and leader of a group of 11 Ifugao who opened up the first land in Dupaya in 1994. The old man is a charismatic personality with a record of pioneering, first in Santa Cruz, then in Quirino, and now in this new settlement. Nanang Lumu, one of the members of the group, says that all 11 are just workers and older men opening up land for their children. This year, the group went ahead and Mr. Hud'ong only arrived last Saturday from Santa Cruz. Nanang says that she was born in Mayaoyao and decided to migrate to Mungayan, Ifugao to find a better life there; but since they were the last to arrive, they found only 2 ha of *bangkag* and *uma* land there. Now that their 8 children have children of their own (Nanang already has 26 grandchildren), that place is becoming too small: 'There is no more free space and our soils are not so productive anymore.' Mr. Hud'ong says that the problem in their place of origin is that some have big lands and some have small: "If we could divide the land there, we would not be here". The main problem here is malaria. One of the group already died of it, and most others have had the disease.

The group lives as one community, sleeping under one roof and eating together. One of the group members serves as their Christian minister and prays with them before every meal, a habit they learned from an American missionary who regularly visits Aguinaldo. The meal consists of rice and green peas, a typical Ifugao staple. Two birds, shot by the boys in the forest today are skinned alive and then cooked for dinner. At daybreak, we drink the strong black coffee prepared by Mr. Hud'ong, and have a breakfast that consists of leftovers from yesterday's dinner. After breakfast not much time is spent around the house; everybody sharpens his bolo, the boys pump up their airgun and within 30 minutes, all are on their way to their clearing areas. Although the 11 people live as a community, there are subgroups; each clears its own area, opening up an area large enough for 1 can or 7 gantas of seed (appr. 1 ha). We join Nanang and Tatung Lumu at their clearing area, cross the creek separating the hill where the hut of the group is located and climb the next hill, covered with a lush vegetation of bamboo and residual trees. The top portion has already been fully cleared; the two work their way down towards the creek. The soil is moist and brown, a shallow layer of soil on a steep, rocky slope that will be used for banana cultivation. The woman says: "we would not have to do this kind of heavy (*narigat*) work if had been able to stay in the lowlands, but it is too expensive (*nagastos*) for us there and so we have no other way but to travel very far and find a new land for our children". We ask when the area will be burned and she answers "I do not know, it is the work of Mr. Hud'ong, that is why he is now here. We will go home in two weeks' time and then Mr Hud'ong will stay here". (research diary March 1996)

In comparison with migrants in the first two categories, social and economic motives related to the place or origin, referred to here as 'source motives', play a more influential and positive role in the case of newcomers. For pioneers and followers, source motives play either a minor or a negative role, while 'destination motives' are more dominant and positive (see Box 4.5). Typical 'positive source motives' are the conditions in the migrant's place of origin that stimulate the decision to migrate: lack of land, unemployment, debt, and the growing disparity between cost of living and income. These then add up to 'positive destination motives', such as logging employment, or the prospect of finding land of one's own, encouraged by the success of relatives with prior migration experience. Even for those among the earlier migrants who also left their source areas for economic and social hardships there, economic prospects

in the destination areas were more favourable at the time they migrated than when the newcomers moved. Among the farming and landless poor of Cagayan Valley, the most recent category of forest migrants comprises enterprising people with the basic means and labour to allow them to invest household labour in the development of new farmlands in the Sierra Madre, and to sustain themselves during the initial months of land preparation and the long wait for the harvest.

Specialized land developers, such as the Ifugao migrants described in the last profile, are also part of this category, as well as wood-carvers facing a shortages of raw material in their place of origin, and chainsaw operators displaced by the logging industry, who open residual forest lands for others for a fee per hectare. Here we see certain resemblances between the way the first Ifugao newcomers in the above profile establish themselves inside the forest and those described earlier in the pioneer category. In their search for land, both types of migrants enter deep enough to find residual forest not yet claimed by anyone, opening up these lands as quickly as they can to reach the boundary of the nearest settlement, thus delineating their territory according to the rules of custom. They own carabaos nor chainsaws; during the dry season, they collectively cut residual vegetation for weeks on end with machetes (*bolos*) only, preparing a large area for expansive forms of agriculture, which will only intensify once relatives come over and settle permanently<sup>9</sup>.

In 1998, when I returned to the settlement of the newcomers described in Box 4.4, the Lumu couple had built themselves an Ifugao-style wooden pole house here, while 35 households had followed them into the Sierra Madre. The 'pioneering newcomers' were still shuttling between their place of origin and Dupaya, but their presence had clearly become more permanent and they had registered as voters for the May elections as residents of the nearby barangays of Masipi and Limbauan. By this time, the leader of the first group, Mr. Hud'ong, was only irregularly seen in Dupaya, spending most of his time with a new group to develop new *uma* farms in forest lands near Pamplona, Cagayan. In the summer of 1997, he sold part of the land he had opened in Dupaya to the Lumu family for 2,000 Pesos. The rest of his *uma* and *ublag* lands, a total area of approximately 10 hectares, was being offered to another migrant for 10,000 pesos, who said he was still saving money to conclude the deal.

Both profiles show that, for most newcomers, the decision to develop new homesteads and farmlands in the Sierra Madre is often influenced by the encouragement of one person who has prior experience in forest migration, who invites or even leads the others into the Sierra Madre. If a newcomer opens up a fallow field (*ublag*) provided by someone already settled inside the Sierra Madre, he may be asked to pay a sum of money to buy the occupation rights, or to share part of his harvest with the original owner. A third variation of this model is that of financed forest migration, in which a newcomer is actually sent to the forest lands by an entrepreneur in the place of origin, who either speculates that the land will eventually become titled or has a short-term interest in buying a specific crop to be produced on the new land. The profiles presented above represent the two main places of origin of the people in this category: farmers and landless people from the upland province of Ifugao and from the lowlands of Cagayan, Isabela and Quirino. For Ifugao migrants, the distance between their place of origin and the Sierra Madre is 100-200 kilometres, a distance which takes one to two days by public transport. Newcomers originating in the lowlands only travel between 30 to 50 kilometres, which makes it possible for migrants to shuttle several times per month between the new forest farm and their home base in the lowlands, without immediately giving up

<sup>9</sup> Griffin (1985:92) also observed the practice of Ifugao (and Kalinga) migrants who 'leapfrog' over existing settlements to collectively clear new lands, and to maintain close contacts with their place of origin.

whatever tilling rights or other sources of income and social security their households have in the place of origin.

In some established forest settlements, the influx of newcomers increases the sense of scarcity of free 'convertible' forest land, especially when migrants (such as those in Box 4.4) do not settle on fallow fields previously opened by others, but rather open up unoccupied residual forest nearby. Pioneers and followers may react to the rapid appropriation of nearby forests by newly arrived migrants in different ways. One is to plant coffee or mango seedlings in uncleared residual forest stands, to mark their claim to clear these areas in the future. Other migrant settlements have adopted resolutions to control or prohibit the arrival of newcomers on public lands which they regarded as reserved for the future farms of their offspring. The effectiveness with which such a *social fence* can be implemented depends on the quality of local leaders in forest communities and on the degree of support that they receive from higher government officials and politicians, in particular town mayors. The migrants described in the second profile had been denied entry by the people of one barangay, but were granted free access by the captain of the neighbouring barangay. As we will see in Section 4.8.1, established forest migrants may welcome the entry of newcomers to alleviate labour shortages in their upland farms.

#### 4.4.3 Source and destination motives in forest migration: an initial inventory

Box 4.5 is an initial inventory of nominal motives which stimulate or discourage forest migration, based on how migrants themselves talk about that decision. This overview provides no more than an impression of the range of considerations taken into account, including highly individual ones, such as marriage, or legal and political problems in the migrants' place of origin. The overall pattern illustrated here is that

all migrants are driven by a combination of *source* and *destination* motives, and that the balance between the two shifts over time. For pioneers, the decision to leave the source areas meant a greater isolation from markets and relatives than for followers and newcomers. For followers, the main reason for leaving for the forest is the prospect of finding better

Box 4.5 Overview of forest migration motives

	Pio- neer	Fol- lower	New- comer
<i>Source Motives</i>			
access to farmland	+		+
debt or sent by financier			+
escape from tenancy	+		+
employment opportunities		+	+
loss of social network	-		-
access to market, services	-		
<i>Destination Motives</i>			
economic self reliance	+		+
free, good farmland	+		+
forest-based employment		+	
low cost of living			+
disease, hardship	-	-	-
access to market, services			-
peace & order	-	-	+
government policies	-		+
-	negative motive, discouraging forest migration		
+	positive motive, stimulating forest migration		

employment opportunities than were available in their place of origin. The table also shows that a number of *negative destination motives*, such as the uncertain Peace and Order situation, the threat of government sanctions for the illegal occupancy of the Public Domain, and the difficulty of establishing contacts with lowland markets and services, tend to change in value or significance over time. The threat of government sanctions against the illegal occupancy of government land, still a serious problem to pioneers and followers, is no longer as pressing for newcomers. Instead, they have the possibility of benefiting from government support (stewardship, extension) after settling inside the forest. I will examine this issue in detail in Chapter 5. Other positive destination motives, particularly the prospect of greater self-reliance on newly developed farmlands have continued to attract pioneers, followers and newcomers alike.

The improvement in the prospects for establishing oneself in the forest went hand in hand with a negative economic outlook in the place of origin, especially for the newcomers. The history of agricultural expansion in Cagayan Valley (see Chapter 8) shows that until the mid-eighties the total area of cultivated farmland in the lowlands was still expanding rapidly. After 1990 farmers in the lowlands and in the sparsely populated, but mountainous Ifugao Province found fewer opportunities to develop new farmlands in their place of origin. Other factors, such as the impact of agrarian reform policies and the introduction of high-yielding grain varieties in the lowlands, have gained in influence; these will be discussed in Chapters 8 and 9, where we will also return to the subject of the motives enumerated here, and examine the process of forest migration in more detail. But first I will look at an activity that played a major role in setting the forest migration process in motion.

## 4.5 Corporate logging

### 4.5.1 *The activity*

At the time this book was written, corporate logging had become almost a thing of the past, in the Philippines as a whole and in the Sierra Madre. The issuance of corporate licenses for the large-scale mechanized extraction of timber from the region started with the Taggad concession in 1947 and accelerated after 1970. At the height of the logging boom in 1982, a total of 44 corporate logging concessionaires were active in the Cagayan Valley region, varying in size from 30,000 to 220,000 hectares, with a cumulative Annual Allowable Cut of 2.4 million cubic metres of timber. Each year approximately 25,000 ha of old-growth forest was converted into secondary stands of varying quality. Due to factors that will be examined below, the number of corporate logging licenses declined sharply between 1990 and 1997, when the four remaining concessions in the Sierra Madre were permitted to extract only 20,000 cubic metres of timber. The same trend is visible in the Philippines as a whole<sup>10</sup>. Although for this reason it may be appropriate to describe this activity in the past tense, the significance of the impact it had on the overall deforestation process in the Sierra Madre after 1970 warrants a detailed examination of its characteristics and historical origins in this chapter and those that follow.

Corporate logging entailed the large-scale mechanized extraction of timber from natural dipterocarp forest concessions by business corporations with or without permission from the Government. The Philippines' oldest legal instrument covering these activities was the so-called 'Timber Licensing Agreement' (TLA, see Section 5.2.2), by means of which the government leased a large tract of public forest land to a logging company for the purpose of

<sup>10</sup> Chapter 7 provides a more detailed history of corporate logging in the Philippines and Cagayan Valley.

developing the climax stands into more productive production forests. The company gained the exclusive right to extract timber from this concession, subject to government approval of Annual Operations Plans submitted by the company. Corporate timber licenses had a validity of 25 years and could be renewed for another 25 years if the holder could show that the resources entrusted to him had been managed in accordance with the terms of the Philippine Selective Logging System. Concessionaires were also obliged to hire forest guards to protect the concession from illegal extraction and settlement. The continued validity of the license, as well as the yearly approval of the Operations Plan, depended on compliance by the timber licensee with the management conditions stipulated in the TLA, which had to be verified annually by field officials of the Department for Environment and Natural Resources (DENR).

The Philippine Selective Logging System provided technical guidelines to ensure the sustainable management of these corporate concessions and to maximize the growth and yield rates of premium timber species in these natural forests<sup>11</sup>. Species with a good commercial value are Red Lauan (*Shorea negronensis*), Tangile (*Shorea polysperma*), Yakal (*Hopea Acuminata*), Apitong (*Dipterocarpus grandiflorus*), Guijo (*Shorea quiso*) and White Lauan (*Pentacme contorta*). In selective logging, it is assumed that after every cut, the forest will be left to recover for a specified period of time, between 30 and 40 years, after which another cut can be taken out. Each year, the licensee was allowed to selectively log a certain portion of the forest concession; the volume of timber extracted was calculated in such a way that areas logged in the first year of operation would be ready for a second cut in year 25. The Selective Logging (SLS) prescribes the following course of action:

1) *Forest Inventory, estimation of standing stock and sustained growth and yield*

A team of foresters and labourers enters into the concession area. The cut of permitted species is determined on the basis of the following key (dbh = diameter at breast height):

- 25% of the total stock of 60-70 cm dbh
- 75%        "        "        70-80 cm dbh
- 100%       "        "        80 cm and above

On the basis of these inventories, a forest management plan is designed and the extractable volume determined.

2) *Preparation of TLA Operations Plan (for approval by DENR)*

The Operations Plan (OP) is an annual specification of how the concessionaire plans to implement selective logging activities in his concession. The geographical location of the cutting blocks is defined, as well as the species to be extracted, the extractable volume, the road network needed and the Timber Stand Improvement measures to be carried out in the logged-over stand. A reforestation plan for an area (not necessarily inside the TLA) is included in the OP, to be funded by the TLA holder. The TLA holder can only start logging operations after approval of the OP by the DENR.

3) *Surveying, tree-marking and the construction of logging roads*

Engineers determine the area specified in the OP on the ground, lay out a trajectory to be followed by the bulldozers in the construction of logging roads and specify improvements to enhance road stability (drainage, gravelling). Foresters and labourers mark trees to be harvested, as well as trees that should not be damaged during the felling because of their potential value in the next cutting cycle.

4) *Felling and cutting, yarding*

<sup>11</sup> Selective Logging is "the systematic removal of mature, overmature and defective trees in such a manner as to leave an adequate number and volume of healthy residual trees of the desired species necessary to produce a future crop of timber and forest cover for the protection and conservation of soil, water and wildlife" (PD 1559, 1978)

Chainsaw operators fell the marked trees, remove tops and branches and cut these into round logs of approximately 3 metres length. The round logs are yarded from the stump site to a log pond, either by cable or making use of winches and spar trees.

5) *Transportation to log pond and sawmill/ processing plant*

At the log pond, an open spot in the forest that can be reached by the logging trucks, the round logs are loaded on trucks and taken to the sawmill for semi-processing, or to a plywood mill or other wood-processing plant (pulp, matches, dendro-thermal energy).

6) *Timber Stand Improvement (TSI)*

Because of the added light reaching the forest floor after removal of some of the taller trees, many seedlings and vines sprout and compete for light, water and nutrients. Some of the vines 'strangle' the young tree seedlings, slowing down the recovery of commercially important species. Timber Stand Improvement is carried out 5 to 10 years after the last cut. Less valuable species are girdled or removed, while 'potential crop trees' are liberated from competing vines and trees. Wildlings of valuable timber species are added to the residual stand. TSI entails a long-term investment by the concessionaire, recoverable through a higher extractable volume at the end of the cutting cycle.

7) *Reforestation*

Site preparation, hole-digging, manure-hauling, seedling production, planting, the construction of fire lines and the replacement of seedlings that died after the first planting are all funded by the TLA holder. For every hectare logged, another hectare must be replanted.

8) *Evaluation (by DENR)*

At the end of the logging season, the DENR verifies whether the OP has actually been implemented. Non-compliance with the guidelines set out by the Selective Logging System or with other pertinent regulations and policies, including the ban on prohibited species such as Narra (*Pterocarpus varanus*<sup>12</sup>) and Almaciga (*Agathis philippinensis*), can lead to suspension or cancellation of the TLA.

TLA holders were also required to select a portion of their concession to be preserved as a wilderness area. Other rules and regulations prescribe the maximum width of logging and spur roads (10 and 6 metres respectively) the density of roads used for log transportation; specify felling techniques that minimize damage to the residual stand; require the maintenance of forest cover on a twenty-metre strip along the banks of rivers; and ban logging in mossy forests and in areas steeper than 50%, or over 1000 metres above sea level.

In practice, the selective logging system was hardly ever followed.<sup>13</sup> TLA holders, their contractors, and others illegally entering their concessions failed to observe most of the technical prescriptions designed to minimize residual damage due to yarding and the construction of logging roads and log landings. The so-called 'Bataan' system became the standard operating procedure in the mechanized logging operations on the western slopes of the Sierra Madre. This system derives its name from the vintage Second World War personnel- and weapon-carriers; these were imported from the American army base in Bataan province by local contractors in the fifties and sixties, and used to haul logs from the forest to the

<sup>12</sup> Prickly Narra is dominant in the Sierra Madre. *Pterocarpus indicus*, the variety with smooth-skinned seeds also occurs, but less frequently than in other parts of the Philippines.

<sup>13</sup> See also Chapter 6 on the implementation of government policies with regard to the corporate logging industry. Other sources describing violations of Philippine forestry laws and policies are Broad and Cavanagh 1993; Delos Angeles 1982; Hurst 1988; PCIJ 1991; Repetto and Gillis 1988; Romero 1991; Simons 1991; Vitug 1993.

sawmills in the lowlands. A Bataan-style logging operation involved a team of people with a bulldozer and some trucks who entered into a concession to survey commercial stands of timber and then to take them out. There was no pre-defined management plan and instead of following the silvicultural practice of putting into place a pre-designed network of roads and landing areas, the bulldozer operator followed the surveyors to random places near the main road, where good trees were to be found. Because of the ability of the bulldozers to negotiate extremely steep and muddy slopes, they were able to open up a dense fishbone network of logging roads, often only serving the cutting and yarding of one or two valuable trees. In this manner, "foresters were clearing so much land for roads, cable and tractor ways and for log storage that an estimated average of 30 % of the forest - and often as much as 40-70% - was clear cut in the course of the logging" (Sy and Lasmarías 1983:36, quoted in Porter and Ganapin 1988: 25)

The improper construction of logging roads has been a common feature of corporate logging concessions in the Sierra Madre; where access roads passed through good timber stands, they were over-dimensioned to allow the clear-cutting of a larger area; where they passed through poorer portions, prescriptions on maximum slope were disregarded so as to reach the next set-up more quickly. A major problem occurred when natural waterways were crossed without the use of culverts. As a result of such haphazard road engineering, these roads could barely support the weight of the often overloaded trucks leaving the cutting area. Severe erosion occurred along these roads, and cascades of landslides can be seen downhill from road tracés. Especially after heavy rain, bulldozers repeatedly scrape thick layers of mud from the road tracts, creating bypasses along landslides and collapsed passages of creeks, and dig deeper into the mountain slopes to create new tracks which will enable trucks to pass. Anyone who has once been a passenger on top of the last log loaded on a *six-by-six*<sup>14</sup>, sliding down the steep, muddy bends of a logging road, while being treated to a rundown on the more spectacular accidents that have overcome trucks making the same trip, feels a distinct sense of relief at having reached the sawmill alive.

It is difficult to imagine the scale of these operations during the seventies and eighties. First-hand reports by former employees of contractors operating in the WESCA concession in Isabela say that every logging season 10 bulldozer teams, each with two or three chainsaw operators, were operating inside the concession, and that the company had 300 logging trucks hauling logs from various sources in the Sierra Madre<sup>15</sup>. Simons (1992) gave an eyewitness account of a commercial logging operation in the Sierra Madre.

*"The road plan is designed globally when the setup boundaries are determined, but the final decisions about where to establish a road are made by the bulldozer operator. Upon advice from his helper, who is in front of the bulldozer to look for trees to be cut, the operator tries to minimize the length of the road. Sometimes this means a road is laid straight uphill, especially when there are only a few trees to be harvested. The bulldozer brings the logs to a log landing where they are loaded onto logging trucks. In this way, the trucks do not need to use the steepest bulldozer roads. At other times, bulldozers go straight uphill and then construct a zig-zag road for the logging trucks going down. This way the weight of the machine helps in pushing down. Therefore it can push harder and is less likely to get overheated. Bulldozer roads reach up to 90% in slope, trucks can pass slopes up to 50% using the front winch....areas were set on fire to have a better overview in the area, especially in areas with a dense bamboo undergrowth."* (Simons 1992: 35)

<sup>14</sup> Designed to carry a maximum load of 2.5 tons, these trucks generally carry at least 2200 boardfeet of timber, weighing around 3500 kg (Simons 1992:37)

<sup>15</sup> Since some licensees were actually managing several concessions, farming these out among local contractors, logging conglomerates could form, and one contractor could ship logs from several concessions to one large sawmill.

The same author also observed that nearly all trees were felled in a downhill direction. A chainsaw operator prefers this method, because the tree falls away from him and can not slide downwards towards him after the fall. The more rapid fall of the tree in a downhill direction also reduces the risk of a tree getting caught in other standing trees, a problem which can take a good deal of effort to solve. The downhill felling method is more likely to damage residual stands than uphill-oriented felling, both during the fall of the tree and afterwards, when the logs need to be pulled back upward towards the loading point; this is done with a mechanical winch mounted on the front of the logging truck, a practice which again damages soil and undergrowth uphill from the stump site.

Technical breakdowns were common, as the trucks and bulldozers were poorly maintained, and these frequently obstructed logging roads. Since they were being paid per boardfoot of timber produced, the logging crews would start cutting trees in the logged-over forests surrounding the road block, so that they could at least produce some timber while waiting for repair work on the equipment to be completed (Romero 1991:55). The practice of setting fire to bamboo stands illustrates the careless way in which contractors and their employees<sup>16</sup> went about logging operations; the presence of such dense undergrowth and bamboo inside the concession also points to the insufficient implementation and maintenance of Timber Stand Improvement. The scarcity of good trees suggests that this operation took place in a secondary stand which had not sufficiently recovered, a practice which was illegal up until 1992. In that year, the Philippine government announced a logging ban in the country's last virgin forests.

This so-called "*Oplan Sagip Gubat*" (Operation Save the (virgin) Forest) led the DENR and concessionaires to make new inventories of residual forests, in order to assess whether commercial volumes of extractable timber were to be found in stands that had been logged less than 25 years ago. These inventories were carried out by independent Forestry Service Organizations and, in many cases, they produced volumes of standing stock only barely above the minimum post-harvest stock of 67 m<sup>3</sup> set by the government. With such dim prospects for profitable extraction in the short term, concession holders backed out of the new *Industrial Forest Management Agreements* put forward by the government after 1992, to replace the TLAs (Dr. A. B. Masipiqueña, pers. com. 1994)<sup>17</sup>

Illegal logging operations were invariably associated with Timber Licensing Agreements, particularly on the western slopes of the Sierra Madre. Contractors in the lowland towns of Cagayan Valley availed of the capital, equipment and manpower to conduct their own logging operations, both in existing concessions and in those that had been suspended, cancelled or voluntarily abandoned by the original holder. The origins of these illegal logging operations, locally referred to as *salabadiok*, lay in the breakdown of law enforcement in the corporate timber industry during the last decade of the Marcos administration. Army officials, bureaucrats, local politicians and foresters who were involved in the logging industry in Cagayan Valley during these years corrupted each other into package deals whereby violations of the law were tolerated in exchange for personal benefits. The fact that these benefits were directly proportional to the volumes of illegal timber involved acted as an incentive for poorly

<sup>16</sup> Asked whether he was not concerned about his employment once timber stocks were depleted, a bulldozer operator answered "no problem, then we go mining!" (H. Simons, pers.com., 1992)

<sup>17</sup> The main reason why many IFMA holders returned their concession to the government was the new regulation that required concessionaires to deposit an amount equivalent to 10% of the standing stock of commercial species to a special government account. This amount would be forfeited should the concessionaire be found to have violated the terms of the agreement. The low stocks reduced the deposit, but also led to a long period in which there was little or no return, and logging could only be resumed when new surveys indicated that stocks had adequately recovered.

paid local officials to even become active proponents of these deals (see also Chapter 6).

The following story from a female *salabadiok* operator in the town of San Mariano shows how the large amounts of money earned in corporate logging eventually encouraged her to become a logging entrepreneur herself. Baby Gonzales is the daughter of a landed family of former tobacco and sugar planters in Benito Soliven. When we met for the first time in 1990, she was already a well-known organizer of *salabadiok* logging operations, and she accompanied us on several field trips inside the Sierra Madre. She never failed to make use of these trips to promote her own business.

#### Box 4.6 Profile of a Salabadiok (illegal logging) entrepreneur

*"I used to be a secretary in ... [one of the TLA holders operating in San Mariano, GT]. During my stay with them, I started to sell slabs and other waste lumber from the sawmill, but after some time, I began to sell the real lumber and I found out there is much money in wood. In 1985/86 I started my own salabadiok operations; The NPA allowed me three trucks and asked for 300 Pesos per truck in taxes. I found some trucks in Bulacan, someone from this town financed my operations and I provided him with wood. It is very easy money! After paying the military and the DENR (each 200 per truck) I earned 12,000 Pesos just sitting here. My operations expanded quickly; between 1989 and 1991, I operated 23 trucks, 6 for the Mayor, 6 for me and a number for other people in town. I became a financier myself and my brothers and sisters also participated with some amount. I was getting 30 cents per board foot transported and with my 6 units (2.5 tons each), I earned 58,000 Pesos between March and June! Of course, there is the NPA, and the Army people and others to be bribed. We give them 100 to 200 for their coffee, some pocket money, we take them to a nice restaurant, things like that. We wait, because we know they have to take a rest, and then when it is midnight, we move...*

*The drivers like it very much to work for me in salabadiok, they earn double salaries and a free allowance of 1500 Pesos per load. Every five trips, one is for the boys [the truckdriver and the cutting crew, GT] If they ride a strong truck, they can get 2 trips per day. My challenge to them is to make a homerun: if they can reach 11 trips in one week; the number 11 is also for them. Every load is 1800 boardfeet, and so the financier made 10,000 pesos per load after paying everything (we were paid 9.8 Pesos per bft). But it is also risky for the financiers sometimes; there was this person who hired me and my surveyor to go to an area for salabadiok. But when we brought the bulldozer and the trucks inside we found the place he indicated was not good, we could not earn so much because there were only small diameters. We had to bring out the equipment and some lumber but not much. But I did not lose anything, I was already holding an advance to organize the operation. Once we are moving, the risk is on his part, and so he lost, not me....*

*In 1991, when San Mariano was placed under a logging moratorium, I bought three chainsaws and gave them to my some people here in Musinga. I also gave an advance of 2000 Pesos to each katsero (chainsaw operator, GT) and provided them with oil, gasoline and diesel for the truck. I wanted Narra only, no other species. But after two months, I was still waiting for the Narra. I found out they brought it down to San Mariano and delivered it to another buyer. They went back to supply me but it took them 6 months to get some, not all that I ordered. It is good I have one trusted man here [in the upland barangay of Musinga, GT] so that I could get back my chainsaws and make them produce. I am now renting my chainsaws to some other people, they pay 2 pesos per lineal feet". (Research diary, March 1996)*

The story of Baby Gonzales captures in a nutshell how easy and profitable large-scale mechanized timber extraction was. Attracted by these incentives, and using part of the revenues to hand out money to those charged with protecting public forests from private abuse, she was able to conduct logging operations on a considerable scale without any formal license or other official papers. The practice whereby TLA holders farmed out timber volumes to local contractors was replicated locally, as employees of these contractors acquired their own equipment and entered the concessions on their own. After 1990, when government policies towards corporate logging became increasingly restrictive, and illegal movements of heavy

logging equipment into the forest lands could no longer be hidden under the cloak of legal corporate logging operations, lowland entrepreneurs entered into direct timber production contracts with forest communities.

As in all corporate enterprises, both the revenues and the level of influence on the conduct of logging operations increased in proportion to the distance between the actors and the cutting area. In local terms, chainsaw operators were comparatively well off, with earnings around 1000 pesos (US\$ 40) per day during the logging season. A former TLA employee recalled the fiesta-like atmosphere surrounding the industry during that time:

*"During the logging days, we could be drunk all day and when the money was gone, we just went back to the forest.... Logging produced one-day millionaires: the manager of our sawmill was a pure Chinese, he was one of the richest Chinese in the Philippines, a business partner of 'Don' Alfredo Lim. He always arrived in his own helicopter".* (Research diary, March 1996)

Like the chainsaw operators and helpers in the forest, actors in the lowlands were also paid on the basis of boardfeet; however, given the volume of timber requiring the authorization of company foresters, government officials and other decision makers in the lowlands, their revenues could easily run into hundreds of thousands of pesos per season. Someone holding a timber license and farmed out his annual allowable cut of 20,000 m<sup>3</sup> (a modest amount for the seventies and eighties) to local contractors for an average royalty of 50 centavos per boardfoot would earn 4.3 million pesos per season. According to a conservative estimate, between 1970 and 1990 TLA holders and their contractors extracted timber worth at least US\$ 1.7 billion from the natural forests of the northern Sierra Madre<sup>18</sup>.

Once a sector consisting of a limited number of Manila-based concessionaires managing large blocks of forest lands, the large-scale corporate logging industry in Cagayan Valley was transformed into a conglomerate of local contractors extracting allocated volumes of timber from these concessions on the basis of volume-based royalty payments. Financial gains made by these contractors allowed them to organize and finance their own package deals of tolerated illegal extraction in and around these concessions, hiring workers from among the communities of pioneers and followers already settled inside the Sierra Madre. This *salabadiok* system changed again after 1990, as forest migrants themselves discovered the economic potential of timber extraction and began to enter into direct timber production contracts with buyers in the lowlands. This third timber extraction mode, carabao and waterlogging activities, which was initially carried out by forest migrants on their own initiative, is discussed in Section 4.6. In the late 1980s, when corporate logging was already declining, these originally illegal logging activities of forest migrants were integrated into the regular and *salabadiok* operations of lowland-based contractors, gradually all but replacing corporate logging as the sole legal mode of access to timber from natural forests.

#### 4.5.2 Actors in corporate logging

Apart from the diverse group of forest-based primary actors, including bulldozer and chainsaw operators, yarders, truck drivers and those working in the sawmills, there is an extensive set of secondary and tertiary actors with a certain degree of decision-making power in the corporate timber industry. As we saw in the methodological section of Chapter 2, it is debatable whether forest migrants and logging labourers should actually be classified as primary actors in corporate logging, considering the fact that many of them entered the Sierra

<sup>18</sup> Estimated volume extracted between 1970 and 1990, based on recorded extractable volume (assuming no illegal extraction): 26 million m<sup>3</sup> of prime species, valued at the 1980 price of 4 P/ boardfoot, converted into 1997 U.S dollars.

Madre as logging company employees. The owners of these companies, one might argue, had a greater decision making power in logging operations than the people on their payroll. As we will see in the course of this chapter, however, the methodological choice made in Chapter 2 to start the ranking of actors from those involved in problem-relevant activities inside the forest is not only consistent with the problem-in-context framework, but emphasizes the individual independent decision-making power of forest migrants. Unlike company workers involved in sawmilling, transport, processing and manufacturing, the forest-based timber-cutting teams rapidly went from salaried company employees to temporary wage-labourers and, still later, to independent sub-contractors, paid on the basis of timber volumes delivered to the company. The main actor categories involved in the corporate logging industry, presented in Fig. 4.1, are briefly described below.

#### TIMBER-CUTTING TEAMS

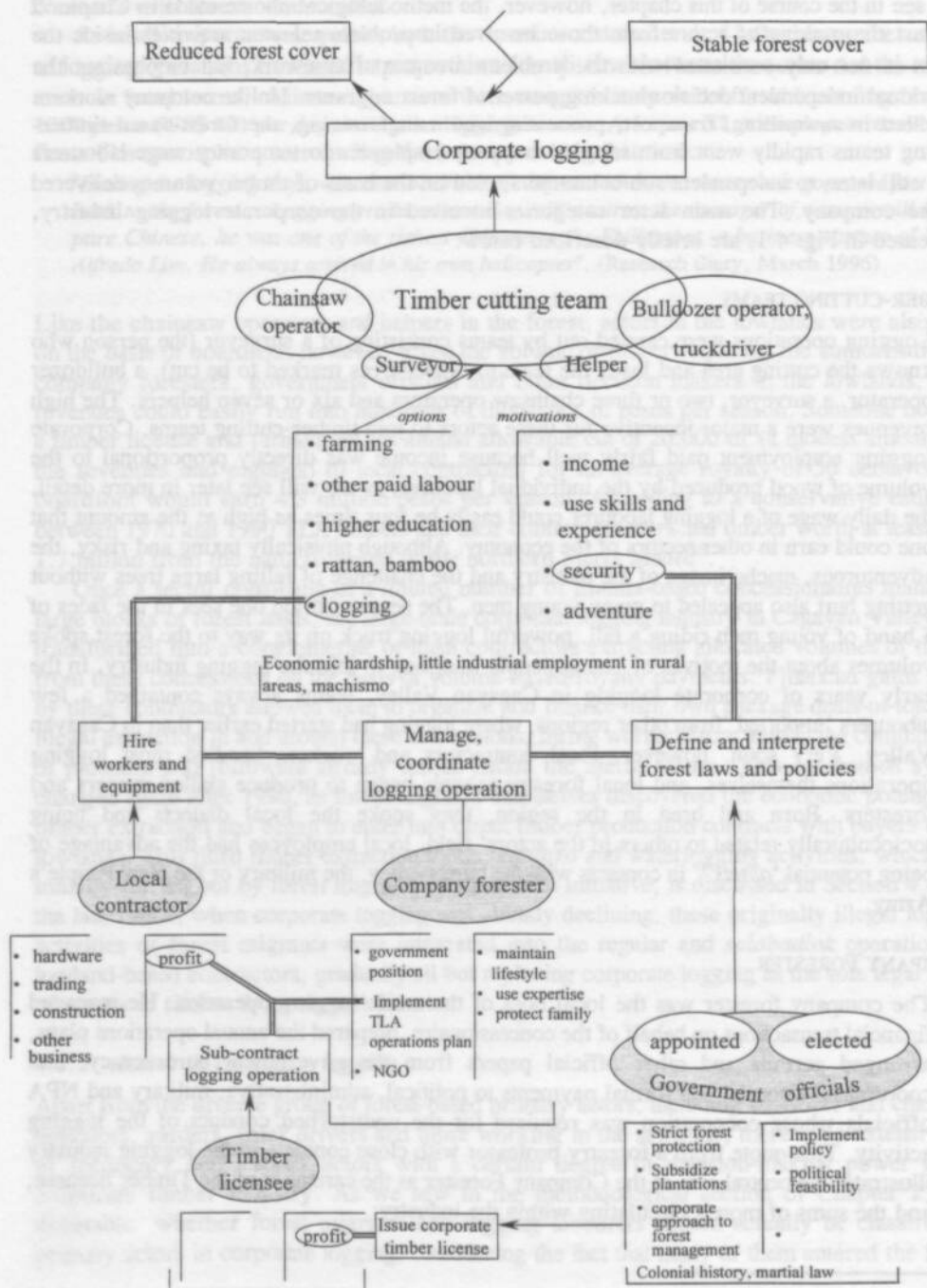
Logging operations were carried out by teams consisting of a surveyor (the person who knows the cutting area and leads the team to timber trees marked to be cut), a bulldozer operator, a surveyor, two or three chainsaw operators and six or seven helpers. The high revenues were a major incentive for these actors to join timber-cutting teams. Corporate logging employment paid fairly well because income was directly proportional to the volume of wood produced by the individual labourer; as we will see later in more detail, the daily wage of a logging labourer could easily be four times as high as the amount that one could earn in other sectors of the economy. Although physically taxing and risky, the adventurous, macho image of the industry and the challenge of felling large trees without getting hurt also appealed to many young men. The sense of pride one sees in the faces of a band of young men riding a tall, powerful logging truck on its way to the forest spoke volumes about the motives of young people in opting to join the logging industry. In the early years of corporate logging in Cagayan Valley, teams always contained a few labourers 'imported' from other regions, where logging had started earlier than in Cagayan Valley. Very soon, however, local contractors and workers handled most logging operations themselves, and local forestry schools began to produce skilled rangers and foresters. Born and bred in the region, they spoke the local dialects and being socioculturally related to others in the actors' field, local employees had the advantage of being potential 'assets'<sup>19</sup> in contacts with the bureaucracy, the military or the New People's Army.

#### COMPANY FORESTER

The company forester was the local boss of the entire logging operation. He managed financial transactions on behalf of the concessionaire, prepared the annual operations plans, arranged permits and other official papers from the government bureaucracy, and coordinated informal and formal payments to political, administrative, military and NPA officials whose cooperation was required for the undisturbed conduct of the logging activity. This quote from a forestry professor with close contacts in the logging industry illustrates the central role of the Company Forester as the caretaker of the Timber licensee, and the sums of money circulating within the industry:

<sup>19</sup> This term originated in the military anti-insurgency campaign; if somebody was referred to as an *asset*, this meant he had close contacts with the NPA. Later, the same term was used by government officials for key informants with contacts among politicians and businessmen associated with illegal logging operations.

Fig. 4.1 A basic actors field of corporate logging



*"The TLA holder would give an amount of 50 million Pesos to the Company Forester at the start of the logging season. With this amount, he could maintain peace in the concession area; the Company Forester was always a very popular man because nobody who visited him was disappointed."* (Research diary 1993)

#### Box 4.7 Profile of a Company Forester

Ramon lives in a large, two-storey house, built in 1989 along what is jokingly called 'millionaires' lane' in the lowland town where he was born. Both he and his neighbour recently built ostentatious houses with money made in a mix of legal and illegal timber businesses. His house has steel bars on all the windows for protection, its walls are covered with thin layers of coral sheet. It is dark inside the house because walls, floors, ceiling and furniture, as well as a massive staircase to the second floor are made of Narra, the most desired species for Philippine interior decoration. Tonight, Ramon is comfortably seated outside in a small Spanish smoking chair with his feet up, and he is facing two lines of men seated around a long table. Helpers serve beer and *polutan*, while he cuddles his son. He shows me a large scar on the boy's face; recently, while playing with his father's gun, he nearly shot himself through the head.

Between 1980 and 1992, Ramon was the most influential Company Forester in the region, managing several concessions in Isabela. During the final years of the industry, he operated a few trucks of his own that transported logs from the area, which is how he amassed what a close friend refers to as his 'nest-egg'. When logging really went down, after 1992, Ramon established his own NGO, to handle consultancy work in foreign-funded environmental projects in the Forestry sector. Other than the director, the NGO employed no permanent staff. Experts are contracted from a nearby university, fieldwork is done mainly by young university graduates with temporary contracts. As the timber industry, formerly a major employer of forestry graduates, is laying off rather than hiring new personnel, his NGO offers a welcome new employment opportunity. Ramon is a well-known figure in the Department of the Environment and Natural Resources; as a Company Forester he used to visit the office regularly to liaise with the Forest Protection and Forest Utilization sections. Nowadays, he is seen mostly at the Foreign Assisted Projects division. Good contacts with the DENR are as essential for company foresters as they are for an NGO manager. Here, fellow forestry graduates administer the implementation of government-funded projects. One person he never fails to pay courtesy visits to is the Regional Executive Director. He, in turn, needs to carefully manage his relationship with Ramon, who is rich and has personal ties with the Governor and with several influential congressmen. After an attempt to start a political career himself in 1992, Ramon ran again for the post of mayor in a former logging town, and won in 1995. He continued to manage his

NGO, using it as a means to generate external financial assistance for development projects in his town. (Personal diary 1990-1998)

#### LOCAL CONTRACTOR

A local businessman who owns or rents the machines (bulldozer, trucks) and personnel needed for a corporate or *salabadiok* logging operation, and who has an informal understanding with the Company Forester whereby he extracts part of the Licensee's Annual Allowable Cut from the concession in return for a royalty. Logging contractors are often engaged in related businesses in the construction sector, such as wood processing (sawmilling, furniture, plywood), or the hardware trade.

#### GOVERNMENT OFFICIAL

The policy of the Philippine government to grant business corporations a temporary lease to extract timber from state-owned forests requires a bureaucratic system in order to monitor whether licensees are managing these leases in accordance with the conditions under which they are granted. Appointed government officials at the national, provincial and local level are charged with this task. Elected officials such as town mayors, governors, and members of the national House of Representatives make up the second category of government actors who are important for corporate logging activities: directly,

by defining relevant laws and policies, but also indirectly, through their influence within the bureaucracy. The latter role is part of the Philippines' longstanding tradition of patronage politics, in which electoral success depends on a combination of maintaining good relations with the business sector, whose financial support is indispensable for successful election campaigns, and projecting a credible image as a politician who will protect the poor from government policies which affect them economically. The interests of local politicians, such as the provincial governors and municipal mayors, inevitably conflict with those of appointed officials in the DENR, charged with protecting public property and natural resources from overexploitation by local campaign-funders and voters. Chapter 6 examines in more detail the interactions between these two categories of state actors on the implementation of forestry policies.

#### TIMBER LICENSEE

Those who held corporate timber licenses were urban businessmen, army generals and others in close contact with high government officials, including the President of the Philippines. They often resided outside the region, only arriving occasionally by private aeroplane or helicopter to meet with local staff or government officials. Throughout the martial law period, the most influential timber licensee in Cagayan Valley was 'Don' Alfonso Lim, who had supported and financed the political career of Ferdinand Marcos since the 1960s. He owned one of Cagayan's first corporate timber concessions, Taggad Industries, and later took over the management of two others (Pamplona Redwoods and Veterans Woodworks Incorporated). He also held shares in several others, including Southern Plywood, operating on the eastern slopes of the Sierra Madre, and the ACME group of companies, which included several other concessions in Isabela (Vitug 1993). By the early eighties, Mr. Lim's business conglomerate managed approximately half of the northern Sierra Madre.

### 4.6 Carabao logging<sup>20</sup>

#### 4.6.1 *The activity*

The term 'carabao logging' is used for a variety of local, and mostly small-scale modes of timber-extraction by forest migrants. The use of the carabao instead of heavy machines to haul wood products from the forest to the community or to a waterway, is the essential difference between these local methods and the large-scale, mechanized procedures described above. Other differences are related to the working power and physiology of the carabao:

##### *Distance to the cutting site*

A carabao has a limited action radius and needs to wallow almost daily. Local people say that a carabao cannot haul a load more than 15 kilometres at a time, but must rest for a while between trips.

##### *Extracted Volume*

The maximum load a carabao can haul is 54 bft of Narra (around 90 kg), and this limits the volume of timber that carabao loggers can extract during the dry season, as well as the diameter of the trees. Only skilled chainsaw operators know how to cut big logs into manageable planks that carabaos can haul.

<sup>20</sup> In addition to my own findings in the field, this paragraph consists of data gathered in the northern Sierra Madre by Millan and Dros (1997), Numan (1997), Kusters (1991) and Veth (1992).

### *Efficiency*

Due to the limitations of the carabao, loggers take away only the most valuable, dark core of the trunk. After the tree has been felled, the trunk is cut into pieces 6-10 feet in length and then squared or sliced, using a chainsaw. From an efficiency standpoint, this practice is wasteful, the more so because the trees cut by carabao loggers are generally younger and smaller in diameter. Only 30 to 40% of the total wood volume of these immature trees has commercial value, and the remainder is left behind in the forest. On the other hand, if carabao logging is not followed by conversion of the forest into farmland, this means that more nutrients can re-enter the forest nutrient cycle than in the case of corporate logging, in which sawmilling takes place outside the forest, and waste materials are processed into charcoal.

### *Access roads*

In order to transport forest products from the cutting site to the road, waterway or village, carabao loggers use tracks constructed by the bulldozers of corporate loggers. Without maintenance, erosion and vegetation regrowth eventually turn these tracks into trails, that carabao loggers can continue to use. Where corporate logging is still going on, carabao loggers have an additional advantage, since the carabao needs to haul the logs only to the nearest logging track, from where trucks are used to transport the wood the rest of the way.

In the past, carabao and corporate logging had a more or less symbiotic relationship. For the corporate industry, forest migrants and their carabaos offered a cheap, temporary workforce, as well as a scapegoat for its own poor record in forest protection. For carabao loggers, large-scale mechanized logging provided road access to additional old-growth forests, removed timber too big for carabaos to haul, and offered transport facilities to take their products from the cutting site to the lowlands. Carabaos were used to yard square logs, flitches and planks from the stump sites to the pick-up point along the logging road. In the commercial logging era, a carabao logger could penetrate deeper into the forest and make more trips, since it was easier for him to organize transportation to the lowlands, either through a friend who drove a company truck or by using a truck hired by his buyer. When commercial logging decreased in the early nineties, forest migrants became more and more aware of the limitations imposed by the use of a carabao. This led to a shift from premium hardwoods to lesser-known hardwoods and softwoods found within a 15-20 kilometre radius of the migrants' settlements.

During the wet season, from August to December, carabao loggers fell the volume they will sell the following summer, between mid-March and July. The loggers regard this as their investment in the next season; once a buyer comes, they can quickly come up with the volume required and recover the time and money invested. Other reasons for felling a certain volume of trees prior to sale are:

- 1) It is the surest way to appropriate a tree. Once a tree has been cut, there is an unwritten rule that says that no one who was not involved in its felling is allowed to touch it. Basically, the same principle applies to surveyors who discover a tree and leave their own mark on it, but this does not have the other advantages described below.
- 2) When a large tree is found in a difficult location (remote, steep slope, etc.), the buyer runs the risk of losing his investment if the timber can not be extracted. Trees may be offered to buyers wholesale or under a production sharing-agreement. In the first case, which is preferred by the producers, the buyer gets the whole tree and the team is paid in cash. In the second option, the producers get a share of the wood harvested, meaning that producer and buyer share the risk of production failure. The advanced felling of a tree ensures that

a wholesale deal is possible, because the buyer is already assured that the timber can indeed be produced.

- 3) The quality of the wood tends to improve in the first few months after felling; it will dry slowly, become lighter, and crack less easily after slicing.
- 4) Old cut is legally accepted as an exception to the enforcement of temporary or selective log bans. In other words, felling the tree makes it more likely that one can actually bring out the timber without getting caught by the DENR. CVPED case studies and DENR reports suggest that for every 100 households based in the uplands, there are at least 10 operating chainsaws (Kusters 1991; Millan and Macadangdang 1994; DENR official, pers. com. Oct 1994). Combining this figure with the total number of 30,000 households who make their home in the residing in the northern Sierra Madre in 1995, an estimated 3,000 chainsaws still operate here, producing at least 56,000 m<sup>3</sup> of timber per year<sup>21</sup>, roughly equivalent to the annual allowable cut of one corporate timber concession during the 1970s and 80s.

Barangays involved in carabao logging have distinctively higher numbers of carabaos than would be needed for the agricultural labour required in the croplands<sup>22</sup>. Averages of three or more carabaos per household are reported (CVPED Team IV 1994). Loggers keep so many animals because they not only haul logs, but also serve as a kind of savings account. Carabaos do not require a great deal of care: in the uplands, where there is sufficient grazing space around the settlement and hence no need to cut grass to feed them, a child can see to the animals' pasturing and wallowing needs. They also fetch a good price in the market: a one-year-old untrained male carabao fetches seven to eight thousand pesos in the local market, the equivalent of the average annual income in the uplands.

In addition to the commercial species mentioned in the previous section, carabao loggers also look for Narra trees. While the cutting of this tree is prohibited by law, Cagayan Valley has a thriving furniture industry which makes almost exclusive use of Narra as its raw material. One indication of the volume of Narra taken out by carabao loggers is that since 1990 they have been able to supply all the wood required by the furniture industry in Region 2. Huigen (1997:28), citing a project proposal by a local association of furniture producers, sets the wood requirement per furniture shop at around 1 m<sup>3</sup> per month. Although the total number of furniture shops is difficult to estimate, given the semi-legal character of Narra processing, the number of unregistered furniture shops is widely believed to equal the 1,000 shops registered with the Cagayan Valley Furniture Producers Association. Based on these estimates, the region's furniture industries process 24,000 m<sup>3</sup> of timber, mostly Narra, per year, a volume that could be sustainably produced by approximately 1,000 hectares of pure Narra plantations<sup>23</sup>, but which continues to be entirely extracted from the logged-over, natural forests of the Sierra Madre. The problem here is that the natural Narra stock will probably be depleted before the 35-year period has elapsed which is required to establish such a sustained-yield

<sup>21</sup> Based on the assumption that each of these chainsaws is used for 4 two-week trips per year, producing 2000 boardfeet of timber per trip.

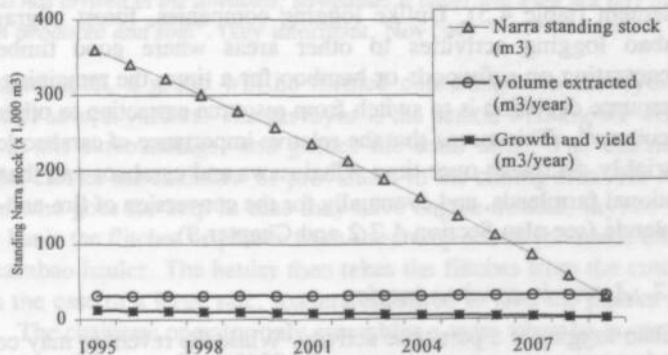
<sup>22</sup> During interviews, Forest migrants in Palanan, where commercial logging was banned in the seventies, joked that they could not go back to agricultural activities because their carabaos had been hauling flitches for so many years that they had forgotten how to plow (Dr. A.B Masipiqueña, pers. com., May 1994).

<sup>23</sup> Assuming 400 trees per hectare, harvested after 35 years, yielding 2m<sup>3</sup> of lumber per mature tree (8 metre bolt, 70 cm dbh) = 800 m<sup>3</sup>/ha/35 yrs = 23 m<sup>3</sup>/ha.yr. The annual demand of 24,000 m<sup>3</sup> is produced by 1000 ha of pure Narra plantation.

Narra plantation. Fig. 4.2 shows that the current volumes of Narra processed annually by the region's furniture industry are bound to cause a strong reduction in the natural Narra stocks of the Sierra Madre. The following assumptions underlie this graph:

- 1) The 24,000 m<sup>3</sup> of Narra timber used annually by the Cagayan Valley furniture industry is extracted from the 600,000 ha of residual dipterocarp forests on the western slopes of the Sierra Madre.
- 2) An average 1% of the overall timber stand is Narra; this means that of every 10 hectares of moderately stocked residual forest (60m<sup>3</sup>/ha), 6m<sup>3</sup> consists of Narra. (This is an optimistic assumption: DENR stand-stock tables in San Pablo showed Narra stocks of only 0.25 m<sup>3</sup> every 10 hectares, either harvestable or still growing).
- 3) An overall growth and yield rate (of all timber species) of 2 m<sup>3</sup>/ha.yr. This means that the growth and yield of Narra alone would be close to 0.02 m<sup>3</sup>/ha/yr (This is also higher than the figures put forward by a DENR/NRMP workshop in 1994, where it was estimated that every 10 hectares yield one extractable Narra tree (4 m<sup>3</sup>) every 30 years, or 0.013 m<sup>3</sup>/ha.yr).
- 4) A resulting aggregate Narra growth and yield estimated at 12,000 m<sup>3</sup> per year, declining linearly with overall stock decline. (It is assumed that extracted areas do not produce significant volumes of commercial Narra within the period considered here.)

Fig. 4.2 Projected Narra depletion, 1995-2010, Northern Sierra Madre.



One indicator of a rising awareness of timber scarcity among forest migrants is that carabao logging appears to be shifting from a free-for-all system of resource extraction towards exclusive systems of resource access, through the delineation of extraction territories. As in large-scale corporate concessions, these informal territories generally consist of an access route together with the forest resources located on either side of that route. One rattan-gatherer told me he that he found out about this so-called *area-area* system when he entered a trail to find rattan, and met some people there who refused to grant him entry, saying that they had already occupied that trail. Ever since, the man only gathered rattan in areas where there were no open trails. The 'owner' of one trail later told me that the *area-area* system succeeded the *kanya kanya* system practised earlier, whereby forest products were removed on a first-come, first-served basis. According to this trail owner, the *area-area* system was introduced by the NPA in 1992, after a conflict had arisen between carabao loggers over square logs that had disappeared from a trail. The *area-area* system applies exclusively to forest products, and cannot prevent the opening of new farmland. Should someone plan to develop a farm inside forest land claimed by the person who opened the trail, he is morally bound to respect the economic interests of the trail owner by opening up an area where there are few trees.

**Table 4.5** Distance from sitios Mansarong and Dy Abra to Narra-extraction areas

Year	Mansarong (km)	Dy Abra (km)
1989	n.a.	4.5
1992	7	7
1993	11	9
1994	17	10

(Source: Milan & Macadangang 1994)

Data from two migrant communities relying strongly on carabao logging confirm a depletion trend in Narra extraction, with commercial sizes found at ever greater distances from the settlement (table 4.5). Unlike logging companies, forest migrants cannot easily shift their carabao logging activities to other areas where good timber is still available. After concentrating on softwoods or bamboo for a time, the remaining response of forest migrants to resource depletion is to switch from resource extraction to other sources of income, usually agriculture<sup>24</sup>. This means that the relative importance of carabao logging as a source of income invariably decreases over time. Chainsaws and carabaos can then be used for the opening of additional farmlands, and eventually for the conversion of fire-and-fallow farms into permanent croplands (see also Section 4.7.2 and Chapter 9).

#### 4.6.2 *Actors in carabao logging*

Carabao logging is a part-time activity. While the revenues may constitute as much as 60% of overall household income (Huijbregts 1996:105), very few forest migrants spend more than 4 months a year on timber extraction. Thus the primary actors in this activity are actually the same people we will be meeting in the next section, dealing with upland agriculture, and in many cases the individuals who were introduced in the previous section as corporate logging labourers. Many forest migrants have successively played each of these three roles since they first entered the Sierra Madre. Carabao logging encompasses a variety of activities, ranging from surveying to cutting and hauling, and forest migrants participate to the extent their resources permit. Newcomers seldom have either a chainsaw or a carabao, and as a rule can only work as helpers, waterloggers (transporting logs and flitches from the cutting site to a pickup point), or surveyors, if they happen to discover a harvestable tree. Pioneers and followers, on the other hand, often have the means to organize carabao logging trips and thus earn the most from the activity.

Carabao logging entails close cooperation between forest migrants and the buyers (or their middleman) in the lowlands: the former must deliver the correct species and specifications at the appointed time, while the latter must deal with the risk of confiscation once forest products are on their way down to the lowlands, where they pass DENR and Army checkpoints on their way. With the exception of the 'investment' cut during the wet season, carabao logging teams only set out for the forest after an order has been confirmed through a cash advance from the buyer, often a furniture maker, building contractor or lumber dealer from the lowlands. While the loggers are out in the forest producing the appointed volume, the buyer makes arrangements in the lowlands to prevent the confiscation of his shipment:

<sup>24</sup> Migrants who enter the Sierra Madre with the specific intention of developing new farmlands for themselves or others may be more likely to move on to new frontiers, now that unoccupied and still forested lands are becoming harder to find. However, since people in this category make their living primarily from agriculture from the time they enter the forest, the depletion of forest products actually has little relevance for the decision to move on to a new frontier.

"The buyers in [...] are mostly from outside. They proceed there on Saturday; the buyer knows some of the people there very well and he will ask if there is good Narra, how far it is and if it can be taken. If the guarantor, usually the chainsaw operator, says 'OK', they will give him an advance. This is the 'proof of purchase' and the buyer will now send the truck. The average deal is 2000 bft at 15 Pesos per bft, and the advance would be 5 to 10,000 Pesos. Once the advance has been paid, the team has to go out and get the wood, since the financiers cannot afford to lend money that will take more than a month to realize a return. One of them is a rich man who lives in Malapit, and used to be employed by Veterans [the former concessionaire, GT]; he now owns two trucks and takes out Narra. He sells it up at Aparri, and from there it goes to Manila by barge. He prefers the nothern route because there is less risk of being caught giving bribes. The cutters do not get the rest of their money until the load has arrived in the lowlands; sometimes a buyer will even not pay them until the furniture has been produced and sold". (key informant, Nov '94)

Once the sale has been agreed upon, a group will be formed consisting of a surveyor, a chainsaw operator, a helper and several yarders. The surveyor is the person who knows where good timber can be found in the surroundings, and guides the team there. The chainsaw operator brings a helper, who carries the chainsaw or provisions to the cutting area. He may also be the cook and the one who goes for help in case they have engine trouble, say, or run out of kerosine. The yarder hauls the flitches or planks from the stump site to the road; either for pick-up by a truck or a carabao hauler. The hauler then takes the flitches from the cutting area to the place of sale. In the case of a large sale, loaders are hired to load the planks and flitches onto a logging truck. The chainsaw operator only assembles a team when he is certain of at least 400 bft. But given the minimum sale of 2000 bft, several teams may go out to bring back the volume sold. On average, one carabao logging team can produce 1,500 - 2,000 bft in square logs in one to two weeks<sup>25</sup> (Millan and Dros 1997). Much depends on the skill of the chainsaw operator, as it is his cutting technique which determines how much of the valuable core material of the tree can be recovered.

Although carabao logging sometimes serves subsistence purposes, such as the construction of a house or community building, it is primarily a source of cash income. As we will see later in this chapter, it offers the highest returns on labour of all the income-generating options in the uplands. The share of the harvested value one receives will depend on the quality and quantity of the product harvested, and on one's place in the team. Lumber prices vary according to species and the size of planks, flitches or round logs. A chainsaw operator can produce 60 bft of planks a day and around 140 bft of flitches. At the 1994 local selling price of Narra planks (18-19 Ph₱/bft), a chainsaw operator could make 500-1,000 Ph₱/day, enabling him to quickly recover the cost of a loan taken out for the purchase of a chainsaw<sup>26</sup>.

Despite the returns on labour, there are limits to the amount of time people can spend on carabao logging, mainly because of its seasonal nature. Other constraints are the risky nature of the work and the physical requirements, which mean that most carabao loggers are young, unmarried males. The semi-legal or illegal nature of carabao-logging and ultimately the dwindling stocks of commercial timber in the surroundings also reduce the total amount of time

<sup>25</sup> Dutch student Kusters (1991) estimates that one chainsaw can cut and slice approximately 10 trees per month, producing 2000 to 3000 boardfeet of commercial timber. I consider the higher rates given here more accurate, since they were given by a Filipino forester after a six months' study on carabao logging in two communities in the Sierra Madre.

<sup>26</sup> A comparison of the returns on labour of various livelihood options is given in Section 4.10. The figures presented there are based on 1994 lumber prices, which have risen with the increasing scarcity of timber as a result of the contracting corporate logging industry in the 1990s. Actual net returns on labour may be slightly lower after payment of formal and informal taxes to NPA, army and government officials (see Chapter 6).

spent on this activity. Numan (1995) reports that carabao loggers set out on a tree-cutting trip with a specific purchase in mind, for which they need the income generated by that particular trip. On the basis of my own interviews, I would venture to say that carabao logging is largely a demand-driven activity. While forest migrants may have a concrete objective in mind for the revenues generated by each trip, the decision to go into the forest is based primarily on an assured order from the lowlands, for the following reasons:

- 1) Cutting teams need a cash advance to buy petrol, oil and supplies to last them one to two weeks.
- 2) The timber buyer has to make arrangements with local DENR field officials to secure passage of the forest products at the checkpoints. It would not make sense for carabao loggers to set out for a trip until this has been done, since their pay also depends on the sale of the - processed - product.
- 3) Once the demand has been ascertained, forest migrants are eager to invest their time in such a prime cash-earning opportunity. Since most sources of cash income present themselves only during the dry season, the highest-paying job naturally gets priority, and farming chores may even be skipped or contracted out to other migrants..

Thus in addition to the cutting teams in the Sierra Madre, a preliminary version of the actors' field of carabao logging would also include the following actors (see fig. 4.3):

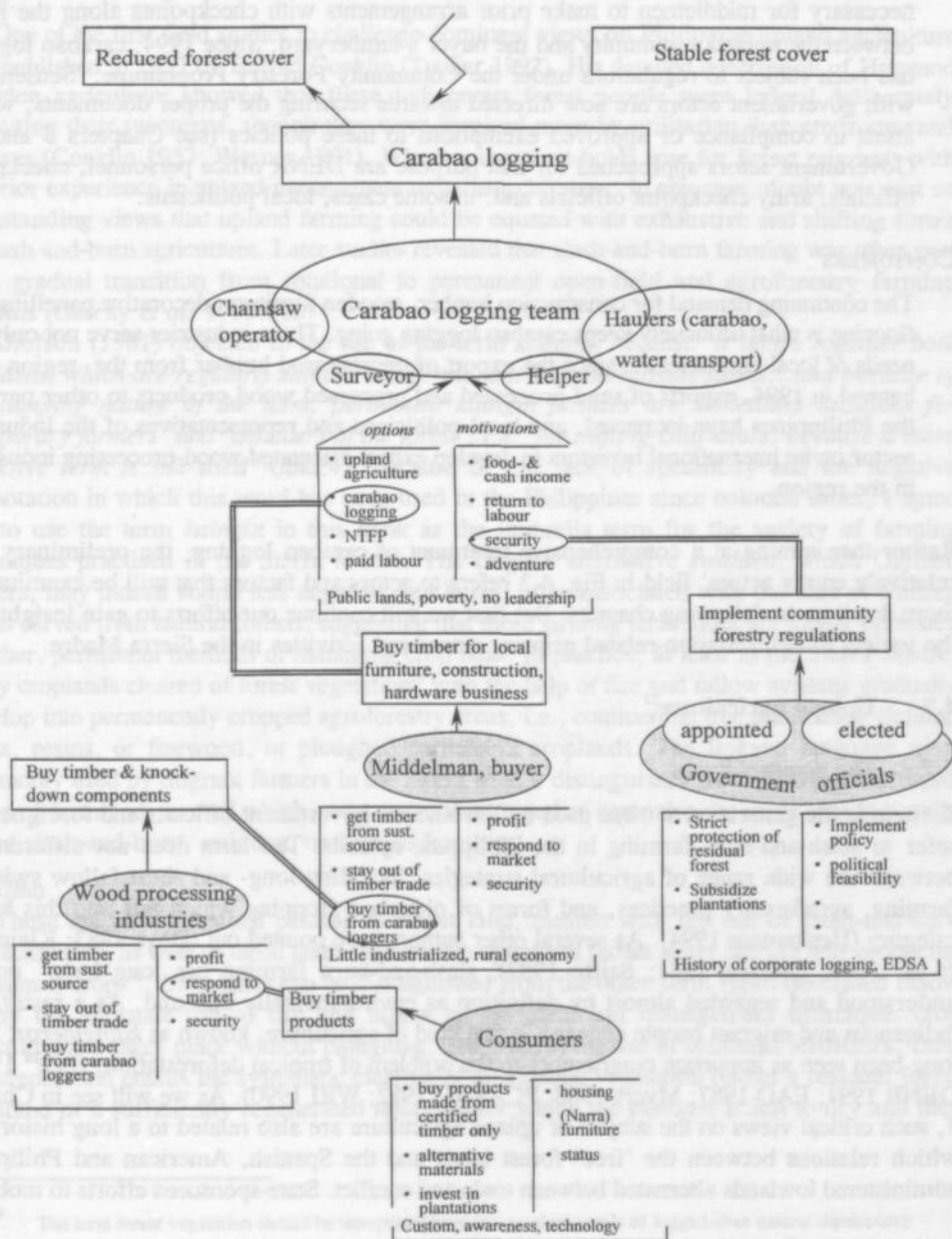
#### MIDDLEMEN/BUYERS

Middlemen are individuals with reliable contacts in the forest lands, who enter into deals on behalf of one or more buyers in the lowlands. Huigen (1997) distinguishes first and second middlemen: the first middleman is based in the upland barangay where the lumber is produced and organizes the logistics for a carabao logging team. The second middleman is a lowland-based trader/entrepreneur, who organizes lumber transportation from the forest lands to his lumberyard and distributes the volume produced among the buyers who are financing the operation.

#### WOOD-PROCESSING INDUSTRIES IN CAGAYAN VALLEY

Wood-processing industries in Region 2, such as furniture shops and construction industries, have traditionally depended largely on illegal sources of lumber. In addition to price considerations, furniture makers also relied on carabao loggers because of the strong customer preference for Narra products. Legal logging concessionaires were not allowed to cut this tree, after Marcos proclaimed it a protected national symbol. The construction industry was interested in illegal lumber because of cost savings, and because of shortages caused by the primary goal of TLA holders, which was to ship round logs and sawn timber straight out of Region 2 and on to destinations abroad. Thus most local wood-processing industries all started as more or less as 'hitch-hikers' of the legal logging industry. Depending on their skills and productivity, carpenters, varnishers and planers earn between 2,000 and 5,000 Pesos per month, while the salary of a master carpenter employee may reach 7,000 to 8,000 Pesos per month (Huigen 1997) The various jeepneys and ostentatious houses owned by some these shop operators suggest that the production of furniture, woodnedn tiles, carvings, panels, knock-down stairs and other specialty wood products continues to be highly profitable. Due to the uncertain supply of raw materials, the industry ived, and continues to live, under an umbrella of political patronage and has gradually become better organized by setting up its own association (see Section 5.2.2)

Fig. 4.3 A basic actors field of carabao logging



## GOVERNMENT ACTORS

Policies governing the extraction of forest products by forest migrants have only recently been formulated; until the early 1990s, carabao logging was entirely illegal, making it necessary for middlemen to make prior arrangements with checkpoints along the route between the upland community and the buyer's lumberyard. Since 1994, carabao logging has been subject to regulations under the Community Forestry Programme. Settlements with government actors are now directed towards securing the proper documents, which attest to compliance or approved exemptions to these policies (see Chapters 5 and 6). Government actors approached for that purpose are DENR office personnel, checkpoint officials, army checkpoint officials and, in some cases, local politicians.

## CONSUMERS

The continuing demand for construction lumber, wooden furniture, decorative panelling and flooring is what ultimately keeps carabao logging going. These industries serve not only the needs of local consumers: since the export of unprocessed lumber from the region was banned in 1994, exports of semi-processed and processed wood products to other parts of the Philippines have increased, and local politicians and representatives of the industrial sector invite international investors to develop export-orientated wood-processing industries in the region.

Rather than aiming at a comprehensive treatment of carabao logging, the preliminary and relatively empty actors' field in Fig. 4.3 refers to actors and factors that will be examined in more detail in the following chapters. But first we will continue our efforts to gain insight into the variety of deforestation-related primary actors and activities in the Sierra Madre.

4.7 Upland agriculture<sup>27</sup>4.7.1 *The nomenclature*

*Kaingin* is the generic term often used by lowlanders, government officials and foreigners to refer to slash-and-burn farming in the Philippine uplands. The term does not differentiate between the wide range of agricultural strategies, including long- and short-fallow swidden farming, agroforestry practices, and forms of ploughed cropping which fall into this broad category (Henkemans 1994). As several other authors have pointed out (Dove 1983; Kleinman *et al.* 1995; Olofson 1981; Sajise 1982), slash-and-burn farming has long been poorly understood and regarded almost by definition as environmentally unsound. As a result, the indigenous and migrant people engaged in this kind of agriculture, known as *kaingineros*, have long been seen as important contributors to the problem of tropical deforestation. (Bee<sup>28</sup> 1987; DENR 1991; FAO 1987; Myers 1988; PCARRD 1982; WRI 1990). As we will see in Chapter 7, such critical views on the subject of upland agriculture are also related to a long history, in which relations between the 'free' forest lands and the Spanish, American and Philippine administered lowlands alternated between trade and conflict. State-sponsored efforts to mobilize

<sup>27</sup> Important contributions to the material presented in this section were made by Dirkx (1995), Doedens (1992), Dros (1995), Numan (1995), Romero (1991), Veth (1992), Wedda (1992) and Van Voorthuizen (1995).

<sup>28</sup> To avoid confusion, in my references to the work of Ooi Jin Bee (1987) I will conform to the practice of other authors (Eder 1989; Kummer 1992c), who use his given name Bee, and not his family name Ooi in their citations.

forest lands and resources intensified in the early twentieth century, when the United States introduced the Philippines to scientific forestry and large-scale, mechanized logging, making upland farming even less compatible with government views on how best to manage the forest lands.

One of the first field studies to challenge dominant views on Philippine upland agriculture was published in 1957 by Harold Conklin (Tucker 1992). His detailed description of Hanunoó swidden agriculture showed that these indigenous forest people were indeed deliberately managing their resources, though they were inspired more by utilitarian than environmental motives (Conklin 1957; Warner 1991). Whether the same holds true for forest migrants with no prior experience in upland management remains to be seen; in any case, doubt was cast on longstanding views that upland farming could be equated with exhaustive and shifting forms of slash-and-burn agriculture. Later studies revealed that slash-and-burn farming was often part of a gradual transition from rotational to permanent open-field and agroforestry farming systems (Garrity *et al.* 1993:560)

Olofson (1981) objected to the use of the term *kaingin*, because "it lumps together both swiddens, which are regularly shifted, and permanent or fixed-hillside farms...and because of the lumping nature of the term, permanent *kaingin* farmers are sometimes mistaken for "temporary farmers" and "denuders of the forest", i.e., for shifting cultivators, because a more objective term is not used" (*ibid*:4). Because of this lack of specificity and the negative connotation in which this word has been used in the Philippines since colonial times, I opted not to use the term *kaingin* in this book as the umbrella term for the variety of farming techniques practised in the Sierra Madre. The English alternative *swidden*, which Olofson prefers, may indeed sound less negative, but is still often associated with the idea of shifting farms carved from natural forests, suggesting that these farming techniques are totally unrelated to other, permanent methods of managing crop land. In practice, at least in the Sierra Madre, many croplands cleared of forest vegetation<sup>29</sup> with the help of fire and fallow systems gradually develop into permanently cropped agroforestry areas, i.e., commercial tree plantations yielding fruits, resins, or firewood, or ploughed permanent croplands. The Ilokano language most commonly used by migrant farmers in the Sierra Madre distinguishes the following four basic types of farmland, two of which, *uma* and *ublag*, together comprise the stage that is usually called slash-and-burn, swidden, or *kaingin* farming:

#### 1) *Uma*

These are newly opened patches of forest land, cleared with the use of slash-and-burn techniques, as well as those lands which were opened in recent years and are still producing annual crops<sup>30</sup>. *Uma* lands can be distinguished from the other farm types described below by the alternate use of fire and fallow as the main soil management technique: crop cultivation takes place without ploughing, and without the use of chemical fertilizers. *Uma* preparation entails the systematic clearing of all existing vegetation (either a residual forest stand or a sufficiently regenerated *ublag*), after which the biomass is left to dry and then

<sup>29</sup> The term forest vegetation should be interpreted here as: residual stands of logged-over natural dipterocarp forest. The conversion of primary forest into farmland by forest migrants is highly exceptional in the Sierra Madre, not least because over 80% of the old-growth forests in these mountains were logged between 1970 and 1990.

<sup>30</sup> Peters (1995) and Van der Veen (1997), who conducted fieldwork among Ilokano and Ifugao migrant settlements in the province of Quirino, use both *uma* and *bakher* to refer to a patch of newly opened - and cultivated - forest land; the name of the patch changes into *sipsip* once the second and consecutive crops are cultivated on these lands, and becomes *ubla*, once the land is left to fallow. Once an *ublag* area is reopened for agriculture, the area is referred to as *palompong*.

repeatedly burned. As a rule, a mixture of grain, vegetables and perennials is produced on these fields, until grasses and vegetation regrowth make the cultivation of annuals less feasible and a new *uma* needs to be opened up. Many *Uma* lands still have a few trees from the original forest cover that were tall enough to survive the burn, despite fire-damaged trunks.

#### 2) *Ublag*

Regenerating fallow areas that have been used as *uma* at least once before. Older *ublags* that have been repeatedly opened up are left to fallow for a longer period and thus have more small trees, shrubs and bamboos on them. Henkemans (1994) mentions the local practice of planting *ublag* areas with banana trees and other perennials (coffee, papaya, pineapple), in order to earn some income from these lands. In other cases, banana trees are introduced directly after the first burn, and only old, unproductive banana trees are still visible between the regenerating forest vegetation. The duration of the fallow period ranges from two to seven years.

#### 3) *Bangkag*

Lands devoted permanently to agriculture. The essential difference with *uma* is that the land is ploughed. The switch to plough-based farming can only take place after roots and stumps have decayed sufficiently, in other words, after several fire-and-fallow cycles. Rain-fed agriculture takes place here, and often fertilizer and agrochemicals are applied. Moderately sloping, undulating areas are preferred.

#### 4) *Talon*

These are irrigated lands, mostly under wet rice varieties, located in inner valleys and other low-lying areas near a spring or natural watercourse. Highly suitable for agriculture, they are the first forest lands converted into farmlands.

The main distinction between *uma* farming and the other types is that in the permanent croplands, fire-and-fallow cycles are replaced by ploughing in order to prevent forest regeneration, limit competition between weeds and the agricultural crop, and improve soil fertility. The farming practices commonly employed on *uma* and *ublag* lands are highly relevant to our understanding of the deforestation problem under discussion here. As a rule, these practices retain the possibility for forest regeneration, although steep *ublag* areas with shallow soils that are given only short recovery periods before being turned into *uma* land again are more prone to the adverse environmental impacts of deforestation, such as the loss of forest habitat, watershed degradation and downstream sedimentation. For this reason, the remainder of the present section will explore in more detail the various *uma-ublag* systems practised in the Sierra Madre. In Chapter 9, which discusses the increasing production of commercial agricultural crops in the Sierra Madre, especially hybrid corn, the role of *talon* and *bangkag* agriculture will be examined.

#### 4.7.2 A closer examination of crop-fallow sequences

*Uma* farming involves two cropping periods: a dry-season crop planted in April or May and a wet-season crop planted in October or November. Traditionally, the wet season crop is regarded as the first and most important crop; just after clearing, the soil is fertile and free of weeds, conditions which are particularly important for the principal crop cultivated in the *uma*: upland rice. The second crop, which is harvested in the dry months of February and March, is usually beans or peanuts, as during the wet season these crops are easily affected by rot and moulds. The cropping sequence of upland rice and beans is common on *uma* farms in the Sierra Madre. A generic cultivation calendar for two cropping periods in the *uma* farm appears in fig.

4.4. After the first year of cultivation, farmers can choose from a wide range of cropping and fallow sequences, as we will see in the course of this section. The opening of a new *uma* farm involves the following sequence of activities<sup>31</sup>:

#### 1) UMA SITE SELECTION AND CLEARING

During the final months of the rainy season, when the rains are becoming less frequent and the cool northeastern winds still prevail in Cagayan Valley, upland farmers select a forest patch and slash its vegetation in preparation for the burn. Clearing must be completed by early March, when the dry season starts and the cut vegetation has to dry for one to two weeks to ensure a quick, hot burn. The patch to be cleared may be either an *ublag* area which the farmer considers adequately recovered or a patch of residual forest vegetation that is to be cleared for the first time. With the exception of certain areas in Quirino and on the Pacific slopes, almost all *uma* clearings are in logged-over stands. This makes clearing easier, as these forests contain only a few "forest giants" of the kind Conklin saw being felled by the Hanunóo in Mindoro (Conklin 1957). Probably because of the labour involved in clearing primary forest, residual stands were also preferred by these traditional shifting cultivators. Thus in the three seasons which I observed, only 7 swiddens were opened in primary forest, compared to 155 in secondary stands (*ibid*:61) The following criteria were weighed in the selection of the forest patch to be turned into *uma* land:

##### - *Accessibility, Distance to the house*

*Uma* fields are preferably located within walking distance, so that the hike from the house to the farm and back can be made daily; this usually involves walking to one's farm in the early morning hours between six and eight o'clock, and travelling back between four and six in the afternoon. As in carabao logging, this limits the access from a given upland settlement to a radius of 10-15 kilometres around that settlement<sup>32</sup>. Simons (1992) mentions that accessibility and distance are also important because of security considerations related to the unstable Peace and Order situation.

##### - *Customary Ownership*

Most people avoid opening up an area that informally belongs to another family, unless one has the permission of the owner to do so (often on the basis of an informal sharecropping agreement). Land becomes someone's informal property when he has cleared it of the natural vegetation (*i.e.*, before actual cultivation). This informal rule is based on the relatively large investment in - hired - labour that clearing requires, in comparison with the other stages of *uma/ublag* cultivation.

##### - *Slope and elevation*

Flat and rolling lands are cleared first, since they have the best potential to be turned into permanent crop lands, and ultimately be classified and titled as such. Where these lands are already occupied, which is usually the case when newcomers settle in established forest communities, steeper areas also qualify, as long as other criteria are

<sup>31</sup> A more detailed analysis of upland farming in the forest lands of Quirino may be found in the forthcoming dissertation of Esther Moonen (see also Moonen 1998).

<sup>32</sup> A limited number of cases have been reported in which migrants have moved their residence to a new location in the proximity of new 'convertible' lands with good agricultural potential (Doedens, 1992).

met. Some upland farmers even prefer steep slopes<sup>33</sup>, because they are easier to weed (no need to bend over), or because the slope is expected to provide shelter from a typhoon (Doedens 1992: 46).

- *Soil type*

A deep brown soil with a fine texture is preferred. Red, acidic soils degrade quickly and require a great deal of labour to protect the crop from competition by cogon grasses, which sprout on these soils after only one or two cropping seasons.

- *Vegetative cover*

A farmer who owns a chainsaw can open up a piece of forest that still has a fairly high biomass and bigger standing trees. Those who can afford to invest labour and money in the opening-up of residual forest do so because this offers the prospect of achieving a higher yield after the first burn, when the ash of the residual forest and the fresh topsoil ensure good fertility. Dros (pers. com. 1995) tells of an upland farmer in Amistad, Cagayan who chose to clear an area of rather well-stocked secondary forest, using his chain saw, rather than to convert his large, flat area of *ublag* to *bangkag*. The clearing of the forest entailed so much additional work that the entire first cropping season was missed, but the farmer was convinced he would be better off with his new field, as yields in the coming seasons would more than compensate him for his investments. On the other hand, the additional labour and capital expenses for the use or rental of a chainsaw represent an investment that not everyone can afford or is prepared to make. Poorer and smaller households therefore prefer areas with few grasses and a good number of small trees. The presence of bamboo stands is a sign of good soil fertility (Wedda 1992).

The decision to clear either a new patch of forest or an *ublag* has to do with the time which has elapsed since the migrant started to farm. New migrants obviously do not yet have the option of re-opening an *ublag* of their own, even though they might prefer to do so, given their limited labour. Clearing an *ublag* requires less labour than the opening of a residual forest stand. On the other hand, some of the advantage in terms of the required labour is lost in the course of the season, when more weeding is required on re-opened fallows than on newly cleared forest soils. One way of remedying the shortage of labour during the busy clearing season is to rent a chainsaw. The use of a chainsaw cuts the labour requirement in half: a man with a chainsaw can clear one hectare of secondary forest in 20 to 30 days, a job that would otherwise take about two months. Renting a chainsaw costs 70 to 100 pesos per day, excluding gas and oil, or the equivalent of two days' work as a farm labourer. For many newcomers, such an investment is neither affordable nor economically rational. Since cash is scarce in these households, every day of labour saved by the use of the chainsaw has to be repaid by working two days for the chainsaw owner later. Sometimes payments in the form of labour are made during the clearing season, by using the chainsaw to open up a patch for its owner.

Thus migrants who settle in areas where pioneers and followers have already converted most of the nearby forest lands into *uma* and *ublag*, and who cannot afford to hire a chainsaw to open up a new *uma* of their own further away often ask a pioneer for permission to re-open one of his *ublag* lands, either buying the user rights for a lump sum, or settling for a sharecropping agreement with the person claiming customary ownership to the land on the basis

<sup>33</sup> Conklin observed the same preference among the Hanunóo: "sometimes activities connected with felling, burning and weeding are a good deal easier if the site is on sloping rather than on relatively level land" (*ibid*:38). The average slope of the lands cleared by these indigenous forest people was 43-60%.

of the labour put into the first clearing. Newcomers (such as the Ifugao described in Box 4.4) who, like the pioneers in the fifties and sixties, opt not to settle in the proximity of the last settlement, but rather to leapfrog beyond it to a spot where unoccupied convertible lands are still found, initially clear between 0.5 and 1 hectare of forest every year (Dirkx 1995; Doedens 1992; Dros 1995; Simons 1992), until customary ownership has been established of a total area of *uma* and *ublag* lands amounting to four to six hectares<sup>34</sup>. At the same time, each upland community has its own small group of enterprising early migrants who claim ownership of estate-like areas of converted forest land. Since their arrival in the Sierra Madre in the sixties, two pioneers in Pauikan and Amistad had opened up 165 and 130 hectares of forest respectively (land which was partly idle or cultivated by others), on the basis of paid labour or sharecrop tenancy (see also Section 4.9.1).

The physically demanding work of forest-clearing is typically carried out by the men, especially in residual forest where trees have to be cut with chainsaws and axes. In the case of more lightly vegetated *ublag* areas, which can be cleared using bolos, women and children play a larger role, especially at times when the dry spell started late and rapid clearing is needed to ensure a good burn before the planting season. Women and children remove bamboo, smaller vegetation and weeds, which must be cleared before the bigger trees are felled. Cut bamboo poles are placed upright against trees which are too tall to fell by *bolo* or axe, thus enabling the fire to consume the crowns and prevent them from shading the crop after planting.

Clearing starts at the bottom of the nearest unoccupied and unclaimed slope, preferably in the proximity of a water source. In the following year, the clearing moves sideways the nearest creek, and up again until the boundary of the adjacent settlement or watershed is reached. The next move is upslope again, and the pattern repeats itself, until the household decides it has all the land it can handle for crop production, or until all forests within hiking distance have been converted. Clearing must be thorough and complete, even around creeks and on hilltops where only marginal cropping is possible. If there is a thick vegetation cover in an area selected for *uma*, that area may even be burnt before clearing, to facilitate the work (Wedda 1992). Farmers give the following reasons for the complete and rapid clearing of residual forest during the early years after settlement:

- The staple-production priority of newcomers, due to financial hardship and distance to markets, requires the fertile soil of a newly opened *uma*. On older *uma* lands, upland rice is choked out by a regrowth of forest vegetation and cogon grasses (*Imperata cylindrica*).
- Customary law<sup>35</sup> among forest migrants prescribes that public land belongs to the person who 'improves' (read: clears) it first. Cases have been reported of areas locally regarded as the property of the person who cleared them 25 years ago and left them to fallow ever since (Dros 1995:68). By spending the first years of one's stay in the forest opening up land rather than intensifying on land already cleared, a forest migrant appropriates more land for future use or sale. In pioneer settlements, where land scarcity is perceived as imminent due to the arrival of many newcomers, speculative land clearing may result<sup>36</sup>.

<sup>34</sup> cf. Table 4.2 for average areas of farmland per forest-based household recorded by the 1987 RP-German survey.

<sup>35</sup> This customary law was also a formal government law during the American period and the early years of independence, when the homestead law allowed landless families to occupy and use - though not own - a maximum of 24 ha of public land if they had cleared it of its natural vegetation (see also Chapter 8).

<sup>36</sup> During a field trip to Quirino in the summer of 1993, I encountered Ifugao clearing crews, who were continuously opening up secondary forest stands for well-established migrants. Due to the increasing number of new arrivals, the notion

- Migrants call this sideways expansion "*the run for the boundary*", referring to the maximum width of the strip which will later be cleared in the upslope direction. The slope upward from the current clearing is called the *abanti* and is considered the property of the person who opened the first clearing at the foot of that slope (Peters 1995: 15). By reaching the boundary first, the width of the strip to be cleared in years to come is maximized<sup>37</sup>.
- Steep slopes around creeks are attractive for both clearing and farming: there is no need to bend, and one can work in an upright position.
- A good burn is hot and quick; steep slopes create long flames that climb quickly; the burn can be completed within an hour.
- There should be no vegetation left near the croplands, as these will become hiding places for rats and monkeys
- Competition for light; during the dry season, remaining tree crowns would prevent the drying of the cut vegetation and thus interfere with a good burn. During the cropping season, trees take light away from the crops on the ground.

The first burn takes place a few weeks after the dry season has set in, usually during late March or early April. By this time, the cut vegetation has dried well and a good burn is assured. The timing of the burn is critical: it is important to wait long enough for the slash to dry adequately, but there is always the risk of an early onset of the rainy season. Bad timing may render an entire clearing useless. The fire is started in the lower part of the *uma*; before doing this, fire lines are established around the borders of the prospective *uma*<sup>38</sup>. Farmers who have selected neighbouring *umas* coordinate their prospective burning dates. The burn is always initiated during the hottest hour of the day, around noon. Dew prevents a good burn in the early morning, and the evening is less attractive because winds tend to shift rapidly once the sun goes down (at dusk it either picks up or drops completely, both unfavourable conditions during burning).

If the clearing is completed early or the monsoon arrives late, successive burns are conducted to reach a more complete clearing. After the first burn, preparations are made for remedial burnings by placing piles of half-burnt branches and other vegetation around the trunks of bigger trees. These consecutive burns may be prepared and carried out by the women and younger members of the household, if the man has work to do elsewhere. Scorched stumps are not removed from the field unless they are valuable species or are needed for fuelwood. Clearing remnants from the field also serves to mark one's claim to the land.

Migrants from the Cordillera bring with them the skills and knowledge required for the proper clearing and burning of a forest patch; neither their fellow migrants from the lowlands nor the Agta had previous exposure to this technology. One Ibaloy farmer expressed his role as a slash-and-burn extensionist as follows:

*"It is really hard to burn an area well. Sometimes it takes six times before one can be sure that the forest will not come back. I am an expert in burning but there are many who do not know how to*

---

of future land scarcity began to take hold among these early migrants, giving rise to speculative clearing. The crews were paid 1,500 pesos (\$60) for each hectare cleared (Research diary, March 1993).

<sup>37</sup> One key informant told me that some migrants even '*take advantage*' of this customary mode of appropriating forest for future clearing, by burning a strip of land around a particular forest area with the idea of claiming everything within that line as theirs for future clearing (Research Diary, March 1996).

<sup>38</sup> The risk of an uncontrolled forest fire is not imaginary, especially in poorly stocked logged over forest; the partially opened canopy causes higher temperatures and lower humidity and an overall desiccation of forest foliage and of the lower vegetation-layers.

do it. For example the Agta. Before we came here they did not even know how to make *uma*. But we educated them, and now they know how to clear and burn also" (Research diary, 1992)

Several authors have pointed out the beneficial effects of burning for crop cultivation, such as the deposition of part of the burnt biomass on the topsoil, which lowers acidity and raises levels of essential nutrients such as calcium, potassium, phosphorous, and magnesium; much of the nitrogen and sulfur contained in the biomass oxidize into gaseous compounds (Andriess 1987; Kleinman *et al.* 1995, see also Section 4.6.3). The topsoil is also believed to develop a more favourable structure, while the crop is less affected by weeds and diseases, many of which are destroyed by the fire (Rambo 1981, cited in Peters 1995; Sajise and Fujisaka 1986). The labour-saving effect of fire has also been widely acknowledged; although clearing remains an arduous and time-consuming activity, fire is the fastest way to remove slashed forest or grassland vegetation, while postponing regeneration long enough for cropping to become feasible. Another factor which used to motivate upland tribes to burn their fields was the belief that this would drive away bad spirits. Some trees, such as the Balete (*Ficus balete*), are traditionally seen as a dwelling place of spirits (Wedda 1992:56). Cutting these without having first made an offering to the spirits was believed to bring illness and misfortune to the person involved. While it is unclear what role these animistic elements still play in the decisions of forest migrants on future land use, especially those from the Christian lowlands, their influence can not be ruled out.

## 2) PLANTING AND WEEDING

A variety of crops (see table 4.6) and cropping patterns are found on upland farms. Most often, the first crops planted in the *uma* after clearing are upland rice and beans or upland rice and bananas, often intercropped with a host of minor crops. If bananas are planted from the first crop onwards, farmers are forced to clear new forest during the next dry season, because rice yields are impaired by the shade of the banana trees, which take from 10-18 months to become productive (Huijbregts 1996:103).

**Table 4.6 Yields of common upland crops**

Crop	Yield Estimates (kg/crop/ha)	Source
Hybrid Corn (yellow)	565-718 (no agrochemicals)	Dirkx 1995
	1,260 (with agrochemicals)	Dirkx 1995
Trad. Corn (white)	500-1,000	Veth 1990
	400-1,000	Kusters 1991
Upland rice	357-365	Dirkx 1995
	782	Bakker 1995
	1,000	Romero 1991
Peanut	300	Bakker 1995
	550-650	Kusters 1991
Mung bean	250	Dros 1995
Sweet potato	10,000	Dros 1995
Ginger	1,500	fieldwork '96
Banana	2,000	Dros 1995
	43,000 pc/ha	Polet 1991

Other crops commonly grown on upland farms in the Sierra Madre are:

Annuals: watermelon, Baguio beans, pumpkins, okra, ampalaya, eggplant, tomatoes, chillies and tobacco.

Tree crops: jackfruit, papayas, horseradish, mangos, mandarins, kalamansi, pomelos, santol and coconut.

Upland rice germinates after the first rains have fallen. It is sown in newly opened *uma* lands at the onset of the rainy season, normally in May but sometimes (as in 1992) as late as July. The month of April is considered too hot for planting, but as soon as the first rains arrive, sowing and planting should start to give the agricultural crops an advantage over the weeds. The man makes holes in the soil about 5 cm deep and 10-15 cm apart, using a wooden pole. Behind him, women and children plant a few seeds in each hole and then fill it up with a little soil. Sometimes, an offering is made before planting begins. This might be done in order to please the spirits, the so-called '*patunib*' offer that Tingguian migrants in one settlement in the Sierra Madre still practice. A household member plants a few seeds in the field on the afternoon before the actual planting takes place. This is expected to have a positive effect on yields and to drive away evil spirits from the field. Again, these rituals are only practised by elderly migrants from upland areas; neither their offspring nor Christian migrants from the lowlands attach any great importance to these religious traditions of upland agriculture (Wedda 1992:51)<sup>39</sup>

For forest migrants with a tradition in upland farming, such as the Ifugao, upland rice is the undisputed first crop on the *uma*. The drawback is the fact that it requires a relatively high labour investment in return for modest yields, around 500 kilograms of unhusked *pagay* (II.) per hectare, roughly half the amount of cereals consumed annually by a five-member household. Due to its small leaves, upland rice has more trouble competing with weeds. During the first cropping season on newly opened land, this drawback is not yet serious, as fertility is high and weeds are themselves still recovering from the burn. Depending on the quality of the soil, consecutive crop yields are bound to be more seriously affected by weeds and declining nutrient levels. In addition, it is not advisable to plant upland rice where neighbouring farmers opt for a different crop, since birds would cause high losses in the few areas where rice is growing. Furthermore, a second crop of upland rice can only be cultivated with some success if the *uma* has remained relatively free of *cogon* grasses, which become harder to suppress when soil fertility declines and acidity increases. Corn, on the other hand, competes more aggressively for light and nutrients; its higher leaf area causes a more rapid and higher soil cover, which suppresses weeds, allowing this crop to be cultivated several times in a row on the same *uma*.

For these reasons, and also because lowland people are not used to eating the red upland varieties of rice, some migrants grow traditional white or industrial yellow corn varieties from the first cropping onwards, occasionally interplanted with rice or bananas. Here, the idea is to sell the crop in the lowlands and to buy peeled lowland rice with the cash earned. Kusters (1991) reports on a case in Cagayan, where native (white and red) corn varieties and subsistence crops like upland rice dominated in *uma* farms. Cagayan Valley has a history of producing corn for human consumption, as the cultivation of this staple was more compatible with that of tobacco, which until the sixties was the region's most prized export commodity (See Chapter 8). A dry-season corn crop is intercropped with legumes, peanuts, common beans and mung beans. Intercropping of upland rice and yellow corn occurs in both cropping periods. In that case, the yellow corn is widely interspaced and planted two weeks ahead of upland rice.

Planting of the *uma* is done jointly by men and women, although men have the final responsibility for the production of grains and tree crops. Women care for vegetables and other secondary crops in the *uma*, often cultivating an additional field of their own in the vicinity of the home. With the exception of one upland *sitio* where vegetables were produced on a large

<sup>39</sup> Wedda emphasizes that practices may shift from preventive to curative: instead of making an offering before planting, a sacrifice is made after ploughing or harvesting, or where someone has fallen ill.

scale for the Baguio market, relatively small areas with crops like Baguio beans, squash, watermelons, onions, carrots and ginger are generally cultivated for subsistence. Weeding and harvesting are also jointly carried out by men and women.

After the first crop has been harvested - in the case of upland rice, four months after planting - the *uma* is cleared again and the second crop planted. The clearing now only entails the removal of weeds and crop residues, which are piled alongside the cropping area. Due to the wet conditions that prevail during the months of September and October, burning is not usually done then. Forest migrants who derive an important share of their income from carabao logging or water logging may opt not to re-open the *uma* for a second crop, since by the time this crop is ready for harvest, the short timber extraction season is already underway<sup>40</sup>.

In view of the time lag after clearing, farmers develop agroforestry-like cropping patterns on their *uma* lands. Other perennials, such as bananas, coffee, papayas, citrus fruits, mangos, pineapples and cacao are interplanted with the last annual crops to be harvested from the *uma*, in preparation for a final cropping stage that Henkemans (1994) calls 'improved fallow'. These crops also act as informal markers of ownership, protecting the *ublag* from clearing by another household. They also extend the period during which the investment made in the opening-up of the *uma* produces returns in the form of marketable products, even when the fertility of the soil has dropped. Since clearing, between two and six annual crops have been harvested, and the *uma* is now left to recover under this 'improved fallow' system.

### 3) CROP-FALLOW SEQUENCES

As we saw in the previous section, migrants arriving in unoccupied lands near the forest frontier expand their clearings every year, and thus maintain relatively long fallow systems during their first 8 to 10 years in the forest lands. By this time the household has cleared a total farm area that is large enough to permit a rotational farming system with a shorter fallow period. A shift to permanent, plough-based farming only becomes feasible when the roots and stumps in the first clearing have decayed sufficiently to make ploughing possible. In the expansive systems, upland rice is commonly the first crop after clearing, while a variety of other crops are intercropped. The second or third annual crop is intercropped with young seedlings of fruit trees in preparation of the 'improved fallow' phase. The Ifugao newcomers described in Section 4.4.2 interplanted banana suckers with upland rice from the first planting onwards. This extensive system was opted for because:

- In the phase they are in, agricultural expansion (the sideways "run for the boundary") has priority. Demarcating these lands with perennials such as bananas is more important than the income derived from the crops produced there; during the rainy season these migrants can still partly rely on sources of income and social security in the place of origin.
- There is an abundance of unoccupied residual forest lands in the vicinity, and thus no need to reopen *ublag* lands for farming.
- Operating as a group, and inviting young boys and elderly relatives with little alternative employment options to come and work as seasonal labourers, they were assured of sufficient labour - and available forest lands nearby - to be able to clear new *uma* lands in the next dry season. This assurance is necessary because once bananas have been interplanted on the *uma*, grain cannot be planted during the next cropping season, because of shading by the adult banana trees. A household which depends entirely on the upland

<sup>40</sup> In *bangkag* and *talon* farms, this period is considered the best cropping opportunity, because the risks involved in transporting products to the market are lower in March than in October, when the rainy season is fully underway and access roads into the forest lands are often muddy.

farm for its livelihood and on its own labour supply for both clearing and crop production tends to postpone the planting of perennials until an area has been opened up which is large enough to produce its annual rice intake (or commercial grain for the cash income to buy this intake).

- Besides upland rice, these Ifugao migrants (at least when we met them at the end of the dry season) also consumed cassava and green peas as their staple, perennials which require little labour and which can be intercropped or planted in alternating strips, with bananas.

Fig 4.4 Common crop-fallow sequences in upland agriculture

	year 1		year 2		year 3		year 4		year 5		year 6		year 7		year 8		year 9			
	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II		
<i>Expansive fallow systems</i>																				
3 (2) --	A	A	A	A	P	—————>														
2 (1) --	A	AP	—————>																	
1 (1) --	AP	P	—————>																	
<i>Rotational fallow systems</i>																				
5 (3) 5	A	A	A	A	A	P	—————>												A	A
3 (3) 3	A		A		AP	—————>						A		A		AP	—————>			
4 (2) 2	A	A	A	A	—————>				A	A	A	A	—————>				A	A		
2 (1) 1	A	A	—————>		A	A	—————>		A	A	—————>		A	A	—————>		A	A		
<b>Interpretation key</b>																				
x (y) z = nr. of annuals (in nr. of years) nr. of fallow yrs.																				
A = annual crop      P = perennial crop (banana, coffee, fruit trees)      —> (improved) fallow																				

Fig. 4.4 and table 4.7 present a number of expansive and rotational crop-fallow sequences commonly observed in migrant settlements in the Sierra Madre. As a rule, the length of the fallow period appears to be linked to the number of crops consecutively harvested from the land after opening and, in the rotational systems, to the economic lifespan of the banana. *Saba* is the variety most commonly planted, is used primarily in industrial ketchup production; it remains productive for five to seven years. By this time, other forest vegetation has overgrown the banana trees and renewed clearing is necessary to make the *ublag* productive again. If the *ublag* is indeed cleared by the time the banana trees cease to be productive, then a rotational fallow system is practised. Thus newly established settlements, where expansive fallow systems prevail, have a characteristic landscape of newly opened *uma* lands bordered on one side by residual forest and on the other by improved fallows, which most often have the appearance of banana plantations. The decision on whether to re-opening the *ublag* or open a new *uma* depends, as we saw earlier, will depend first of all on the availability of convertible forests in the vicinity. But even if there are free forests near the settlement, migrants do not simply go on expanding their farmlands. By the time a migrant household manages a total area of four to six hectares of *uma* and *ublag* lands, a rotational short-fallow system becomes feasible. Of this total area, 1.5 hectares of *uma*, formed by two or three pieces of land opened up during the previous seasons, are cultivated with annual crops. The remainder of the area is under 'improved fallow' in various stages of productivity<sup>41</sup>. In such a rotation, the *ublag* is left to fallow for five years after three years of agricultural cropping; it is then reopened eight years

<sup>41</sup> A study among 37 households in four migrant communities in the Sierra Madre found that each household owned a combined area of 3.8 ha of *uma* and *ublag*, of which 0.8 ha was cultivated with upland rice and 0.8 ha with bananas. The cultivated areas ranged from 0.3 to 0.5 ha for the upland rice field and 0.03 to 4.8 ha for the banana fields (Dirkx 1995). It must be noted that these surfaces were estimated by farmers and not validated by measurements on the ground.

**Table 4.7 Common rotational cropping patterns in fire-and-fallow farming**

Location	Wet Season <i>Planting 01 June - 15 July</i> <i>Harvest 01 Sep. - 01 Nov.</i>	Dry Season <i>Planting 15 Oct - 01 Dec.</i> <i>Harvest 15 Jan - 15 Mar.</i>
<b>Dy Abra</b>		
<i>Uma</i> , yr 1	Hybrid corn** or: upland rice	Hybrid corn
<i>Uma</i> , yr 2	Hybrid corn	Hybrid corn
<i>Uma</i> , yr 3	Hybrid corn & banana/Fruit trees	Hybrid corn & banana/Fruit trees
<i>Ublag</i> , yrs 4 - 8	Improved fallow	
<b>Mansarong</b>		
TYPE I		
<i>Uma</i> , yr 1	Upland rice or:Hybrid corn	Stringbeans & mung bean or:Hybrid corn & peanut
<i>Uma</i> , yr 2	Hybrid corn	Hybrid corn & banana/fruittrees
<i>Uma</i> , yr 3	Hybrid corn & Banana/Fruit trees	
<i>Ublag</i> , yrs 4 - 8	Improved fallow	
TYPE II		
<i>Uma</i> , yr 1	Upland Rice and banana	Upland rice and banana
<i>Uma</i> , yr 2	Banana	Bananas
<i>Uma</i> , yr 3	Banana	Bananas
<i>Ublag</i> , yrs 4 - 8	Fallow	Fallow
<b>Dipugpug</b>		
TYPE I		
<i>Uma</i> , yr 1	Hybrid corn & upland rice	Corn, mung bean, peanut
<i>Uma</i> , yr 2	Hybrid corn & upland rice	Corn, mung bean, peanut
<i>Uma</i> , yr 3	Upland rice	Banana
<i>Ublag</i> , yrs 4 - 8	Improved fallow	
TYPE II		
<i>Uma</i> , yr 1	Hybrid corn & upland rice	Corn, mung bean,peanut
<i>Uma</i> , yr 2	Hybrid corn & upland rice/Banana	Banana
<i>Uma</i> , yr 3	Banana	Banana
<i>Ublag</i> , yrs 4 - 8	Improved fallow	
TYPE III		
<i>Uma</i> , yr 1	Hybrid corn & upland rice/Banana	Banana
<i>Uma</i> , yr 2	Banana	Banana
<i>Uma</i> , yr 3	Banana	Banana
<i>Ublag</i> , yrs 4 - 8	Banana	Fallow
<b>Puerta</b>		
<i>Uma</i> , yr 1	Upland rice	Hybrid corn & mung bean
<i>Uma</i> , yr 2	Hybrid corn & mung bean	Hybrid corn & mung bean
<i>Uma</i> , yr 3	Upland rice & Banana	Bananas
<i>Ublag</i> , yrs 4 - 8	Improved fallow	

Notes:

\* In addition to the main crop (occupying the largest part of the *uma/ublag*), which is indicated in this table, smaller areas with a variety of vegetables and root crops are also planted in *uma* and *ublag*. Since the decision to grow these minor crops is only marginally influenced by the decision on the main crop, they are not included here.

\*\* High Yielding Variety (unfit for human consumption)

\*\*\* upland rice may take longer to mature than yellow corn. The length of the growth cycle depends mainly on the variety. Other factors, such as soil, climate and labour allocation, set the actual cropping calendar per farm. The dates given here may be seen as the most probable dates at which planting and harvesting start in the given localities and for the most commonly used varieties.

after the last clearing provided that the vegetation type and density<sup>42</sup> on the *ublag* indicates that the area has recovered sufficiently for a successful cropping. This rotation leads to fallow periods of three to five years, shorter than the minimum eight-year period which, according to Conklin (1957), is required for the recovery of soil fertility.

Other rotations have even shorter cycles: one of the systems shown in fig. 4.4 alternates one-year cultivation periods with one-year fallow. Rotational crop-fallow sequences also exist in areas where there is still abundant convertible forest, such as places where migrants still derive a sizable income from timber extraction or urban wage labour. Expansive systems may be resorted to when the arrival of new migrants leads to a sense of competition over remaining unconverted forest areas, or when the construction of a road or the introduction of a new agricultural crop brightens economic prospects for agriculture. The quality of residual forests in the vicinity also has an important bearing on the fallow system: once these forests no longer produce significant quantities of saleable product, the next rational economic option is to convert them into farmland. Labour, carabaos and chainsaws can then also be mobilized for that purpose, resulting in a shift to more extensive fallow systems, larger farm-areas per household and a stronger cash orientation of the farm (see also Chapter 9).

The expansive fallow systems practised by forest migrants in the Sierra Madre may not be equated with the long-fallow shifting cultivation systems of indigenous forest peoples. Nor can the rotational systems be equated with non-traditional forms and thus almost by definition labelled as less sustainable (see, for example Myers 1992; Garrity *et al.* 1993: 559). Expansive systems occur where migrants still have sufficient access to land, labour and capital to manage large landholdings, and rotational systems are adopted by migrants facing labour constraints, or living in an area where convertible forest lands are no longer found within hiking distance. The second of these conditions is more structural than the first, especially for newly arrived migrants in the early phases of opening up new farmland. More established pioneers and followers are often in a position to hire newcomers to help in the expansion of their farmlands. Newcomers from the lowlands, who prefer not to enter the forest lands too deeply and are more inclined to settle in the vicinity of established forest communities, tend to re-open fallows formerly cultivated by a relative or the local leader who allowed them to settle in his community. There are cases where well-established migrants sell *ublag* lands to new migrants, or allow them to cultivate them under a sharecropping arrangement. Those with access to lands suitable for *bangkag* or *talon* farming tend to switch to permanent cropping, especially once forest products become scarcer in the vicinity, and carabao pulling power becomes available for farming<sup>43</sup>.

At various speeds, using a wide range of cultivation techniques, and with varying degrees of success, all migrant communities are gradually forced by forest degradation and land scarcity to switch from expansive to rotational fallow systems and, where possible, to permanent farming. During the first eight to ten years after its arrival in the forest lands, the average migrant household develops an upland farm of four to six hectares, about one-third of which is cultivated, half with annual crops and half with perennials. After this period, and depending on such factors as the quality and availability of forest products in the vicinity, the physical

<sup>42</sup> Farmers consider the regrowth of young dipterocarp trees and seedlings on the *ublag* as an indicator of good fertility (Dros 1995:85).

<sup>43</sup> All the categories of forest migrants defined earlier include some 'professional *uma* developers' who have made the continuous opening-up of new forest lands into a way of life, selling these lands to other migrants after a few years and moving elsewhere.

properties of the lands that the migrant has managed to appropriate, the agricultural background of the migrants, and the availability of labour and capital in the household, migrants either continue to expand their farmlands, switch to shorter fallow rotations, or begin to develop their forest farms into permanent *bangkag* and *talon* lands. In this way fire-and-fallow farming in the Sierra Madre contains a highly diverse set of mixed cropping strategies which together constitute the first steps in a process by which forests are replaced by permanent farms. The question as to whether this last stage is preferable to the previous ones, from a sustainability point of view, is dealt with in the following sections.

#### 4.6.3 Some remarks on the sustainability of *uma* farming in the Sierra Madre

Questions regarding the sustainability of fire-and-fallow farming systems in the Sierra Madre can be approached from two normative angles: from the point of view of frontier stabilization, and from a perspective of soil conservation and productivity. Based on the former, a switch from expansive to rotational and permanent farming would be desirable. From the latter standpoint, however, expansive fallow systems are more sustainable, allowing the soil and vegetation to recover long enough for future crops. Obviously, neither of these two sustainability dimensions can be realized in isolation. If fallows in a rotational cycle are too short to allow sufficient soil recovery, the reduced productivity of the land will eventually compel the farmer to either start investing in soil and water conservation measures, or to open new lands elsewhere. The following sections discuss the effects of *uma-ublag* cycles on soil productivity, and the contribution of *uma* farming to forest clearing in the Sierra Madre.

#### IMPACT OF FIRE-AND- FALLOW FARMING ON FOREST SOILS

While there is a great deal of variation in the impact of slash-and-burn agriculture on the chemical and physical quality of tropical forest soils, the principal effects of an altered nutrient level and soil structure are undisputed (Siebert and Belsky 1985:288-291; Hamilton and Pierce 1983; Jordan 1985). During the cultivation period, the availability of important nutrients such as phosphorus, potassium and nitrogen declines; higher soil temperatures hasten the oxidation of organic matter, which, in turn, lowers nutrient availability and adversely affects the structure and water-holding capacity of the topsoil. If steep slopes are cleared in high-intensity rainfall areas such as the Sierra Madre, soil erosion rates may go up from 0.04 to 38.8 tons/ha.yr (Veracion 1977, cited in Maus & Schieferli 1989:50).

Low availability of phosphorus, a scarce nutrient in most tropical soils, represents a constraint for agricultural crop production. The first burn temporarily solves this problem, as nutrients contained in the biomass are added to the soil. However, if insufficient time is allowed for the recovery of mineral nutrient levels (K, Ca, Mg), soil acidity is bound to rise, a condition in which *imperata* grasses are able to compete more effectively with the agricultural crops. The process that Jordan (*ibid.*: in Dros 1995:10) calls *savannization* is then set in motion. While these grasses can serve as pioneer species in the recovery of these soils (by opening them up and stimulating the activity of soil fauna), the repeated burning of grasslands stalls the recovery of nutrient levels, because the ashes produced by grassland fire contain few nutrients. The extensive *imperata* grasslands in the vicinity of early forest settlements are likely to be the result of this process<sup>44</sup>. In his study of slash-and-burn agriculture in the forest fringe of San

<sup>44</sup> Unlike the grassland areas inside the Sierra Madre, a number of the "idle grasslands" (Maus & Schieferli 1988:56) on the rolling plains adjacent to the flood plains of the Cagayan River appear to be of prehistoric origin (see Chapter 8).

Mariano, Isabela, Doedens reports that "Migrants near the forest fringe were reported to allow outsiders to cultivate ublag areas that they had themselves cultivated twice already; some of the older ublag areas no longer deemed fit for agriculture were converted into pasture lands and burned more regularly for that purpose" (Doedens 1992:52-53)

Two independent studies on the effects of fire-and-fallow cycles on soil quality, carried out in 1994 and 1995 in three sites in the Sierra Madre, failed to find evidence of chemical soil degradation on either expansive or rotational fire-and-fallow farms (Dros 1995; Van der Veen 1997). The chemical properties of soil samples taken from 15 *uma* and 11 *ublag* sites were analyzed in relation to the land-use histories of these sites. The sites studied by Dros were managed under extensive crop-fallow cycles and had all been opened up for the first time between 1976 and 1994, with the exception of one site, which had been cleared for the first time in 1965, was used for 2 years and then left to fallow for 25 years. The fact that soils under rotational crop-fallow cycles, as analysed by Van der Veen, produce similar results as the extensively managed lands studied by Dros was due to the fact that none of the sites sampled by Van der Veen had been cleared before 1988: three of the five *uma* fields were first opened in 1993, 1994 and 1995 respectively, while the two fields cleared for the second time were in their first cropping after a fallow period of three to four years. The relatively low temperature and regular cloud cover prevailing at elevations of 400-800 metres, as in the study area, probably had a further moderating effect on chemical erosion after forest clearing.

Both studies emphasize the absence of ploughing on these lands as an explanatory factor for the absence of soil degradation. Reducing levels of readily available nutrients (particularly nitrogen) in the root zone compels farmers first to switch from cereals to perennials, and then to leave the land fallow. This natural check on the decline in fertility - only readily available nutrients are depleted - facilitates a swift regeneration of vegetation after the cultivation period. The studies confirm that the burn 'costs' approximately 25% of the organic matter contained by the topsoil after the slash and before the burn, and that much of the organic matter contained by the slash is also converted into gaseous nitrogen compounds, carbon dioxide, water and charcoal. Nevertheless, the nutrients contained in the ashes, supplemented by the mineralization of soil organic matter, create good conditions for crop production. Both authors stress nitrogen deficiency as the principal fertility constraint on crop yields after two years. The common practice of alternating the production of upland rice with that of beans, which fix nitrogen, may be seen as a management measure to deal with this constraint.

Dros (*ibid*) reports that banana production is still possible after two years of annuals, largely because their deeper root system enables banana trees to extract nutrients from layers not reached by annuals. Combined with their size and leaf area, this makes bananas a more effective competitor with weeds and residual forest vegetation. To some extent labile organic litter produced by the decaying leaves of these trees replenishes the nutrient levels of the topsoil; in old *ublag* farms in Mansarong, Sta Margarita, Baggao Cagayan, where bananas had reached the end of their productive life span, recorded levels of organic matter in the topsoil which were comparable to those of nearby areas not yet cleared for farming. Under an extensive crop-fallow cycle, in which *ublags* are cleared again after 12 to 16 years, soil organic matter and plant nutrient levels recover most of their original values (*ibid*:85) Contrary to farmers' own perception that re-opened fallows were less fertile than newly cleared forest soils, the results of Dros and Van der Veen suggest that the fertility and structure of soils under expansive crop-fallow systems did not differ significantly from those under the original forest vegetation (Van der Veen 1997: 64).

And finally, both studies emphasize the risk of nutrient depletion and a concomitant rise in

soil acidity if ploughing and permanent corn cultivation are introduced on these lands<sup>45</sup>. The absence of ploughing in *uma* lands places a natural restriction on the number of crops that can be successively cultivated there, and thus on the degree to which nutrient levels can be reduced; ploughing facilitates the mineralization of organic soil matter over a deeper layer of the soil, so that larger amounts of plant nutrients are released. If these 'exported' nutrients are not replenished (mulch, manure, fertilizer), they are eventually depleted. The increased mineralization of soil organic matter reduces the capacity of the soil to retain mineral nutrients (Ca, Mg, K) and lowers stocks of organic nutrients (N, P and S). This, in turn, exacerbates the acidification problems which were also recorded by Siebert and Belsky (1990) in soils subjected to intensive annual production in the uplands of Leyte.

Increasing soil acidity, in turn, further constrains the availability of phosphorus, a critical nutrient for root development and plant growth. High levels of iron and aluminium in most soils of the humid tropics facilitate phosphate fixation, leaving less available for root development and plant growth. Lowered soil acidity, e.g., due to the influx of minerals from ashes after burning, stimulates both the solution of these phosphates and the mineralization of soil organic matter, releasing phosphorus for plant growth. This beneficial effect of burning, *i.e.*, the recycling of part of the nutrients contained in the vegetation back into the soil, does not alter the fact that cultivation means a net export of soil nutrients which must be replenished by the weathering of parent material and the mineralization of organic matter (J.M. Dros, pers.com. Oct 1997). Both Dros and Van der Veen therefore emphasize the importance of maintaining organic matter levels as a source of phosphorus<sup>46</sup> and warn that a conversion of slash-and-burn farming to permanent *bangkag* farming is not necessarily a step forward in terms of preventing chemical soil degradation<sup>47</sup>. Dros concludes that:

*"The merits of the soil (fertility, resistance to erosion, water-holding capacity and high-quality organic matter, mycorrhizae that facilitate hardwood growth) are well maintained - but not well exploited - by the kaingin farming system" (ibid: 94).*

Thus looking at the sustainability of fire-and-fallow upland agriculture from the point of view of long-term soil productivity, it may be concluded that expansive fire-and-fallow farming is, not surprisingly, the least problematic mode of slash-and-burn farming. However, the studies carried out thus far have not encountered any serious problems related to chemical soil degradation in the rotational systems either. Because of the relatively short period during which these soils had been cultivated, however, the validity of this finding must be ascertained through studies carried out in areas subjected to protracted series of rotational crop-fallow sequences. On the basis of both studies conducted so far it may be concluded that the replacement of fire-and-fallow by ploughing will facilitate a more thorough depletion of the natural fertility buffer of forest soils, and is therefore bound to render these soils more acidic.

<sup>45</sup> Chapter 9 presents some indications of the increasing cultivation of hybrid corn varieties in upland farms in the Sierra Madre, and analyzes the political-economic backgrounds of this trend.

<sup>46</sup> *"The maintenance of a good soil organic matter content is valuable. Firstly, it provides a continuous source of phosphorus through mineralization. Secondly, organic phosphates appear to be less readily fixed than anorganic forms. And thirdly, organic acids dissolve some 'fixed' phosphate and so render it available" (Van der Veen 1997:58)*

<sup>47</sup> One could argue that even in terms of physical erosion, fire-and-fallow upland agriculture is also more sustainable than plough-based farming, due to a more superficial impact on soil structure, a lower risk of surface erosion in furrows, etc. However, the comparison depends on the practices followed in the two systems; contour ploughing prevents soil losses, but so does the maintenance of a good soil organic matter content under fire-and-fallow management.

The ploughing and permanent farming of forest soils can be a step in the direction of sustainability if this is accompanied by mulching, contour ploughing, the application of manure or chemical fertilizers, and other soil, water and fertility management measures. This conclusion is particularly relevant to recent changes in cropping practices in both *uma* and *bangkag* farms in the Sierra Madre, as presented in Chapter 9.

#### CONTRIBUTION OF FIRE-AND-FALLOW AGRICULTURE TO FOREST CONVERSION

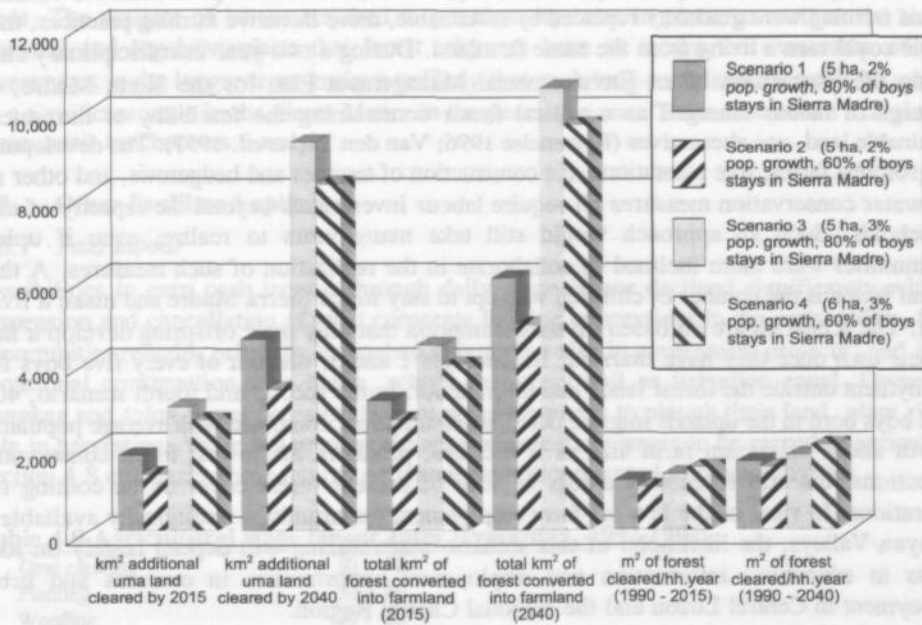
In spite of the risk of falling prey to criticism such as that expressed by Eder (1989) and Kummer (1992a,c) with regard to the work of Ooi Jin Bee (1987), who came up with the rather poorly founded estimate that shifting cultivators converted 330,000 hectares of natural forest into upland farms between 1980 and 1985, my efforts to assess the sustainability *uma* farming would be incomplete without an attempt to quantify the areas of residual forest cleared annually by forest migrants in the Sierra Madre. One weak element in Bee's calculations was the assumption that all upland households carve 3.9 hectares of farmland from the forest every 12 years<sup>48</sup>. As described above, migrants in the Sierra Madre convert residual forest into *uma* and *ublag* lands more rapidly, but then cease to expand once their *uma* and *ublag* lands together cover four to six hectares. At that point, rotational crop-fallow systems become feasible. Expansion may resume after a son has grown physically strong enough to make a significant contribution to the expansion and management of the farm and, eventually, to develop a farm for himself and his own household. Assuming that migrants do not need to move on after developing this area because, as the preliminary findings presented in the previous section show, soil productivity can be maintained under the rotational fallow systems, and forest loss due to upland agriculture becomes directly proportional to the combined effects of forest migration and fertility rates in the uplands: each new migrant family opens an area of approximately five hectares, as does each male child who chooses to make a living as an upland farmer.

**Table 4.8 Projected forest conversion to *uma* farming, 1990-2015-2040**

Key assumptions	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Area per household (ha)	5	5	5	6
pop growth (%/yr)	2	2	3	3
1990 pop	135,000	135,000	135,000	135,000
Household size	5	5	5	5
proportion of boys staying in SM	0.80	0.60	0.80	0.60
km <sup>2</sup> add'l <i>uma</i> land cleared by 2015	1,730	1,297	2,953	2,658
km <sup>2</sup> add'l <i>uma</i> land cleared by 2040	4,567	3,425	9,137	8,223
total km <sup>2</sup> of forest converted into farmland (2015)	3,080	2,647	4,303	4,008
total km <sup>2</sup> of forest converted into farmland (2040)	5,917	4,775	10,487	9,573
m <sup>2</sup> of forest cleared/hh.year (1990-2015)	1,123	980	1,373	1,491
m <sup>2</sup> of forest cleared/hh.yr (1990-2040)	1,544	1,435	1,743	2,005
forest cleared 1990-2015 as % of 1990 forest cover	30.80	26.47	43.03	40.08
forest cleared 1990-2040 as % of 1990 forest cover	59.17	47.75	100.00	95.73

<sup>48</sup> Kummer (1992) argues that a twelve-year cycle is too long for migrant shifting agriculture and shows that a more realistic six-year cycle produces improbably rapid deforestation rates, hence illustrating his view that there are many permanent forms of agriculture in the uplands as well, and that Bee's approximation varies too greatly in keeping with changes in its underlying assumptions to effectively prove otherwise.

Fig. 4.5 Projected forest conversion due to uma farming, 1990-2015-2040



The projections shown in table 4.8 and fig. 4.5 are based on different combinations of assumptions on population growth, average farm size per household, and the number of children opting to make a living in the Sierra Madre. More details of the calculations underlying these figures are provided in Annex B. In all scenarios, the areas cleared annually per household are significantly lower than the 0.325 ha. per family per year estimated by Bee (*ibid*), and correspond to estimates by the Regional Master Plan for Forestry Development (DENR 1991) and Kummer (1992c). It should be kept in mind that these are artificial figures; in practice, the process is not as continuous as these small annual areas suggest. As we saw earlier, agricultural expansion in migrant settlements takes place via a staggered process of fits and starts, triggered by the arrival of newcomers, a planned road, or the introduction of a new crop. As Kummer argues (1992a:88), fire-and-fallow farming does not appear to be shifting as rapidly as is widely assumed. Nevertheless, as both table 4.8 and fig. 4.5 show, upland farming will entail the conversion of 25-43% of the remaining forests of the Sierra Madre into agricultural land by 2015, even under the conservative assumption of an average population growth. Scenarios 3 and 4 are based on a 3% population growth rate and may be seen as the scenarios associated with increased forest migration, the second combined with a higher farm area per household, and more children leaving the uplands for education and urban employment. Both scenarios result in the complete clearing of all remaining forests in the Sierra Madre in the next 50 years.

The value of an admittedly simplistic exercise such as the above lies in the identification of the key variables that set the agricultural expansion pace, rather than in the absolute values of the figures that result from it. Population growth, influenced by the fertility rates of those already present in the forest lands, and the net migration balance of forest lands *vis-a-vis* adjacent lowland areas, is one of those variables which directly influence the agricultural expansion rate. The second important variable is the available labour, which determines the

total area which can be cultivated per household, and the feasibility of putting certain soil and water management techniques in place. If the present labour- and capital-extensive forms of upland farming were gradually replaced by sustainable, more intensive farming practices, more people could earn a living from the same farmland. During a two-year interdisciplinary study during the preparation of an Environmental Management Plan for the Sierra Madre, the shortage of labour emerged as a critical factor constraining the feasibility of introducing sustainable land-use alternatives (Rommelse 1996; Van den Top *et al.* 1997). The development of agroforest farms, tree plantations, the construction of terraces and hedgerows, and other soil and water conservation measures all require labour investments beyond the capacity of most households. Such an approach would still take many years to realize, even if upland communities were more inclined to collaborate in the realization of such measures. A third critical factor is the number of children who opt to stay in the Sierra Madre and make a living there. The scenarios are all based on the assumption that only male offspring develop a farm of their own once they have married. In scenarios 1 and 3, one out of every five boys find employment outside the forest lands and migrate out. In the second and fourth scenario, 40% of all boys born in the uplands migrate out. This assumption, combined with average population growth and a maximum farm size of 5 hectares, produces the lowest forest conservation projections, but still represents a loss of 50% of present forest cover in the coming two generations. In view of the few off-farm employment opportunities traditionally available in Cagayan Valleys, the likelihood of this scenario materializing will depend largely on local access to education, information and employment opportunities in overseas and urban employment in Central Luzon and the National Capitol Region.

From the dual perspectives of soil and water conservation, therefore, we must conclude that fire-and-fallow farming practices of forest migrants in the Sierra Madre are not sustainable. The expansive fallow systems allow the regeneration of vegetative cover and soil fertility, but cause the movement of the forest frontier. As far as the rotational systems are concerned, initial student studies devoted to the physical impact of these more intensive rotations failed to find evidence of serious chemical soil degradation. However, as we have seen here, increasing numbers of people depending on upland agriculture for a living will eventually cause the resumption of expansive systems, causing the total loss of the Sierra Madre forest in the decades to come.

In areas already opened up for farming, the *uma-ublag* cycles are shorter than the period of eight to ten years generally considered to be the minimum for stability. Visible degradation of watershed as a result of erosion in newly opened farms, burnt grassland areas, and poorly managed residual forest areas cause increased sedimentation in the tributaries and lower reaches of the Cagayan river. These heavier sedimentation rates in the Cagayan River - rather than changes in peak, or base flows from the watershed - will cause additional economic costs in the lowlands, which is home to most of the region's 2.5 million population. With due caution - in view of the inadequate records on the actual damage caused by past flooding events in the Cagayan River basin, and remaining uncertainties about the hydrological impact of changes in forest cover - higher flooding and siltation rates were calculated to cause a 10% increase in economic damage to roads, irrigation systems, and population centres, or \$5-10 per year per hectare of forest cleared in the Sierra Madre (Oosterberg 1997).

The stabilization of the forest frontier by replacing rotational fire-and-fallow farming by plough-based permanent cropping does not necessarily enhance the sustainability of agricultural land use or facilitate a more thorough intake of mineral and organic nutrients by the crop over deeper layers of the soil. Alternative measures to stabilize the forest frontier and enhance the productivity of rotational land-use systems, e.g., by maintaining the slash and omitting the

burn, the integration of livestock farming, agroforestry and soil and water conservation measures probably offer a better long-term option for a sustainable livelihood inside the forest lands. The amount of labour required to put these systems in place, as well as the limited financial and legal prospects that forest migrants have to secure the ownership of these investments in the longer term, make it unlikely that such long-term land uses will be adopted on a significant scale in the Sierra Madre in the years to come. These factors are examined in more detail in Chapters 5 and 9.

#### 4.8 Other livelihood options

##### 4.8.1 Paid labour

Possibilities to earn cash income through daily wage labour declined significantly with the suspension and cancellation of most corporate logging concessions in the early 1990s. Some opportunities remain, primarily in carabao logging but also in government projects<sup>49</sup> and in the occasional construction of a house, school, barangay hall or irrigation canal. Owners of *bangkag* and *talon* farms occasionally hire wage labourers to plough their land, plant rice or help in harvesting. Table 4.9 presents the approximate daily wages to be earned in agriculture. Section 4.8 compares these returns on labour with those earned in other activities.

**Table 4.9 Agricultural wage labour rates (Pesos/day, 1992-1994)**

• <i>Uma</i> clearing	50 - 70
• Planting	30 - 40
• Weeding	30 - 50
• Ploughing (incl. carabao)	85 - 120

Sources: Aquino 1991; Bakker 1995; Dirix 1995; Numan 1995; Polet 1991; this research

In *uma* farming, the most important agricultural land use in the uplands, peak labour demands are managed mainly through exchange labour. The high labour demands of forest clearing are often managed by working as a group and spreading this joint workforce over the lands to be opened up by the various members of the group. In Ilokano, the non-monetary exchange of labour, which is governed by the principle of reciprocity, is referred to as *amuyo* (Wedda 1992:44). The voluntary offering of labour for a collective purpose, such as the opening of a trail or the construction of a bridge is referred to as *bayanihan*, a Tagalog term which has its origins in the word *bayani*, or hero: a person who offers his labour for free for a common purpose performs a heroic deed. The Marcos administration gave the term *banayihan* a more nationalistic connotation. The spirit of 'love of country' was used to mobilize citizens for voluntary collective action aimed at the 'beautification' of the country through landscaping or the construction of minor public works, such as waiting sheds. Wedda and Van Aken (1997) distinguish a third non-monetary form of exchange labour, called "*bataris*". While this term is also the Kapampangan translation of the Ilokano term *amuyo* (pers. com. Van den Muijzenberg, Nov. 1997), both authors found that it was used for yet another form of exchange labour, whereby people work in each other's fields, or assist in the construction of a house, in exchange for coffee and a good meal that includes meat.

In spite of the existence of these mechanisms for the occasional exchange of labour, forest migrants must rely largely on the labour available within their own household, since the social cohesion that is required for exchange labour systems to work tends to be lower in migrant

<sup>49</sup> cf. Pasicolan (1996) for an analysis of the effectiveness of paid labour as an instrument to promote local participation in government-funded reforestation projects in the Philippines.

communities than in the source areas. Cases have been reported of ethnically heterogeneous migrant settlements in which separate cooperatives were set up with the specific goal of protecting and promoting the cultural identity and economic interest of people of a particular ethnic background (Doedens 1992; Graeber 1993; Van Zorge 1996). Traditional modes of collective action and labour exchange appear to endure best in upland communities in which the majority of people share ethnic origins, as in the case of Tibunauan and the much older case of Dimatan. In such communities, paid labour is only resorted to in cases of the greatest urgency, as when clearing must be done very quickly.

As a rule, paid labour becomes more important as forest settlements age and economic differentiation among migrants becomes more pronounced (Van Aken 1997; Huijbregts 1996). Differences in economic means and income appear to be related to the length of time since they arrived in the forest land. Pioneers with large land holdings that they cannot cultivate using only household labour, people who run *sari sari* stores, and chainsaw operators hire poorer migrants to plough or clear land for them, or to lend a hand during the harvest. Payment takes place in various ways:

– *in cash*

Less common in the uplands than in lowland society. More important in older migrant settlements with a higher degree of economic differentiation. Amounts paid per day depend on the kind of activity carried out and vary within the ranges indicated in table 4.8.

– *in kind or in return for items or cash borrowed earlier at the land owner's store*

During the rainy season, devoid of opportunities of earning cash income, poor families buy their basic needs from these stores on credit. In exchange for financial help, either in the form of cash loans or goods provided on credit, poorer members of the community provide casual labour to expand, improve and cultivate the pioneer's land. Two *gantas* of rice (market value = 30 Pesos, equal to 2 days' staple requirements of a household of five) is worth one day's labour the following summer.

– *share of the harvest*

Doedens observed one case where a worker was paid according to an 'eight-to-one system', whereby he received every ninth bushel harvested (Doedens 1992:36).

– *permanent sharecropping arrangement*

The re-opening of old *ublag* areas by new migrants is either arranged through a one-off payment to the pioneer or follower who first cleared the forest on this land, or through a sharecropping arrangement between the cultivator and the owner. I will return to this in Chapters 8 and 9.

#### 4.8.2 *Hunting and gathering of non-timber forest products*

A survey held in 1990 among forest occupants in the provinces of Isabela and Cagayan produced a list of more than 150 different non-timber forest products (NTFPs), including spices, medicinal products and chemical substances that were collected from the natural forest stands of the Sierra Madre. Polet (1991) and Aquino (1991)<sup>50</sup>, the authors who conducted this survey, indicate that this number was arrived at by interviewing only 30 individuals from four ethnic groups. To illustrate this point, Polet cites an ethnobotanic study among the Itawis in Cagayan, in which around 250 products were identified (Rocero 1982 in *ibid*:29). Using a somewhat less refined categorization than that employed by De Beer and McDermott (1989,

<sup>50</sup> The data in this section were drawn largely from these sources, and from Wakker (1991).

1996)<sup>51</sup>, the main non-timber forest products gathered and hunted in the Sierra Madre are as follows:

#### FOREST ANIMAL PRODUCTS

- Wild pig (*Sus celebensis negrinus*) ('Alingo')  
Of all terrestrial forest animals in the Sierra Madre, this is the one most commonly hunted. Hunting pressures have increased considerably in recent years, due to disturbances by mechanized logging, an increase in the number of hunters, and the introduction of firearms and other non-traditional hunting techniques by forest migrants, reducing the effectiveness of the bow and arrow, the hunting tool of the Agta (Rai 1990:47). The growing tendency among forest occupants to keep domesticated pigs in their compound is a further indication of the scarcity of wild pig (cf. Persoon and De Iongh 1997).
- Philippine deer (*Cervus mariannus*) ('Ugsa')  
Probably closer to elimination in the Sierra Madre than the wild pig; wanted both for meat and as a live animal for domestication. The shy deer prefer the remoter parts of the forest, where they live mainly on forest foliage, unlike the wild pig and monkey, which are attracted by the agricultural crops on forest farms, and thus tend to be found near the forest/farmland fringe.
- Philippine Macaque (*Macaca fascicularis*) ('Sungo')  
Monkeys are not systematically hunted as are deer and pig, but are either accidentally caught in traps intended for other animals or shot by hunters looking for subsistence bushmeat. Monkeys are considered a nuisance, because they tend to live in the vicinity of banana plantations and *uma* fields, taking their share of the harvest.
- Various fish  
A wide variety of fish species are used for food; tilapia ('Tilapia'), mud fish ('Dalag') and cat fish ('Palat') are the most common ones. Eel ('Igat') is rare and precious, traditionally a typical Agta product which, according to lowlanders, can be exchanged for canned sardines. Today a medium-sized eel easily fetches 50-80 Pesos. Reported catches per fishing household range from 60 to 100 a year (Polet 1991; Romero 1991).
- Bats, flying foxes ('Paniqui')  
The Philippine bat fauna comprises 45 known species, 25 of which are endemic; the many caves present all over the Sierra Madre provide good resting sites for bats, which is no doubt the reason for the large and diverse population (Danielsen *et al.* 1994). Bats are hunted for meat, and in some places local people collect guano, an excellent fertilizer formed by the excreta of bats and birds.
- Wildcat (*Felis* spp) ('Mutit')  
An untargeted catch, occasionally caught in snares intended for deer or pig.
- Various birds  
The Sierra Madre is home to more than 200 different bird species, many of which are threatened with extinction (Danielsen *et al.* 1994: 32). Bird hunting is very common among forest migrants, for both food and fun, and because of the widespread presence of airguns and firearms in the area, farmers shoot at whatever they happen to spot on their way to and from their fields. The birds commonly hunted for food are jungle fowl (*Gallus gallus*) and various species of pigeons, hornbills, doves and cuckoos. Bird and animal hunting is not only born of necessity, it is also experienced by men as a pleasant form of amusement in

51

In addition to practicality, one reason why I combined 'edible' and 'non-edible products' under one heading is the flexibility with which this distinction is handled in Philippine rural cuisine.

an otherwise arduous life. If caught alive, birds may be played with or even kept as pets for some time before being killed and eaten. The Martines bird (*Acridotheres cristatellus*), which is non-endemic, is caught young and kept as a pet, mainly for its ability to imitate human voices. There is a good market for parrots: Guaiabero (*bolbopsittacus l. Lunulatus*) and hanging parakeets (*Loriculus p. Philippinensis*) are common in both degraded and primary forest areas, and are sold to pet shops in Manila. Large birds of prey, such as the rare Philippine Eagle (*Phytocophaga jefferyi*) and the Philippine Hawk Eagle (*Spizaetus Philippinensis*) are shot primarily out of fear. Young eaglets are also in demand among high-ranking officials and businessmen in the lowlands; forest migrants told of delivering young birds of prey for prices in the order of 10,000 Pesos. If a nest is spotted in a tall tree, the tree is felled to catch the young birds inside. More recently, the reduced logging intensity, mass-media information campaigns, and DENR monitoring have somewhat curtailed the collection and trade in birds of prey.

Very few forest migrants spend more than occasional hours on hunting. For most migrants, catching a bird or wild pig is the result of efforts to protect their crops, the accidental felling of a nesting-tree, or a chance sighting while commuting between home and the forest. At the same time, more intensive hunting techniques have been adopted by those for whom hunting is more than an occasional pastime. Large areas of residual forest and brushland are burned to attract wild deer with the young grass shoots which sprout after a fire, and increasing numbers of snares and other traps are being used to capture just a few pigs or a deer. The use of dynamite, wrapped in candle wax and hidden inside bait is another new technique which leaves game little chance of escaping unhurt from the dense network of traps laid out for them. Installing and monitoring traps and collecting the catch is a time-consuming activity. For those equipped with the skills and stamina required to succeed at this trade, the return on their labour can exceed that offered by other activities, as the following case shows:

"Nato was born in Nueva Ecija and came to the Sierra Madre with a logging company in the 1960s. When the company closed, he began to spend more time hunting in the forest between Cassala and Palanan. During a two-day hike to Palanan, he checks his 150 traps along the way. Every month when he passes his traps, he finds five to ten pigs. Once he arrives in Palanan, the drying of the meat produces 100 kg of dried pork, worth 10,000 Pesos in the market of Cabanatuan, Nueva Ecija. Via a boat trip from Palanan to Baler, he travels there by bus to sell the meat." (Research diary, March 1996)

Fresh-water fisheries became unsustainable with the introduction of cyanide and pesticides, and the technique of electrocution. In the latter method, locally referred to as 'Kuryente', the fisherman kills the entire fish population in the vicinity of two steel rods by sending a high-voltage jolt into the water. Aside from their non-selectiveness, both techniques entail serious health risks; Headland & Headland (1997:84) report the poisoning of an entire Agta camp as a result of the discharge of a chemical insecticide into the river upstream.

Both fishermen and hunters speak of depletion, not only through overexploitation, but also as a result of habitat degradation, soil erosion, increased silt loads of surface water, and the resulting sedimentation of breeding grounds. The presence of large numbers of firearms inside the forest lands aggravates the problem of unsustainable hunting. The official purpose of the establishment of the Civilian Armed Forces Geographical Units (CAFGUs) in 1988 was to enable local communities to protect themselves against the New People's Army; firearms were distributed among hastily trained civilians. In practice, the CAFGU policy heightened the intensity of the armed conflict inside the Sierra Madre (Jones 1989:273). The growing number of private firearms, combined with the continuous entry of armed logging company personnel

into old-growth forest also caused additional hunting pressures on forest fauna. Those pressures subsided somewhat in the early nineties, when the both the insurgency and large-scale mechanized logging went into decline. With the exception of those few individuals who hunt for a living, forest migrants no longer penetrate as regularly or as deeply into the forest as they were able to do using logging company trucks. If strictly implemented, the 1992 logging ban in virgin forests (see Chapter 5) and the establishment in 1994 of the Northern Sierra Madre Natural Park would create a refuge where hunting pressures can be managed and the reproduction of forest fauna ensured.

#### FOREST PLANT PRODUCTS

- Rattan

Rattans are climbing palms which, using their whip-like leaf-extensions (*flagellae*) and thorns, cling to trees in their upward growth. In the primary forest, stems reach a length of 30-40 metres, with some species attaining 100-200 metres, winding up and down along several trees, or growing along the forest floor. Rattan stems of 10 metres or more are of commercial value. Even poles the diameter of a cigarette can be sold to buyers, but those with diameters of 2 cm and above fetch higher prices. Of the 69 rattan species known to the Philippines, gatherers in the Sierra Madre distinguish the following species with commercial value: Palasan (*Calamus merrillii*), Tumulim (*C. mindorensis* Becc.) and Limuran (*C. ornatus* var. *Philippinensis* Becc). Polet (1991) suggests that other species may be extracted as well, but are not recognized as by the gatherers as separate species. The following materials are derived from the poles:

- Splits: small-diameter poles are sliced 3 to 6 times; fibers are removed, but some remain, which enhances durability.
- Malacca: the skin of the rattan cane is peeled off in 4 to 14 slices.
- Round-core: After skinning, the square core which remains is sliced into a round core
- Wicker: the square core is pushed through a wicker blade, dividing it into three to six parts, called 'wickers'.

The first three products are used in by rattan furniture manufacturers in Cagayan Valley and central Luzon. Wicker is the principal raw material used in basket-making, both in the home and in the basketry shops in the region.

- Bamboo ('Bulu', Il)

While generally considered part of the NTFP category, bamboo is not a typical forest product; bamboos are members of the *Graminea*, a family of grasses that thrive very well after forest disturbance. After logging, rapid bamboo growth is one of the principal reasons why secondary forests are so combustible and difficult to penetrate. The most common bamboo species in the Philippines are 'buho' (*Schizostachyum lumampao*), 'bayog' (*Dendrocalamus merrillianis*), 'Kauayan tinik' (*Bambusa spinosa*) and 'Kauayan kiling' (*Bambusa vulgaris*). Bamboo poles are collected from residual forest areas, but also from bamboo groves in the open lands surrounding forest settlements. Their uses vary from construction material (roofing, bamboo mats, walls, and fishpens) to fencing and paper production. The importance of bamboo as a trading commodity is also connected to the tobacco industry here and in nearby provinces. Each year, large quantities of bamboo are needed for the drying and curing of the tobacco leaves (Aquino 1991; Polet 1991).

- Resins, tannins, fruits, and insect products

The collection of Almaciga resins or Manila copal from the Almaciga (*Agathis alba*) tree was mentioned earlier. The resin is also known as 'the candle of the forest', as a small piece of hardened Almaciga burns for hours. Polet estimated the total volume collected annually

in the town of San Mariano, Isabela at 22,500 kg, representing a Manila market value of approximately 150,000 Pesos. After 1989, when a logging moratorium was imposed in the town, the collection of Almaciga declined drastically. Gatherers used to bring their products down in logging trucks, which plied the 30-40 kilometres between the forest and the town centre. Other trade-related plant and insect products gathered in the forest are orchids, honey and various fruits (beetle, guava, rattan fruits), but the trade in these items is not substantial. A host of other herbs, oils, spices, fibres and chemical substances are gathered in smaller quantities; as a rule these are not sold, but rather used locally for various purposes, including medicines, dyes and decoration.

The revenues earned in the collection of non-timber forest products are lower than those to be made in logging. A case study devoted to the collection of forest products in barangay Tupa, San Pablo, Isabela, revealed that net revenues from illegal timber sales constituted 70 % of migrants' overall income from the collection and sale of forest products (Laarman *et al.* 1995:160). Rattan and bamboo sales accounted for 18% and 7% percent respectively. The collection of rattan, in particular, is time-consuming and physically demanding, especially since large-scale corporate logging activities have more or less come to an end. Like carabao loggers, rattan gatherers used to accompany logging company trucks and employees into the primary forest, removing rattan from the trees before they were felled and bringing their products down by logging truck.

Polet (1990) describes the hardships of a group of migrants gathering rattan in an abandoned logging concession in San Mariano, Isabela. A lowland-based rattan licensee finances a team of skilled rattan cutters. After one to two weeks inside the forest, the poles are brought down on bamboo rafts. When the rattan arrives downstream, the gatherers' income depends largely on how their financier (to whom they are bound to deliver their product) translates transport-related damage into the price offered for the poles. The quality of the poles always suffers from the damp conditions during transport, so that the value of the quantity brought down can only be set after it arrives from the forest. After subtracting the cost of products supplied and cash advances paid to the team, the migrants are left with only a small amount. The return which rattan gatherers make on their labour is in the order of 30 pesos per day<sup>52</sup>, close to the cost of purchases the gatherers make at the onset of their trip for their own sustenance and the needs of their household during their absence.

A case in which rattan gatherers ended up in permanent debt peonage under this system of pre-financed collection was encountered by Lowe (pers. com. April 1997) in the southern Sierra Madre during the late 1980s. Lowland traders provided Agta rattan-gatherers with essential consumption items, such as rice. In exchange for the value of these commodities plus interest rates, the Agta were bound to the exclusive delivery of rattan poles to their moneylender, again valued at his prices. Lowe also observed how Agta people were actually traded against the value of their outstanding debts (Lowe, pers. com. 1997)<sup>53</sup>.

The collection of rattan is therefore "a last-resort activity" (Polet 1991:77) of the poorest forest residents, who lack better economic options. Others are involved, on a smaller scale,

<sup>52</sup> Polet's higher estimate is based on an extractable volume per gatherer of 192 poles (measuring 12 feet each) in 4 days; at a value of 1 peso per pole, this amounts to 48 p/day. Given the distance between the source areas and delivery points, 2 days must be added for transportation, reducing the return on labour to approximately 30 p/day. These results correspond to the findings of Wakker (1991) and Numan (1994) in Palanan, Isabela and Baggao, Cagayan respectively.

<sup>53</sup> Lowe told me he bought one Agta himself for 500 Pesos. The purchase was filmed on camera, as part of a documentary about labour abuse in the Philippines. (Barry Lowe, pers. com., April 1997)

because they need the raw materials in the production of baskets and other rattan products. Better-off forest migrants look down on this activity as an "unprofitable waste of time" (Huijbregts 1996:58). A study among forest migrants in Dipugpug, San Mariano found that six out of thirteen households who used to be involved in rattan gathering switched to logging when a buyer in the lowlands offered to finance them as carabao loggers. Until the logging opportunity arose, these six (two of whom own a chainsaw) earned roughly 1,750 pesos gathering rattan from January to May. In the following three months they earned an average of 7,500 pesos from logging (Doedens, 1992:42)<sup>54</sup>.

In his study among 48 rattan-gathering households in San Mariano, Isabela, Polet found that rattan contributed 6% to an overall cash income of 17,230 pesos per year. This overall income is low in comparison with income and expenditure data collected by the same author and Aquino (1993) among households involved in bamboo-gathering, agriculture and water logging. Households specialized in the collection and sale of bamboo had an average annual income of 35,130 pesos, 14% of which came from bamboo. Since bamboo is available not far from the settlement, it can be collected during a longer period throughout the year. Moreover, none of the 36 bamboo-gatherers interviewed by these authors had ever been involved in bonded sales or systems where informal credit was provided by traders in the lowlands. Since in practice the formal system of government licenses is seldom if ever implemented, the market for bamboo is fairly free. All this means that bamboo gatherers are able to generate higher returns on their labour, and also have more time - compared with, say, rattan gatherers - for other income-generating activities. However, the higher income of a bamboo gatherer is due mainly to other sources of income, notably timber extraction and agriculture (see Table 4.10).

**Table 4.10 Income composition of rattan- and bamboo-gatherers, San Mariano, Isabela**

	Rattan-gathering households (N=48)	Bamboo-gathering households (N=29)
Agriculture	12.5	32.1
Carabao logging	32.5	44.5
Rattan/Bamboo	6.1	14.1
Corporate logging	21.5	-
Informal employment	17.5	9.3
100% (average total income, Ph₱)	17,230	35,130

(Sources: Aquino (1991); Polet (1991).

Not all forest migrants view bamboo as a scarce and economically interesting resource. In the summer months, when *ublag* or residual forest stands are cleared for upland agriculture, the bamboo groves cleared from these lands are seldom collected for sale in the lowlands, but simply burned with the other vegetation. Nevertheless, outsiders entering the forest lands in search of bamboo cannot simply extract bamboo poles from clearings made by forest migrants, as I found out during one of my field visits:

*"While we're having our breakfast, a group of eight people riding white Brahman cows passes the Ifugao settlement. According to Mr. Hud'ong, they're coming to gather bamboo (used in the Hacienda for tobacco drying and curing). 'If they want to get bamboo from our fields they pay, he says, but if it is from outside, it is for free'"* (Research diary, March 1996)

The fact that some forest migrants burn considerable volumes of bamboo, while others spend time and effort cutting and transporting this product to the lowlands points up both the

<sup>54</sup> One full-time chainsaw operator even earned 20,000 pesos between May and July of 1991 (Doedens 1992:42).

abundance of bamboo in the Sierra Madre and the restricted access. Many forest migrants clearing new *uma* land do not yet have the animal draught power required to haul the heavy bamboo poles to the lowlands. Aquino found that rattan-gatherers often belong to the 'newcomer' category, with minor holdings of *ublag* and *uma* land, while the 39 bamboo gatherers he interviewed had been living in the same place for nearly 12 years and had obtained ownership titles to lands inside the Sierra Madre (*ibid*:76). Since rattan poles with a commercial value occur mainly in old-growth or recovering secondary forest stands, while bamboos are abundant in residual forests and brushlands<sup>55</sup>, Aquino's statistical findings confirm that rattan-gathering is practised by people who arrived at the forest fringe fairly recently, while the collection of bamboo is an economic sideline of forest migrants residing in older settlements further away from the forest. The decision to take up the collection of rattan, bamboo or the other products mentioned above is not based on considerations such as financial return on the labour invested, but is closely related to other context factors, such as distance to the resource, carabao ownership, family custom and the specific products required by lowland entrepreneurs in exchange for informal credit.

Throughout the corporate logging decades, rattan extraction in the Sierra Madre was carried out using a non-rotational system of cutting blocks shifting upwards into the mountains, together with the extension of logging roads into new areas of old-growth forest. Resource inventories by Tesoro (1984) and FRI (1987) (cited in Wakker 1991:81) showed a drop in standing rattan stock in Region 02 from 1,806 million to 1,457 million linear metres between 1981 and 1987, a decrease of 58 million linear metres per year. This rate seems unrealistically high, even considering the relative intensity of extraction and forest conversion due to large-scale logging and farm establishment during this particular period. The total volume of rattan extracted annually by the region's 38 licensed and 50-100 unlicensed rattan buyers is estimated to be on the order of 10-15 million linear metres, or about ten times the production rates reported to the DENR (*ibid*: 61). In his simulation model on the sustainability of rattan extraction levels in San Mariano during the 1990-1991 season, Aquino found depletion periods of five to fifteen years for commercially sized rattan poles in actual cutting areas of San Mariano, Isabela. If licensees actually extracted rattan only from areas officially awarded to them - and should we take into account the fact that most of these blocks are only partially forested - then the aggregate rattan cut would need to be reduced by nearly 50% of the 1990-1991 volume to reach sustainability. Wakker (*ibid*) arrived at similar conclusions for rattan-cutting areas in Bintacan, Annapunan and Palanan (all in Isabela).

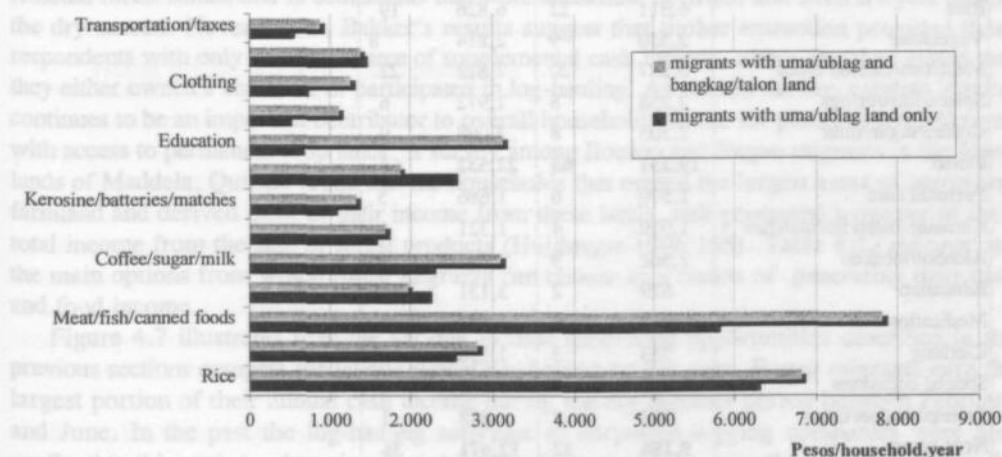
At the time these studies were carried out, the first effects of the contraction of corporate logging activities were already being felt by the rattan furniture industry in the lowlands; new commercial rattan stocks, which were found only at a considerable distance from the population centres, could no longer be accessed with the help of company bulldozers, or brought down by logging trucks. Thus both gatherers and buyers were faced with the depletion of rattan stocks in existing cutting areas, because of the stagnation in the opening-up of new areas of old-growth forest. In other words, the cutback in commercial logging operations curtailed rattan extraction levels before the stock of commercial sizes was entirely depleted throughout the Sierra Madre.

<sup>55</sup> Bamboos are sensitive to soil acidity; for that reason they are less common in the residual forests of certain parts of northern Cagayan (Bakker, 1994). This also explains why forest migrants consider the presence of bamboo stands in a potential forest clearing as an indicator of good soil fertility (see Section 4.7.2)

#### 4.9 The overall livelihood picture

Forest migrants generally live far away from major markets and service centres. Nevertheless, cash income is indispensable for a household, in order to secure basic consumption items that it cannot produce itself. In a survey of 33 migrant households in five forest migrant communities in the Sierra Madre in 1993, Bakker (1995) recorded an average per capita cash income of 5,570 pesos (\$200) per year, well below the Philippine rural poverty threshold of 7,751 pesos set by the National Economic Development Authority (NEDA).<sup>36</sup> Bakker divided her sample into two groups, based on whether they have access only to *uma/ublag* land or to permanent fields as well. Those in the former category had an even lower average income of around 4,600 pesos per year.

Fig. 4.6 Expenditure pattern of 33 migrants in five forest settlements in the Sierra Madre (Source: Bakker 1995)



The average household size in the surveys of Bakker, Dirx (1995), Baldé (1994), Doedens (1992) was 4.6 to 6.7 persons. In my own survey of 74 upland families in six migrant communities, the average number of people actually living in the household was 4.4. I excluded children who had already married or for some other reason (such as employment elsewhere) were no longer dependent on the household's food and cash income for their livelihood. Thus the average migrant household in the Sierra Madre spends approximately 25,000 pesos per year on food, items like kerosine, soap, coffee, canned goods, tobacco, sugar and, salt, alongside occasional expenditures on transportation, medicines, and clothing. Approximately 30% of this amount is used to supplement the household's own production of rice; *uma* farmers bought 54% of their staple requirements, compared to 32% for the better off owners of permanent farmlands in the second category (See fig. 4.6 and table 4.11).

<sup>36</sup>

In 1993, NEDA lowered the Philippines' national poverty threshold from 9,886 to 7,751 Pesos per capita per year. A number of non-food items were removed from the list of basic necessities, notably cigarettes and alcoholic beverages. Bakker's surveys indicates that some 10% of household expenses relates to these items (see Chapter 4).

**Table 4.11** Income and expenditure of 33 migrants in five forest settlements in the Sierra Madre (1993 Ph₱) (Source: Bakker 1995)

	Cat. 1 (N=15)	%	Cat. 2 (N=18)	%
<b>Income*</b>	<b>26,087</b>	<b>100</b>	<b>41,700</b>	<b>100</b>
Agriculture		29		58
• <i>uma/ublag</i>		29		37
• <i>bangkag/talon</i>		--		21
Forest products		45		9
• <i>Timber</i>		14		6
• <i>NTFP</i>		31		3
Livestock		6		11
Off-farm income**		20		22
<b>Expenditure</b>	<b>28,534</b>	<b>100</b>	<b>35,202</b>	<b>100</b>
Rice	6,311	22	6,826	19
Vegetables	2,550	9	2,814	8
Meat/fish/canned foods	5,827	20	7,822	22
Spices/flavourings	2,258	8	1,972	6
Coffee/sugar/milk	2,305	8	3,098	9
<b>FOOD</b>	<b>19,251</b>	<b>68</b>	<b>22,532</b>	<b>64</b>
Personal care	1,579	6	1,686	5
Kerosine/batteries/matches	1,079	4	1,321	4
Alcohol/tobacco	2,561	9	1,882	5
Education	679	2	3,131	9
Medication	526	2	1,127	3
Clothing	733	3	1,258	4
Special occasions	1,465	5	1,388	4
Transportation/taxes	562	2	878	2
<b>NON-FOOD</b>	<b>9,184</b>	<b>32</b>	<b>12,671</b>	<b>36</b>
Total	28,435	100	35,203	100
Per capita	5,078		5,254	

\* Gross farm income (food products valued at shadow farmgate price, commercial crops at actual market prices) minus farming expenses, plus income from other sources, including forest products, wage labour and off-farm income

\*\* Off-farm income comprises agr/non-agr labour and remittances.

Group I: migrants with only *uma* farms (average size = 1.34 ha)

Group II: migrants with average 2.2 ha of *uma* and 1 ha of *bangkag/talon* lands

While the *bangkag* and *talon* owners can afford slightly higher expenditures, there are only minor differences between the two categories of migrants in the relative importance of expenditure items. The fact that those owning permanent croplands spend more on education is related to the fact that 11 of the 18 households interviewed in this category had young and school-age children, dependent on the income of the household. The households in the first category were not only smaller, but also predominantly in the phase where their children were starting to leave home. While the number of family members aged 13 or over (who had finished elementary school and were ready to work in the farm) was equal for both categories, the productive members of the households in the second category had responsibility for one or more dependents.

Table 4.11 shows that households with access to permanently cropped lands had a higher total income, and derived a larger share of their income from farming than those without permanent fields, whose livelihood relied more heavily on the extraction of forest products. In general, the same trend toward higher incomes and a higher share of agriculture within those incomes was seen in the surveys by Polet (1990) and Aquino (1993), which were presented in the previous section. The informative value of table 4.10 lies in these income and expenditure patterns, rather than in the absolute values per item. Considering that income levels include the financial value of farm products consumed by the household members themselves, valued against shadow farmgate prices, the total cash income levels recorded in this survey usually are not sufficient to finance the stated expenditures. The limited number of households surveyed, the relatively short period spent with each family, and the illegal nature of the most important source of cash income of forest migrants, carabao logging, are likely to cause downward distortions in the total incomes recorded. In the sample studied by Bakker, for example, 13 out of the 18 respondents with access to permanent crop lands resided in the proximity of good residual forest stands and in settlements that were accessible by truck and even tricycle during the dry season. Nevertheless, Bakker's results suggest that timber extraction provided these respondents with only a minor source of supplemental cash income, although many stated that they either owned a chainsaw or participated in log-hauling. As we saw earlier, carabao logging continues to be an important contributor to overall household income for pioneers and followers with access to permanent crop lands. A survey among Ilocano and Ifugao migrants in the forest lands of Maddela, Quirino found that the households that owned the largest areas of permanent farmland and derived most of their income from these lands, still generated a quarter of their total income from the sale of forest products (Huijbregts 1996:105). Table 4.12 summarizes the main options from which forest migrants can choose as a means of generating their cash and food income.

Figure 4.7 illustrates how the various income-generating opportunities described in the previous sections compete for labour allocation throughout the year. Forest migrants earn the largest portion of their annual cash income during the dry summer period between February and June. In the past the log-hauling activities of corporate logging companies were also confined to this period, when six-wheel-drive trucks were able to enter the logging roads in the Sierra Madre to collect agricultural crops and forest products. Agricultural labour requirements also peak during summer, when the main cereal crop is harvested from the *bangkag* fields, *talon* areas are prepared for the coming monsoon, and new *uma* clearings should be carried out quickly, so that one or more good burns can be realized before the end of May, when the heavy rains of the southwest monsoon arrive. By contrast, migrants growing rain-fed rice in *uma*, *bangkag* and *talon* fields harvest their most important crop in September or October, in the midst of the rainy season. Since the most laborious part of the fire-and-fallow cycle is clearing and burning, fig. 4.7 shows that migrants who rely on *uma* and *ublag* lands for their agricultural income face time constraints when it comes to participating in other cash-earning opportunities, especially carabao logging activities. Being limited to fire-and-fallow farming through lack of access to animal - let alone mechanical - draught power, farmers without ploughed lands are often hired by *bangkag* owners to plant their lands while they are occupied in log-hauling. Owners compensate cultivators either on a daily-wage basis, or through a sharecropping arrangement. Households that can afford to hire wage labour for their farms are those with substantial *bangkag* or *talon* farm areas (where cash crops are produced), and those with a substantial cash income from logging (or another source of steady cash income, e.g., a shop or remittances from relatives with urban or overseas employment).

carry out their own small-scale logging operations using logging concessions, a practice which

Fig 4.7 Activity calendar for major livelihood options

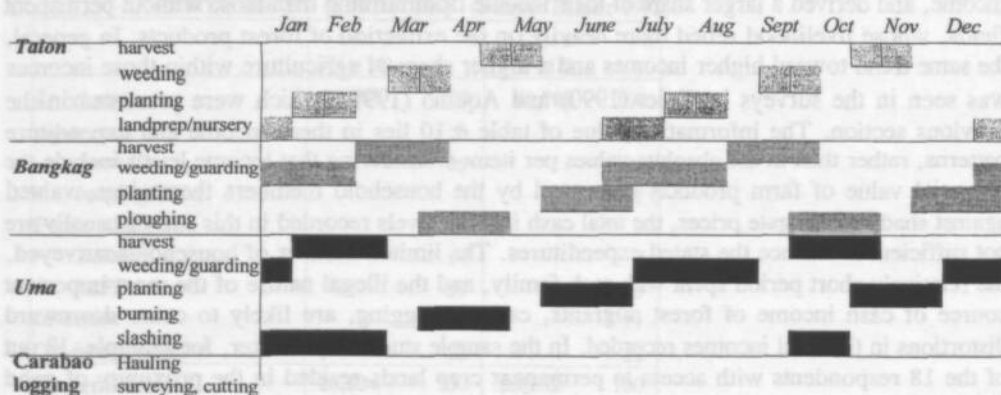


Table 4.12 Estimated return to labour for livelihood options in the Sierra Madre

Activity	Return on labour (pesos per day)
Carabao logging	
• Chainsaw operator	250 - 1000
• Surveyor	100
• Helper	70-100
• Yarder	130
• Hauler <sup>1</sup>	150-300
• Loader	50
Upland Agriculture	
• banana on uma	125-200
• upland rice & beans on uma	40
• hybrid corn on uma	45
• hybrid corn on bangkag	140 (incl. input/credit-cost)
• white corn on bangkag	85
Agricultural wage labour	
• Uma-clearing	50-70
• Planting	30 - 40
• Weeding	30- 50
• Ploughing (incl carabao)	85 - 120
Basket-weaving	30
Rattan-gathering	20-30

Sources: Dirx 1995; Numan 1995; Bakker 1995; Polet 1991; Aquino 1991; own fieldwork  
See Annex C for calculations of returns on labour for agricultural crops

<sup>1</sup> Income of the hauler depends on the quality of the wood, market prices and distance from the cutting area to pick-up point. In 1994, a one-day carabao hauling of 54 boardfeet of premium timber over a distance of 10 km earned approximately 200 Pesos. By 1996, waterhaulers reported being paid 8 Pesos per boardfeet for transporting Narra lumber from the cutting site directly to a pick-up point in the lowlands. The trip takes 4 days, and the haulers bring 400 boardfeet in one trip, resulting in a gross return to labour of 800 Pesos per day. However this RTL still needs to be adjusted downward by incorporating costs for maintenance of the person transporting the log, bribes paid for passage at checkpoints, losses due to confiscations, waiting time for the actual payment and working days lost due to injuries incurred along the way.

In view of the lack of options open to *uma* farmers for either food and cash income, the popularity of bananas as a cash crop is not surprising. After the clearing of the land, the banana trees produce a small but steady income (5,000 to 10,000 pesos per hectare per year at 1993 prices) in return for a minimal investment of labour over a period of four to eight years. The heavy bunches can only reach outside buyers when access roads from lowland markets to pickup points in the Sierra Madre are passable by six-wheel-drive trucks. Another drawback is the fact that the shade of banana trees hampers the growth of annual crops; this is why it is most popular in newly expanding settlement areas near the forest frontier, where the production of grain can be shifted to new *uma* land. In older settlements, banana trees are found mainly in the improved *ublags*. A third disadvantage of raising bananas is the sensitivity of the plant to typhoons. In 1990 and 1993, strong typhoons passed the Cagayan Valley region, inflicting large-scale damage on banana plantations in the Sierra Madre and depriving many of the poorest migrants of a scarce source of cash income for at least one year.

Fig. 4.7 also illustrates why forest migrants engaged in carabao logging often opt for the production of only one crop of corn on their *bangkag* lands. The dry season being a peak period for timber hauling, carabaos are mobilized for that purpose when chainsaw operators, timber buyers and bamboo traders are offering hauling contracts. Hence the option of preparing land for the planting of hybrid corn in the summer competes for labour during those few months when the most lucrative cash earner presents itself. An added reason to forego the summer planting is the risk of crop failure due to the moist conditions prevailing between July and the harvesting months of September and October. These moist conditions and the regular occurrence of typhoons during this period also represent a risk for the traders financing the cultivation of commercial crops. The poorly maintained logging roads into the Sierra Madre become impassable for extended periods of time in the rainy season, and the crop may not be able to reach the lowland market. Forest migrants cultivating *bangkag* lands near all-weather roads may indeed opt to produce two commercial crops per year. The increasing production of commercial corn varieties in the Sierra Madre is more closely examined in Chapter 9.

#### 4.10 Initial conclusions, further questions

The results of interpretations of aerial photographs and satellite imagery presented in the previous chapter show substantial deforestation between 1950 and 1990: 46% of the Sierra Madre's high and medium forest cover area was degraded into lower classes, and 4%, almost 40,000 hectares, was cleared. Forest migration remained limited during this period: in 1990 an estimated 130,000 people were living on the 1.4 million hectares of forest lands in the Sierra Madre. Even if we take into account the fact that in-migration was concentrated on the western slopes, the resulting population density of less than 20 people per square kilometre is low.

I therefore conclude that up until 1990, large-scale, mechanized logging operations were the most important cause of deforestation in de Sierra Madre. During the 25-year boom-and-bust cycle of the corporate timber industry, a small number of holders of Timber Licensing Agreements were allowed to extract an estimated 26 million cubic metres of premium hardwoods worth nearly two billion dollars, from these natural forest stands. A similar volume of illicit timber is estimated to have been extracted by local logging contractors and their employees during this same period.

For the early forest migrants, pre-logging pioneers, and former logging labourers (characterized here as 'followers'), agriculture was not a major income-earner during the corporate logging period, but merely ensured the food security of the household. With money earned in the logging industry, these migrants were able to buy chainsaws and carabaos, and carry out their own small-scale logging operations inside logging concessions, a practice which

became more common after the majority of these concessions were suspended, cancelled or abandoned during the early nineties. Since then, forest migrants have come to play an increasingly important role in advancing the deforestation process. Residual forests, already exposed to premature second and third cuts in previous years, continue to be used for rattan-gathering, bamboo-cutting and carabao logging. Extraction continues until these products are no longer found within the 15-kilometre action radius of the carabao. The alternative option of using waterways for the transportation of forest products is not feasible for all forest settlements, but it does enable chainsaw operators to continue logging at much greater distances from their settlements. Once accessible forests have been stripped of their residual stocks of commercial products - and even before then - migrants tend to put the remaining biomass to economic use by clearing and burning it, to produce a number of agricultural crops in a labour- and capital-extensive manner.

In the case of the Sierra Madre, therefore, tropical deforestation is triggered by corporate logging companies failing to secure the long-term productivity of logged-over forests, and completed by individual forest migrants competing with each other for the lands and the remaining products contained in this open-access resource on a 'first-come, first-served' basis. As only a relatively small number of migrants resided in the Sierra Madre, only a small area had reached the second phase of this deforestation process by the time this study was carried out. After 1990, competition for the lands and resources of the Sierra Madre began to intensify, as new migrants from poor rural villages in Ifugao and the lowlands of Cagayan Valley also began to enter the western slopes of the Sierra Madre to clear farmlands and ultimately to settle there with their families. Unlike the pioneers and followers who preceded them, this last group of migrants immediately turned to agriculture as a means of making a living. Since they do not have carabaos or chainsaws, and often find the best lands already occupied, these recent migrants are engaged almost exclusively in fire-and-fallow farming. Not only does this have a favourable effect on soil fertility and the ability of the crop to compete with weeds and disease, it is first and foremost a labour-efficient method by which these often poor migrants can develop a good-sized farm area within the constraints set by the available household labour.

Thus far, little evidence of soil degradation has been found under either extensive or intensive fire-fallow cycles in upland farms in the northern Sierra Madre. Moreover, the majority of forest migrants are not continuously shifting their farms in the direction of the forest frontier, as is sometimes assumed. The majority build a permanent residence and gradually switch from longer to shorter fire-and-fallow cycles, and eventually to plough farming, as unclaimed convertible forest land becomes steadily scarcer. This last step is not always a sustainable one, as it may lead to a more thorough depletion of readily available organic and mineral nutrients distributed throughout the deeper layers of the soil. However, combining current population growth rates with the farm size required for a sustainable fire-fallow cycle, simple extrapolations show that in the coming fifty years the present forest cover of the Sierra Madre will largely be converted into farmlands to accommodate its occupants. It follows that, in the medium term, it is not so much the upland farming methods as the numbers of migrants who depend on them for a livelihood that pose the greatest threat to the future of the Sierra Madre forest.

Social and economic relationships between people living inside the forest lands and secondary and tertiary actors living in lowland areas play a role in all the primary activities discussed in this chapter. Logging company employees become 'follower' migrants; lowland-based buyers of rattan, bamboo and timber organize and finance carabao logging, bamboo-collection and rattan-gathering. And as I will argue in Chapter 9, moneylenders in the lowlands are also increasingly engaged in the financing of crop production contracts in upland farms.

Another 'outsider' that may be expected to have a significant influence on developments inside the forest lands is the Philippine government. Questions have arisen on the policies it is pursuing in the forestry sector, and on the manner in which the people representing the government are putting those policies into practice. Why have successive governments allowed such a relatively small group of primary actors to take advantage of these resources, when the effects are so obviously at odds with the public interest, not to mention that of the indigenous peoples who claim these lands as their ancestral home? The next two chapters describe relevant government policies pertaining to the ownership and use of the Philippine forest lands and resources, and examine the process by which these policies are interpreted and implemented on their way from the national policy formulation level to the field.

One century could be the result of either a deliberate government policy to convert forests into alternative economic assets (e.g., capital and farmland) or a failed government attempt to manage these public resources in a sustainable way. History shows that subsequent Philippine governments performed both roles, the latter with considerably less success than the former.

To understand the role of the government as *stakeholder*, the first question to be resolved concerns the content of the relevant laws and policies. The 1906 Menembaud Act (see Section 2.5), and subsequent government-sponsored settlement programmes in Mindanao, Palawan and the Visayas, are examples of policies that transformed forest resources and forest clearing, after independence, however, government policies refused to address human abuse of unsustainable forest use. Nevertheless, corporate logging entered an unregulated boom after independence, putting to the test policies designed to protect the Philippine forests from abuse. The rapid deforestation rates of the postwar years are evidence that forest policies have failed the test (2006). This failure may have been due to (1) the policies themselves, (2) the way government actors implemented them or, (3) in a more general sense, the quality of the relationship between the citizenry and the state, its policies and its representatives. The latter two factors are examined in Chapter 6. Here, I will first provide a critical overview of policies that have been central to Philippine forest governance since the 1970s, and the various actors involved in their formulation.

## 5.2 Philippine forest policy

The Philippines has a wide range of presidential decrees, laws, policies and implementing guidelines concerning the protection and utilization of its natural forests (De Goozen 1991, La Yifa 1991). The state is mandated to develop and implement rules and regulations regarding:

- ownership of lands and natural resources
- forest product utilization
- forest land use and occupancy
- reforestation and nature conservation

The following sections present an overview of the main policies pursued in these four areas, including the most significant changes that took place after the popular overthrow of the Marcos administration in 1986, and assess the potential contribution of these policies to sustainable forest management, i.e., without considering the implementation aspects discussed in the next chapter.

<sup>1</sup> Following Van Ierland (1992:14-17), I define policy as 'a particular identification of objectives and instruments of social action shared by members of some state apparatus'. Government policies concerning natural resources have conventional dimensions about protection, production and benefits, but possibly also include an important political dimension.

## Policies and policy actors in Philippine forest management

### 5.1 Introduction

The continuous decline of the Philippine forests since the early twentieth century could be the result of either a deliberate government policy to convert forests into alternative economic assets (e.g., capital and farmland) or a failed government attempt to manage these public resources in a sustainable way. History shows that subsequent Philippine governments performed both roles, the latter with considerably less success than the former.

To understand the role of the government in deforestation, the first question to be answered concerns the content of the relevant laws and policies<sup>1</sup>. The 1904 Homestead Act (see Section 8.5), and subsequent government-sponsored settlement programmes in Mindanao, Palawan and the Visayas, are examples of policies that stimulated forest migration and forest clearing. After independence, however, government policies reflected increasing concern about unsustainable forest use. Nevertheless, corporate logging enjoyed an unprecedented boom after independence, putting to the test policies designed to protect the Philippine forests from abuse. The rapid deforestation rates of the postwar years are evidence that those policies have failed the test (*ibid*). This failure may have been due to (1) the policies themselves, (2) the way government actors implemented them or, (3) in a more general sense, the quality of the relationship between the citizenry and the state, its policies and its representatives. The latter two factors are examined in Chapter 6. Here, I will first provide a critical overview of policies that have been central to Philippine forest governance since the 1970s, and the various actors involved in their formulation.

### 5.2 Philippine forest policy

The Philippines has a wide range of presidential decrees, laws, policies and implementing guidelines concerning the protection and utilization of its natural forests (De Guzman 1992; La Viña 1991). The state is mandated to define and implement rules and regulations regarding:

- ownership of lands and natural resources
- forest product utilization
- forest land use and occupancy
- reforestation and nature conservation.

The following sections present an overview of the main policies pursued in these four areas, including the most significant changes that took place after the popular overthrow of the Marcos administration in 1986, and assess the potential contribution of these policies to sustainable forest management, *i.e.*, without considering the implementation aspects discussed in the next chapter.

<sup>1</sup> Following Van Braam (1986:14-17), I define a policy as "a particular combination of objectives and instruments of social acting deemed appropriate to obtain these objectives". Government policies concretize societal values into normative statements about processes in society, and include the possibility to re-direct an undesirable process.

## 5.2.1 Ownership of lands and natural resources

All policies and laws guiding the use and protection of Philippine forests are based on the Regalian Doctrine, which dates back to the sixteenth century, when the archipelago was annexed by Spain. All lands and resources in the Islands were considered Crown properties, unless there was evidence to the contrary in the form of official certificates based on formal law. Lynch calls the doctrine mythical, claiming that it was re-invented by the United States as a "*convenient legal pretext*" (Lynch and Talbott 1995:45) to justify and perpetuate the colonial government's hold on the large public domain after 1898, when Spain lost the Islands to the United States. In 1909, the Regalian Doctrine was legally refuted by a U.S. Supreme Court decision stating "*that land occupied in the Philippines since time immemorial was never legally public land*" (Cariño vs. Insular Affairs, 1939, cited in Plugge 1992) but this court decision has been ignored ever since and the Spanish crown's ownership of all lands without formal titles was inherited by successive governments of the Philippines. In 1902, the United States Congress reinforced the public ownership of unclassified and untitled lands in the "Philippine Act", as did the new 1987 Constitution of the Philippines.

It would appear that the American and Philippine governments applied the doctrine more rigorously than Spain's King Philip had intended, to the disadvantage of the ancestral inhabitants of the public lands. In 1594, for example, he specified that "*Grants of land to Spaniards be without injury to the natives and those which have been granted to their loss and injury be returned to their lawful owners*" (Lynch 1986: 271). Two other Royal Decrees, issued in 1754 and 1880 respectively, also recognize "*justified long and continuous possession*" as a valid title, even in the absence of formal deeds (De Guzman 1992: 33). Subsequent American and Philippine legislation pertaining to the public lands also recognizes so-called *native titles*, but confine these to public *agricultural* lands. The 1997 Indigenous Peoples Rights Act, although still based on the Regalian principle that forest lands are owned by the government unless proven otherwise, is a novelty in the history of Philippine forest policy, as it opens up the possibility for indigenous forest people to gain ownership titles of lands in the public domain on the basis of formalized claims that they and their ancestors have lived on these lands since time immemorial.

During the early years of United States administration of the Philippines (which lasted from 1898 to 1946, with a three-year interruption during World War II when the country was under Japanese rule), 92% of the Philippine land mass was declared Public Domain. In the subsequent 'Philippine Act' of 1902, the U.S. Congress granted authority to the Philippine government to dispose of and allocate tenurial rights to use natural resources in Public Lands. The 1903 'Public Lands Act' (Republic Act 926) specified a land-classification system for the granting of individual ownership of land; only so-called **Alienable and Disposable Lands** could be privately owned, while the **Public Lands** would be permanently managed by the State, a principle which is still upheld under the terms of the 1987 Constitution:

*"All lands of the Public Domain, waters, minerals, coal, petroleum and other mineral oils, all forces of potential energy, forests or timber, wildlife, flora and fauna and other natural resources are owned by the State. With the exception of agricultural lands, all other natural resources shall not be alienated"* (Philippine Constitution, 1987, Article XII, Section 2)

The Public Lands Act distinguished, among others, the following classes of land:

- **Alienable and Disposable (A&D)** lands refer to those lands of the public domain which have been classified and declared as not needed for forest purposes.
- **Forest Lands**, comprise both lands classified as such under the criteria defined by the act, as well as all unclassified lands of the public domain.

- **Public Forest** is the area of lands of the public domain which has not been classified, which differentiates lands needed for forestry purposes from those which are not.

The primacy of the forestry sector in government decisions on the allocation of public land flows from the rationale behind this classification: forestry purposes prevail over other land uses, and only agricultural lands in the public domain can be alienated by the State. The Forest Act, enacted by the US Congress in 1904, reaffirmed that only agricultural lands in the Public Domain could be classified for private titling. This act, which upheld the concept of state ownership of forest and mineral lands, classifying them as 'not-Alienable and Disposable', also stipulated the manner in which the State was to organize the extraction of natural resources from these lands, *i.e.*, by issuing licenses to the private sector (the special relationship between the State and the Philippine forestry sector is given further historical dimensions in Chapter 7).

The Revised Forestry Code of 1975 (PD 705) still limited the possibilities of classifying Public Land as A&D land, by stipulating that all lands with slopes of 18% and above were automatically classified as Forest lands, which could not be alienated from the State or legally acquired. This principle has continued to be a cornerstone of all subsequent forest laws and policies, and the above mentioned Ancestral Domain Act appears to be the first serious sign of a reversal in the Philippines' long history of rejected claims by indigenous forest peoples to the ownership and use of tracts of public land. DENR Department Administrative Order N° 2 of 1993, initiated the process of registering, defining and validating such claims (see section 5.2.3).

Land classification proceeded slowly; in 1948, two years after the Philippines had formally gained independence from the United States, the Public Domain still comprised over 70% of all lands; 61% were unclassified public lands and 10% classified forest land (Bautista 1990:74). Under the first two administrations of the independent republic, the majority of newly classified lands became Alienable and Disposable. After independence, the responsibility for land classification shifted from the Bureau of Lands to the Bureau of Forestry. This shift reflected the growing importance of forest industries for the Philippine economy and reduced the chances of public lands being classified as A&D. The Chief of the Bureau of Public Lands could not process any land claims unless A&D classification had been issued by the Director of the Bureau of Forestry, a situation which led to bureaucratic rivalry and the *de facto* impossibility of anyone residing in the Public Domain obtaining legal ownership of the land (Lynch 1986). Under the administration of President Corazon Aquino, both bureaus became part of the newly established Department of Environment and Natural Resources (DENR), and the responsibility for land classification returned to the Bureau of Lands.

The government's reluctance to release its unclassified lands, and the preferential treatment the forestry sector continued to enjoy after independence, is reflected in the fact that out of the 13.3 million ha of public lands which were classified between 1957 and 1985, 72% were retained by the state as classified forest land (Bautista 1990: 75). In 1994, the share of the Public Domain classified as public forest or unclassified and assumed to be under forest had dropped to 50%. According to Lynch (1995:58), most of these remaining forests are probably located in ancestral domains. The most recent forestry bill<sup>2</sup>, which was approved by the House of Representatives and replaces the outdated 1975 Forestry Code, pledges to complete the classification of all the remaining unclassified lands in the Public Domain within three years

<sup>2</sup> House Bill 2966, *An Act Providing for the Sustainable Management of Forest Resources*, approved by the Committee on Natural Resources of the House of Representatives on 29 November 1995

of the enactment of the bill in 1995. The bill maintains the criterion setting the maximum slope at 18 % for lands classified as A&D, but Section 36 recognizes land and domain claims of the indigenous cultural communities residing in the public domain, and endorses DENR's administrative order N° 2 of 1993 pertaining to the delineation of these claims.

### 5.2.2 *Forest product utilization: from corporate license to 'democratized access'*

#### TIMBER LICENSING AGREEMENTS (TLAS)

Large-scale, mechanized logging operations have been the dominant land use in all Philippine forests since the early twentieth century, when the United States mechanized the industry, encouraged private investments for purposes of large-scale timber extraction in the 'Philippine Islands', and developed the first scientific forestry school in the Philippines, at Los Baños (see Chapter 7). Government policies were developed to regulate the extraction of forest products from the public domain by private logging companies. The first Philippine Forest Act, introduced by the U.S. Congress in 1904, became the bible of Philippine forestry and up until 1975 it remained the basis for all subsequent forestry regulations (Boado 1988:172). The Forest Act introduced the Timber Licensing Agreement (TLA) as the legal instrument for corporate access to public forests. Through these agreements, the government grants private enterprises the right to

*"utilize forest resources within any forest land without any right of occupation or possession over the same, to exclusion of others, except the Government, but with the corresponding obligation to develop, protect and rehabilitate the same in accordance with the terms set forth in said agreement"*  
(Presidential Decree n° 1559, revised Forestry Code of the Philippines, 1978)

TLAs are valid for 25 years and renewable for an additional 25 years. The government retains the right to unilaterally suspend or cancel the agreement if it finds convincing evidence of violations of forestry rules and regulations, as stipulated in the 1975 Forestry Reform Code (PD 705) and its successor PD 1559 or the Revised Forestry Code of 1978. Section 61 of the Revised Forestry Code stipulates that a licensee may transfer or convey his license or extraction rights in the concession to other parties, but only if no violations of forestry rules and regulations have been committed. The same section explicitly prohibits semi-transfer, known as 'farming out', in which someone who holds a timber license allows one or more local contractors to carry out logging operations in the concession, and receives a fixed sum for every board foot of lumber extracted by these other contractors.

Logging, wood processing and transport can only take place after the licensee has received government approval for his Annual Operations Plan, which specifies how and in what parts of the concession the licensee will extract the Annual Allowable Cut (AAC), the volume of timber which may be cut, as defined by the government. The Operations Plan is based on field surveys by the company forester and his crew, who survey the concession and carry out stand-stock inventories. The Operations Plan also provides details on access roads to be constructed for the operation. Each timber licensee is required to carry out reforestation and timber stand improvement activities in the concession, or in its vicinity. These activities offer company personnel alternative activities during the rainy season, when terrain conditions become unsuitable for mechanized logging operations.

Government officials monitor the implementation of the Operations Plan by issuing transportation permits, certificates of origin and sawmill permits. Since 1993, only processed and semi-processed wood products may be exported from Region 2. By monitoring the total amount of wood shipped out of each source by the TLA holders, the government sees to it that

licensees do not extract a higher volume than their Allowable Cut. Checkpoints along the Maharlika National Highway are used to verify whether all vehicles transporting forest products carry the appropriate papers. Any lumber transported without the proper documents is confiscated and sold at public auction. Through ground and areal surveys, the government monitors actual logging operations, to see that they are carried out according to the Operations Plan.

In the 1987 constitution, TLAs are no longer mentioned as an option for forest resource utilization. Instead, Executive Order 278 of that year reflects a shift away from commercial large-scale users and in favour of 'democratic access' to natural resources, notably for poor households occupying forest lands (De Guzman, 192:48). This was quite a remarkable change, after decades during which government policy had consistently provided legal support for the corporate logging industry in its land-use conflict with forest communities, both indigenous and of migrant origin. Existing concessions had to be converted into so-called Timber Production Sharing Agreements, in which both government and forest communities had a larger share of the revenues from corporate logging operations in public forest lands.

In 1992, there were still 68 valid Timber Licensing Agreements in the country as a whole, down from 471 in 1976. Of these, 38 had obtained DENR approval for their 1992 operations plan. A year later, the number of corporate concessions in operation had dropped to 33 (Philippine Star, 24 May 1993). The same newspaper article quoted an announcement by the DENR that its officials would "start to physically examine logged-over areas and to check for any deviations from the concerned TLA's operations plan", an activity that the department had been responsible for carrying out ever since the first Philippine Bureau of Forestry was set up in 1908. DENR underscored its renewed monitoring vigour with a "new set of fines and penalties to be imposed on tree damaging TLAs".

The number of corporate logging concessions in operation also dropped sharply in Cagayan Valley: from 28 in 1989, with an aggregate Annual Allowable Cut of 1.3 million m<sup>3</sup>, to four in 1997, with a total AAC of 20,000 m<sup>3</sup> (see also Chapter 7). One of the more problematic aspects of this rigorous reduction in corporate logging concessions during the early 1990s was the lack of alternative management measures. By 1992, the cancellations and suspensions had created approximately one million hectares of accessible residual and old-growth forest. In a context in which forest communities lacked legal tenure to these resources, and the DENR had insufficient staff and resources to protect these, the Sierra Madre became a virtual open-access resource, to be appropriated on a first-come, first-served basis.

#### PROS AND CONS OF SELECTIVE LOGGING

TLA holders are required to manage their forests in accordance with the principles laid down in the Philippine Selective Logging System (SLS). The development of this system, by the College of Forestry of the University of the Philippines, was a response to growing government concerns about the sustainability of large-scale mechanized logging operations:

*"due to the general practice of leaving understocked areas in the process of removing the best marketable timber, the country will face a shortage of timber after the virgin forest has been logged over. Due to careless logging and a complete disregard for the safety of young trees, more areas would be added to the millions of hectares already barren or understocked. To avoid the increase in such areas and the tremendous cost of restoring the forest by artificial reforestation, Selective Logging had to be practised"* (Bureau of Forestry, 1970:5)

Selective Logging optimizes the productivity of natural mixed dipterocarp rainforests for commercial timber species. The higher sustained growth and yield of these species is achieved

by removing 'overmature' and a percentage of 'mature' trees of commercial species from a climax vegetation. Through Timber Stand Improvement measures, the density of commercial species is increased at the expense of non-commercial species. Other prescriptions concern measures to minimize damage due to access roads and log ponds, the protection of critical watersheds, rivers and streams in the concession area, and a felling system that minimizes damage to the residual stand. Section 4.4. describes the system in more detail.

Empirical evidence suggests that selective logging is not as sustainable as the above theoretical prescriptions suggest. Garrity *et al.* (1992:566) cite several studies on the damage caused by the extensive road network, loading and collection points, and the mechanical cutting and hauling operations inherent in large-scale mechanized logging. Based on observations of the impact of selective logging techniques on the residual forest stand, Kuswata (1980:120), Ashton (1980:48) and Thaib and Karnasudirja (1981, all cited in Gilles 1988:99) estimate that half of the standing trees larger than 10 cm in diameter are severely damaged. A FORI study in two set-ups of mechanized logging operations in the Philippines reported that 42 % of the marked residuals had sustained damage after selective logging. High-lead logging is reported to cause damage to as much as 72% of the remaining stock (BFD 1984:223). A weakness which is linked not to the selective logging techniques themselves, but rather to the stability assumptions on which they are based, is the impact of un-modelled social 'distortions' such as forest migration and illegal cuts following the first opening of the old-growth vegetation. As Gillis reports:

*"The Philippine experience with selective cutting is similar to that of Indonesia. Concessionaires who began operating in the 1950s were, by 1986, just reaching the end of the first cutting cycle provided under that system. It is now clear that the quantity and the quality of the second-cycle harvest will be much below the earlier optimistic estimates of the government"* (Gillis 1988:99)

Bautista, an economist who has studied the Philippine forestry sector for many years, explains that many forest concessions never reach a second cut, because their economic horizon is shorter than the 25-year period during which the resources are entrusted to them. Philippine TLA holders only hold on to their concession for an average period of nine to ten years, leading him to conclude that *"given the actual term of the lease, being 25 years, renewable for another 25 years, the early voluntary return of leased lands may reflect the capacity of licensed holders to exhaust the standing timber within their concession area, as well as their lack of interest in replanting and sustaining yield."* (Bautista 1990:78). A 1982 cost/benefit analysis of the Selective Logging System as implemented in three concessions in Agusan del Norte, Cagayan Valley and Davao-Zamboanga del Norte, concludes that the second cut often takes too long to be of economic significance. Likewise, capital outlays in replanting and Timber Stand Improvement after the first cut are of questionable economic rationality for the loggers (Cruz 1982). Higher returns can be earned by investing in other sectors of the economy, or simply banking one's money; real interest rates are well above the productivity of mixed dipterocarp forests (Rice *et al.* 1997). Thus profit-maximizing loggers are inclined towards the unrestricted extraction of all commercial volume during the first cut.

Gillis (1980) argues that governments should allow loggers to follow this tendency, instead of inhibiting such behaviour by imposing non-specific forest charges. In his view, selective logging entails the *high grading*, or cream-skimming of a natural forest capital, and is not the logger's economic response to forest charges based on a non-specific amount per board foot of timber extracted from the concession. High-grading loggers only remove the most valuable stems from the forest, leaving the rest behind, often in damaged condition. The economic value of the damaged, unused volume of residual timber is lost, for both the State and the logger.

Hence, in Gillis' view, high and non-specific forest charges are an incentive for high grading. Although the Philippines did indeed have a system of non-specific forest charges and selective logging guidelines to encourage timber concessionaires to practice high grading, most concessionaires behaved quite like the "rational loggers" described by Bautista, Cruz and Rice *et al.*: they maximized the volumes extracted in the first cut and pulled out of the concession well before a second cut could be harvested. One explanation for the fact that forest charges were unable to reinforce the official selective logging policy was that, until recently, these were disproportionately low. Up until 1980, application fees for a TLA concession were as low as 1 Peso per hectare (Vitug 1993:58), while for each cubic metre of prime hardwood extracted, a forest charge of 3.5 Pesos (well below one percent of the commercial value) was imposed. In 1980, these charges were increased to 9.35 ₱/m<sup>3</sup> (for domestic use) or 13.25 ₱/m<sup>3</sup> (if exported) and by 1984 to 30 Pesos/m<sup>3</sup>, which was still only 5-6% of log value against wholesale price (Bautista 1990:78). The other assumption that underlies the *high-grading* theory is that governments are actually able to impose these taxes in full upon concessionaires. The validity of this assumption in the context of the Cagayan Valley Region is weak, but will be further examined in the next Chapter.

Accepting the sub-optimality of selective logging from an economic perspective, the alternatives Gillis presents are probably less attractive from an environmental point of view. His recommendation that non-specific charges be replaced by a flat income tax or a system of differentiated forest charges according to species may indeed be an incentive for loggers to extract a higher volume, thus increasing earnings from the first cut by both the licensee and the government. However, maximizing extracted volumes results in much greater damage to the forest ecosystem and reduces the chances of forest recovery. In fact, the most recent systems for sustained yield forestry in natural tropical moist forest are based on multiple cycles in which considerably smaller volumes of timber are extracted per hectare (see Chapter 2, section 2.2.4). A more effective, if more complicated, measure would be not only to charge loggers (and lumber users) on the basis of the timber extracted, but also to pass on to them the cost of their operations, both on-site in the remaining stand and off-site, on whatever scale defined. This can be realized either by increasing differentiated forest charges, or via the price-incentive which is part of present efforts towards timber certification. Charges, or prices, could then be co-determined by management variables such as the quality of the residual stand and the reforestation performance of the concessionaire. In this way, poor management would reduce logging profits. In the present situation, loggers do not bear any of the environmental and social consequences of their operations, as Gillis himself notes in a later work:

*"enterprises are only charged on the basis of timber removals, without reference to the stock of merchantable and legal-sized stems in the stand. This contributes to the unavoidable features of selective cutting and unintended depletion of tropical forest resources...the damage to the residual stand on public lands constitutes a social cost for which the logger is not charged...these damages can be very substantial."* (Gillis 1988:98-99)

While it is true that forest charges do not reflect the costs Gillis mentions here, damage to residual trees is punishable by law. In the tree-marking surveys that are a mandatory part of the preparation of the Annual Operations Plan, not only trees for immediate harvesting are marked, but also those which will be ready for harvesting in the next cutting cycle. If the logging operation damages marked residual trees, the law imposes a fine equivalent to four times the regular forest charge (HB 2966, Sec 78).

Despite objections raised by the wood industry, the DENR imposed higher forest charges through Department Administrative Order No. 39, series of 1993. From then onwards, a

reforestation fee of ₱ 12,500 per hectare had to be deposited with the Philippine Wood Producers Association, an amount which is forfeited if the concessionaire does not carry out his reforestation obligations. Forest charges were increased to ₱550/m<sup>3</sup> for common and construction hardwood, and ₱ 3000/m<sup>3</sup> for premium species, which is 10-15 % of market value.

One objection to raising forest charges is the possible side-effect of stimulating illegal extraction. However, the highest deforestation and forest degradation rates in the Philippines took place between 1960 and 1990, when forest charges were low by any standard. In this policy context of low, non-specific forest charges, massive over-cutting by concessionaires and forest migrants took place, as well as other forms of fraud involving the extraction, processing and trading of forest products (Bautista 1990; Broad and Cavanagh 1993; Repetto 1990; Repetto and Gillis 1988; Tumaliuan 1994; Vitug 1993; World Bank 1988, see also Chapter 6). If high grading had indeed occurred, under the silvicultural prescriptions of the Philippine Selective Logging System, the Philippine deforestation problem would probably not be as serious as it is today.

#### DIMINISHING POLITICAL SUPPORT AFTER 1986

The Philippine Government gradually distanced itself from the corporate approach to forest management after 1986. Aside from a few showcases of corporate forest management, such as the pulp and matchwood plantations of PICOP and Providential Tree Farms in Mindanao, the track record of the corporate method of implementing selective logging led to the conclusion that *"rare exceptions apart, the experience thus far has not borne out the merits of the system"* (ADB 1988:19). This was a historical turnaround: for the first time since the timber licensing system was introduced into the Philippines almost exactly one century earlier (cf. section 7.2), the government began to reassess how well its public resources had fared in the hands of private enterprise. This policy shift may be attributed to four developments in Philippine society:

- First, there was the 'EDSA Revolution', when a crowd protected rebellious military and blocked *Epifano Delos Santos Avenue*, the main thoroughfare of Metro Manila, and finally forced Ferdinand Marcos and his family to flee to Hawaii on February 26, 1986. The revolution temporarily cut off many of the ties that had been forged between corporate enterprises and Malacañang, the presidential palace, during the two decades that Marcos was in power. The logging industry was closely associated with nepotism and corruption; and a continuation of this mode of exploitation of public resources was incompatible with the new administration's promise of principled good government. NGOs were allowed to operate openly, became better organized, and began to expose past and present abuses in the logging industry, emphasizing the right of forest communities to co-manage the national forest patrimony. The continuation of corporate forest-access policies was difficult to reconcile with the *People Power*-based political legitimacy of the administration of Mrs. Corazon Aquino.
- Compelling evidence of deforestation discredited claims by the corporate logging lobby that the timber extraction boom between 1960 and 1985 could be sustained. Nationwide, forest degradation and loss had assumed serious dimensions that were apparent not only to foresters and other professionals, but to the citizenry as a whole.
- Environmental awareness heightened as a result of a large number of natural disasters that took place during the period 1990-1992: the 1990 earthquake and the heavy rains that followed it, the 1991 Pinatubo disaster, and the flash flood on November 5, 1991, which killed 8000 people in Ormoc City, Leyte. Local officials blamed the disaster on lost forest

cover, due to unrestricted logging in the watershed areas around Ormoc City.

- As a result of continuous forest migration, the presence of human beings inside the public domain could no longer be neglected. By the late 1980s, the corporate logging concept did not outlive the validity of its fundamental perception of forests as unpopulated timber production systems.

To prevent the resurgence of the old practice of using corporate timber concessions as instruments of favouritism, the new 1987 Constitution introduced competitive bidding in the awarding of forest exploitation rights to the private sector. Logging revenues were to be shared between the Government and the private sector. Forest charges were raised from 5% to 20% of stumpage value, and the export ban on raw logs, referred to in PD 705, was reconfirmed by DAO 19 of 1989. Furthermore, new strategies were employed to supervise logging operations more strictly. Special Operations, such as *Oplan Sagip Gubat* (Operation Save the Virgin Forest), *Oplan Luntian* (Operation clean up) and *Oplan Jericho* were carried out by DENR, in cooperation with the Philippine national police and the Philippine army.

The latter operation entailed an impressive display of government muscle-flexing in the direction of illegal logging activities. The operation entailed a combined air, sea and land drive by DENR and other government agencies, including the army, the police and the Department of Justice, to stamp out the illegal cutting, storing and trading of timber in Regions 2,4 and 10. Illegal sawmills were closed down and more than 250 million pesos' worth of logs confiscated. In Region 2 alone 16 businessmen were charged, 11 of whom were arrested, together with 7 mayors (Manila Bulletin, 15 July 1993). Joseph Estrada, then Vice President and elected in May 1998 as President of the Philippines, supervised the operations himself:

*"right at the heart of what environment officials concede as "the most problematic region". The Government's chief crime buster personally supervised the suspension of two big logging companies here which had been found to be operating outside their concessions (Consolidated Logging and Lumber Mills Inc and Green Valley Timber Inc.). Estrada also inspected some 20,000 cubic meters of timber confiscated by the DENR just last week....Leonardo Paat, DENR Regional Director acknowledged that the provinces of Isabela, Cagayan, Batanes and Nueva Viscaya comprised the 'most notorious' logging region in the country. In 1991, 20% of the national timber production came from the Region....For the past 6 months alone, he said, an estimated 30,000 cubic meters of timber have been illegally cut from the Region 'That would already account for 9% of what is allowed for this year', Paat said. (PDI, 13 July 1993)*

From the first of January 1992 onwards, logging became prohibited in virgin forests, in areas over 1000 metres in elevation and in areas with slopes of 50% and above (DAO 24, 1991). The conservation impact of this order was limited, since by the time it was issued, only a small portion of the Philippines' remaining natural forest had not yet been logged over (see Ch. 3). The remaining one million hectares of old-growth forest were the least accessible ones and of lower commercial value. The log ban in virgin forests did not mean the end of corporate logging: it simply led companies to transfer their attention to the secondary forests. DAO 24 directed holders of TLA and TPSA licenses to conduct timber inventories in at least 5% of the residual stands logged between 1 and 25 years earlier; DENR would then use this as a basis of evaluation in determining whether a second cut could be extracted from these forests. The plans prepared by the concessionaires had to be based on a remaining timber stand stock of 67m<sup>3</sup>/ha after logging, reducing the financial prospects of logging operations in these generally understocked forests (see section 6.2). Nevertheless, the policy designed to protect a relatively small area of old-growth forests was accompanied by regulations easing logging restrictions -

such as the minimum length of the cutting cycle - in residual forests which comprised over 80% of the country's overall forest cover.

Corporate logging moratoria were also imposed on provinces with less than 40% forest cover and on provinces and towns under investigation for past irregularities in the logging industry. In March 1993 a logging moratorium was declared for the entire Cagayan Valley region. This moratorium had been pushed through by a coalition of NGOs and progressive individuals in the regional office of the DENR. Its enthusiastic endorsement by the Central Office in Manila was widely perceived to be, at least in part, politically sponsored: days before the 1992 elections, the provincial governor of Isabela had broken his promise to support administration's candidate for the presidential elections, Fidel Ramos (see Box 5.2, section 5.3.2).

#### THE DEFEAT OF THE TOTAL LOG BAN

On May 18, 1993, the Philippine Senate unanimously approved a 30-year total log ban on third reading. The approval revived the logging ban debate in Philippine society, in spite of the fact that the sharp reduction in old-growth forests in the Philippines' had caused a commensurate decline in the significance of forest industries for the national economy. There was broad consensus on the need for government action to deal with the deforestation crisis in the country, but divisions remained over the question of whether a total log ban was the best instrument to achieve this. Opponents claimed that it would be unfair to penalize poor communities, workers in the wood industry, and all those who abided by forestry rules and regulations simply because of the Government's failure to implement the existing laws.

To turn the Senate proposal into an Act, support from the House of Representatives was necessary. The House was not ready for that, partly because of personal involvement (see section 5.3.2) and partly because of the continuing strength of *"the lobbying power of logging concessionaires"*, branded by USAID as a constraint on forest protection in the Philippines (Vitug 1993:59). The Philippine Wood Producers Association tried to convince scientists, policy makers, lawmakers and the public not to support the total log ban. On January 19, 1995, leaders of six labour unions of *"the workers in the forest-dependent and forest-based industries.....and nine million Filipinos likewise dependent on our forests"*, placed a full-page advertisement in all major national newspapers, thanking President Ramos *"for steadfastly maintaining your policy of Sustainable Forestry Development as contained in the bill now under consideration by the House of Representatives"* (PDI 19/01/95). Senators Mercado and Pimentel Jr., two leading voices of the log ban movement in national politics, disclosed vote-buying plans and lobbying visits to the President of the Philippines by PWPA representatives. These visits were confirmed by President Ramos' Press Secretary, but claims that Ramos had promised to veto a logging ban initiative in the House of Representatives were denied.

PWPA was also represented in a regional policy workshop in Cagayan Valley in October 1994. The vice-president of the association, who had been asked by the President to represent him in the workshop, opened his statement by joking *"it was expensive for Ferdie Lu to ask me to replace him today, because he had to lend me his plane so I could get here!"* During the logging boom in Cagayan Valley, timber licensees often used small private planes to travel from their Manila offices to the concession quarters in the North. This was not only a symbol of status and economic prowess, but also a security measure; the risk of being robbed or kidnapped could not be ruled out in Cagayan Valley and the Sierra Madre. With the security issue clearly out of the way in 1994, this remark was intended to get the message across that the wood industry was still alive and kicking. Once again, the Association stated its opposition to any log ban or moratorium, citing the essential roles of the industry in Philippine society.

such as employment, tax revenues to local government and servicing the demand for wood products, unconventionally worded as follows: "*the need for wood does not decrease with the stoppage of logging activities in a particular province. People need houses, furnitures and when they die, coffins.*" (Lu 1994:6)

The Association of Filipino Foresters did not come up with a unified position in the logging ban debate. Most foresters whom I spoke to were opposed to a total log ban, and even to the more restricted log ban in virgin forests. The 1991 National Master Plan for Forestry Development, which could be seen as the first post-EDSA response of foresters in the government and academe to the Philippine forestry crisis, lays the blame on population growth and forest migration, claiming that 87% of national forest loss resulted from slash-and-burn agriculture, firewood gathering and other land-use practices of upland communities. Although the plan supported the preservation of virgin and mossy forests, it gravitated around priority investment areas for the sustainable production of timber and other forest products from the secondary stands and from tree plantations (Aquino 1994). A newspaper article by one of the authors of the Plan described the dire social consequences that a total log ban would have, such as a "*massive economic dislocation of thousands of wood-based industry workers...not to mention those in other regions directly relying on wood for their livelihood and survival*". The author warns that the Philippines would have to import 120 million Dollar worth of logs every year to meet local wood requirements and that "*most worrisome for the Government...would be its inability to enforce forestry laws and implement order in the uplands as abandoned logging concessions would become 'free for all', exposing their vulnerability to upland dwellers, kaingineros and other small scale illegal loggers*" (Tesoro in PDI, 9/09/1992).

While some of the arguments raised by foresters against a general closure of all corporate logging concessions, and especially the last one mentioned by Tesoro, make much sense, other reactions gave evidence of the remarkable resilience of theoretical principles, notwithstanding their continuous defeat by reality. After almost 40 years of unprecedented decline in forest cover, during which only few logged-over forests reached the end of the first cutting cycle, Martin R. Reyes, the father of the Philippine Selective Logging System, wrote in an article in a large national newspaper:

*"..There is no imminent or future danger to the people rushing to a total logging ban law...we would have missed the P5 billion cashflow from our timber resources in virgin forests best suited for wood production.....Under a selective logging system on a 35-year cutting cycle, 1/35 or 3% of the forest is logged while another 3% matures yearly in one concession or for the entire managed forests nationwide. Thus, 97% always stays unlogged so that to impose a logging ban of 30 or 1 years is unnecessary. Logging continues year after year without loss of forest"* (Philippine Star, 13/03/1993)

Ultimately, Congressmen De Venecia, Yap and the 'responsible logging' lobby had their way in November 1995, when the Philippine House of Representatives adopted the alternative to the log ban, House Bill nr 2966, an *Act Providing for Sustainable Management of Forest Resources*. Although the bill is a far cry from a total log ban, it certainly does not simply maintain the status quo; repealing the two key Decrees which had hitherto guided forest management in the Philippines, PD 705 and PD 1559, the new bill represents a fundamental shift away from corporate to community-based access to public forests, defining Community Based Forest Management (CBFM) as "*the principal strategy to promote sustainable forest management, which shall have precedence over other strategies*". The bill upholds the National Integrated Protected Areas Law and the logging ban for old-growth forest, classifying mossy forests and NIPAS areas as "Protection Forest". All other forests are categorized as Production

Forest subject to extractive activities guided by integrated management plans.

Existing Timber Licensing Agreements are honoured through Section 15 of the new bill, which says that "Existing holders of valid and subsisting licenses or contracts granted by the government for the development, management and utilization of forest resources shall be reviewed by DENR .... and only those which have substantially complied with terms and conditions may be converted into any of the modes authorized under this ACT for the duration of their unexpired term..." Examples of such new modes are the Timber Production Sharing Agreement, which is basically a corporate logging license which specifies mutually agreeable benefit-sharing agreements with local communities and the national government; DAO 121 (1989), the Private Lands Timber Permit (PLTP); and the Industrial Forest Management Agreements (IFMAs) as provided in DAO 60 of 1993.

In areas managed under an IFMA license, logging is only allowed after degraded areas have been reforested or have recovered to such an extent that logging operations have become economically rational without violating the minimum standing stock after logging of 67m<sup>3</sup>/ha. The first generation of IFMA licenses concerned degraded forest lands (brushlands and grasslands) only. After protests from licensees about the limited economic prospects of these areas in the short term, a second generation IFMA was developed, comprising areas which were 50% degraded forest land and for 50% residual forests with sufficient stock to allow logging within a reasonable time span. One cynical observer said that after the adjustments of IFMA-1 into IFMA-2, which served to attract the former TLA holders, he was still waiting for an IFMA-4 (*For*), the version that would compensate the Foresters of the DENR for 'lost income' (see sections 6.2 and 6.3).

As part of the IFMA agreement between government and licensee, the latter is required to deposit a substantial 'holding fee', amounting to 10% of the value of the entire standing stock in the IFMA area. The holding fee is forfeited if the licensee is found violating forestry rules and regulations. The licensee hires a DENR-recognized Forestry Service Organization to carry out stand-stock inventories and prepare a management plan for the IFMA. FSO personnel and DENR officials monitoring their activities are thus in a key position in the setting of standing stock: a low stock reduces the holding fee, but also pushes the first year of logging operations farther into the future. The implementation aspects of this and other policies are discussed in more detail in the next Chapter.

#### FURNITURE INDUSTRY POLICIES

The use of Narra (*Pterocarpus varanus*), the national tree of the Philippines and a prohibited species in logging operations, is tacitly allowed and it continues to be one of the principal raw materials in the furniture industry. Owning a 'Cleopatra' sala set, or a solid Narra dining table, office desk or cabinet, richly decorated with carvings, is a status symbol in Cagayan Valley and in other parts of the Philippines as well. The species only occurs in low densities in mixed dipterocarp forest; a DENR forester estimated that the residual forests on the western slopes of the Sierra Madre contain only one extractable Narra tree per 10 hectares, producing approximately 2.5 m<sup>3</sup> of the precious red core wood most wanted for the production of furniture, parquet floors and wall panels. Despite the scarcity and illegal status of its most important raw material, the number of furniture manufacturing establishments in Cagayan Valley increased rapidly in the early 1990s. Based on records of the Department of Trade and Industry (cited in Huigen 1997), in the province of Isabela alone, more than 400 furniture shops were operating in 1990. In 1993, the Cagayan Valley Chamber of Furniture Industries had a registered membership of 965 shops, and estimated that another 145, mostly smaller

shops were operating in the Region (Chrispijn 1995:47). Estimates on the wood requirement per shop vary widely, but probably averages 1.5 to 2.5 cubic metres of timber per month (see also Ch. 4, section 4.5). The industry not only produces final products, but knock-down elements for furniture and interior decoration as well. Stimulated by a government policy to prohibit the export of unprocessed logs from the Region, production plants in the National Capitol Region, as well as international buyers, now contract local furniture shops to process timber into parts, to be shipped to manufacturing facilities in the National Capitol Region and abroad. Apparently, international demand for wood furniture continues to be good enough to attract foreign investment in the further expansion of industry, encouraging the Cagayan Valley Chamber of Furniture Industries to ask for DENR clemency for the industry;

*"John Cummins, president of Wood Pattern Inc.,...one of the big exporters of wood-based products to the US, Britain and other European countries said that his firm wants to help Quirino not only because of its vast forest resources and readily available skilled manpower but also because it is an ideal site for an industry dispersal program....CVCFI spokesman Agullana said that CVCFI members in Cagayan, Isabela, Nueva Viscaya and Quirino are appealing to the DENR to consider the immediate lifting of the logging moratorium"* (Manila Bulletin, 22 juli 1993)

In fact, this logging moratorium only lasted for a few months in 1992 and 1993. After it had been lifted, DENR Department Administrative Order (DAO) 47, series of 1987, continued to regulate the processing of lumber by furniture industries. This policy entailed a general Timber Amnesty, legalizing all declared timber that was stored in the yards of wood processing facilities (including sawmills and lumber shops) before the end of 1992, irrespective of the origin of these stocks. Whatever was declared would be considered legal and could be used in manufacturing. For each consignment of lumber transported from the manufacturer's premises, the amount of lumber used was subtracted from the declared stock. Once the declared stock had been fully utilized, the supply of new raw materials would have to be secured from a sustainably managed source, to be further specified by the DENR.

In April of 1993, DAO 47 was replaced by DAO 58, the *"Rules and Regulations governing the extraction, assessment, processing and transport of Narra Resources"*. The order included another timber amnesty, legalizing all Narra stocks declared by furniture makers per the end of April of 1994. Again, these legalized stocks were to be used and counted down on the basis of the finished and semi-finished products transported out of each yard, while awaiting the designation of sustainable source areas for the industry in each region. In order to give local DENR officials, Forestry Specialist Organizations, and forest communities time to define these sustainable source areas, DAO 58 lifted the ban on the cutting of Narra and allowed extraction in:

- cancelled and existing corporate timber concessions
- Community Forestry Areas
- buffer zones of NIPAS areas
- private lands, using special Private Land Timber Permits

DAO 58 also prescribes that the extraction of Narra from these areas must follow the normal procedure or tree-marking and validation by the local DENR officials, and a CO or Certificate of Origin (of the timber) had to be carried by transporters hauling the lumber to the manufacturer and the finished product to buyers and retailers.

The sustainable forestry act (HB 2966, discussed under 'corporate logging policies') includes a package of new incentives for the industry. To complement lumber supplies

produced from the above areas, and later on from the sustainable sources, imports of raw materials are allowed against the lowest customs and duty tariffs, even if the products made from imported lumber, rattan poles and other forest-based raw materials are sold in the domestic market (HB 2966, sec 62). As part of these incentives, the industry was also exempted from payment of value added taxes. The economic rationality of these government measures to support the furniture industry is questionable. Both in semi-finished products, like veneer and plywood, and in furniture, the Philippine industry has higher resource costs than its Asian competitors<sup>3</sup>. Bautista therefore concludes that

*"we should not be exporting these relatively inefficiently produced goods. Still, 70% of what is produced in the furniture industry is exported...to keep it going we import cheap raw material without raising import taxes as we do on other important products; at the same time we charge high tariffs on imported products. In this manner, we are protecting an inefficient industry"* (G.M. Bautista, pers.com., Oct. 1994)

Representatives of the wood processing industries in the Philippines like to refer to their sector as a *"guerilla industry"*, which has been in a *"state of suspended extinction, really."* (pers.com., President of the Cagayan Valley Chamber of Furniture Producers, Oct '94). This image appears to have earned the wood-processing industries a special place in the view of DENR policy makers and implementors. The subsequent Department Administrative Orders granting the industry exemptions from the ban on cutting Narra, timber amnesties, as well as repeated extensions of the validity of these orders reflect both the industry's chronic dependence on a scarce and illegal raw material, and the reluctance of the DENR to act against it. During a regional workshop on forest policy reform in Region 2, the special relationship between DENR and the furniture makers was reflected in the interactions between a ranking DENR official and the President of the Cagayan Valley Chamber of Furniture Industries. The DENR official presented *Oplan Lansag Kapatagan*, a joint operation of DENR and the Philippine national police to confiscate illegal lumber stocks in the lowlands. As he presented the plan, he reassured the Chamber President, saying:

*"Don't worry Mr. Muñoz, eh pare!<sup>4</sup> I already said: do not touch the furniture makers for the meantime! So now it is only the hardware stores and lumber dealers we are dealing with in this programme."* (Research diary, Oct 1994).

During the first half of the 1990s, furniture shops and the local construction industry became the region's principal users of forest products, and forest communities replaced logging companies as the main suppliers of the logs and flitches used in these industries. DAO 58 and the sustainable forestry act provide tighter legislation towards the sustainable access to wood resources. On the other hand, the current levels of Narra consumption by the industry is not in balance with the growth and yield of the estimated remaining natural stock of Narra on the western slopes. At the present size and turnover of the industry, even the Sierra Madre as a whole is not large enough to serve as a sustainable source (see section 4.5). The past few decades offer little evidence that the industry and the DENR will be able to transform the

<sup>3</sup> The variable taken by Bautista as an indicator for the industry's comparative advantage is the real domestic resource cost (= the domestic resource cost divided by shadow exchange rate) in relation to foreign producers. Resource cost for semi-finished products and furniture is respectively 1.27 and 2.97 times higher in the Philippines than elsewhere in Asia.

<sup>4</sup> The affinitive term *pare* refers to ritual kinship between persons, for example by being godfather to each other's children or by having co-sponsored a wedding (see also section 6.4).

industry into one that keys its size, production level and processes, and investment strategies to long-term sustainability. On the other hand, furniture industries in Cagayan Valley appear to be aware of the risks of relying too heavily on Narra. Although the search for alternative raw materials for the production of furniture started only recently, the first shops have started to plant and manage plantations with fast-growing species also suitable for furniture making, such as *Gmelina arborea*.

### 5.2.3 Forest land use and occupancy

After a century, during which corporate logging companies were given priority access to all public forests of the Philippines, and during which neither indigenous nor migrant forest communities could gain legal tenure to these lands, government policies towards forest communities have made a turnaround in the course of the past decade. The 1995 sustainable forest management bill speaks of the people residing inside the public domain as

*"forest communities, indigenous peoples and other communities whose lives, culture and well being are intricately linked with the forests, shall be recognized, encouraged and actively involved in sustainable forest management and development under the principle of stewardship and people empowerment"* (HB 2966, 1995)

As recently as 1978, the position of the Philippine government regarding indigenous and migrant communities residing in public and classified forest lands was still that:

*"kaingineros, squatters, cultural minorities and other occupants of public forest shall whenever the best land use of the area so demands, be ejected and relocated to the nearest accessible government settlement area"* (PD 1559, 1978, cited in De Guzman 1992:46)

An important aspect of these negative perceptions about people living in forests was that their livelihood activities were incompatible with conditions required for the sustainable management of corporate forest concessions. Slash-and-burn agriculture, carabao logging and certain hunting and gathering techniques disturb the recovery of a residual forest after a logging operation, and they were perceived to be the prime cause of deforestation in the Philippines (ADB 1994; Bee 1987; Cruz *et al.* 1992; DENR 1992). Early government programmes dealing with forest communities were aimed at discouraging forest migration, and categorically prohibited slash-and-burn farming and carabao logging. Foresters were trained for timber extraction and the protection of timber concessions against 'squatters'. They had relatively little background in social forestry or in agroforestry techniques.

One of the first major programmes that was intended - once and for all - to stabilize the opening of residual forests by indigenous and forest migrant communities was the 1971 Kaingin Management and Land Settlement programme. The programme offered upland residents entry permits and kaingin management leases, or the alternative option of being relocated on Alienable and Disposable lands. Permanent land settlements were reserved for *"cultural minorities who cannot be induced to accept a combination of employment and/or allocation of lands suitable for permanent agriculture, or those who prefer the isolated forest environment to perpetuate their traditional practices"* (DAO 62 in De Guzman 1992:58) Its successor, the Forest Occupancy Management programme, again offered land use certificates for areas in forest concessions and in the Public Domain. None of the programmes was able to stem the flow of migrants into the public domain. By 1982, a more comprehensive social forestry approach was adopted.

## THE INTEGRATED SOCIAL FORESTRY PROGRAMME (ISF)

The first government policy providing forest migrants with occupancy, instead of land use rights was Letter of Instruction N° 1260 of 1982, establishing the Integrated Social Forestry Programme (ISF). Upland residents participating in the ISF programme were awarded a Certificate of Stewardship Contract (CSC) for an area to a maximum of seven hectares of denuded forest land, abandoned pasture lands, former reforestation areas or other forest land with less than 10% forest cover. A CSC allowed upland farmers or forest communities the "peaceful occupation, possession and sustainable management" of an upland area for a period of 25 years, renewable for another 25 years. (DENR 1993:15). Stewardship contracts differ from genuine titles in the sense that they are, at least *de jure*, subject to cancellation or non-renewal if the holder does not comply with certain restrictions on his land use. A certificate-holder is bound to implement sustainable land use systems on the land and maintain a minimum forest cover of 20%, either as tree farms or in natural vegetation. Furthermore, the CSC holder pledges to prevent fires and "refrain from cutting or harvesting naturally growing trees here and in adjacent areas" (DENR 1993:18). CSCs are inalienable, except when the original steward dies, moves away or ceases to be the actual tiller of the land.

The CSC was a compromise solution, combining the continued state ownership of forest lands and resources and recognizing the need of upland residents to have a certain level of tenurial security as a precondition for the investments they were expected to make in sustainable upland use (Chambers 1988; Gibbs *et al.* 1990; Dorner and Thiesenhusen 1992; Raintree 1986). Extension became part of the task of the DENR, initially focussing on increasing food production, on soil and water conservation measures and on the rehabilitation of occupied forest lands. In return for these services and for the security provided by the Stewardship, a CSC holder commits to cultivate his or her ISF farm only and not to clear any more residual forest lands for *uma* farms (see section 4.6).

In 1988, the possibility of being awarded larger forest areas under community-based stewardships was added to the individual or family-based Stewardship Certificate. Since then 36 Communal Stewardship Certificates have been issued countrywide, the largest of which was 14,000 ha to the Ikalahan Educational Foundation in Imugan, Nueva Viscaya. This indigenous upland community combines traditional land-use practices with technical innovations developed in many years of close cooperation between the community and a missionary named Father Delbert Rice. This Community Stewardship did become a success, in terms of both forest regeneration and the forest-based livelihood which people derive from it. The foundation is discussed in detail in Cornista and Escueta (1990) Magno (1996), and Sajor (in press). Until the community forestry and ancestral domain programmes caught the limelight in 1994, the ISF programme was the flagship forest policy of the DENR. Over 256,000 individual stewardships were issued in the Philippines since 1982, with a total area of 586,000 ha, and 36 community stewardships (with a total area of 76,628 ha) (PNA, Aug 1996). Between 1982 and 1995, the Cagayan Valley Regional Office of DENR issued individual Certificate of Stewardship contracts for a total area of 25,977 hectares of forest lands occupied by forest migrants, and a 14,000-hectare community stewardship to the above mentioned Ikalahan Foundation (DENR 1996).

The overall impact of the ISF programme on the stabilization of forest frontier areas remains questionable; while the first Letter Of Instruction specified that only those who had arrived on or before December 31, 1981 would qualify for a stewardship, the last date has been repeatedly pushed forward to accommodate more recent forest migrants. The ISF programme may in fact have promoted forest migration by syphoning poor families from the lowlands into the forest lands. Compared to the repeated failures of policies aimed at alleviating rural poverty

through agrarian reform in the lowlands, the ISF programme offered a concrete option for farmers and the landless poor to acquire farmland and benefit from other forms of government assistance included in the ISF programme, such as agricultural extension.

A second problem has been the continued opening of forest lands by CSC holders; permanent cropping requires ploughing and the use of agrochemicals, investments that not all upland families can afford or are willing to make. For that reason, migrants tend to continue opening up new *uma* lands. A third development undermining the stabilizing impact of ISF is the use of CSCs as collateral for loans from informal moneylenders. Loan default may then lead to tenancy. A case study in one migrant settlement in Quirino found that out of 16 CSC holders, "only one farmer still tills the land certified to him, seven have sold their certified land, five others have mortgaged (parts of) their lands and the remaining three title holders have divided their land among their offspring..." (Huijbregts 1996:78). The same study also reports families holding multiple Stewardship Certificates, with one migrant holding 56 hectares of this land under stewardship, divided into 15 certificates registered in the name of his two wives, his son, five daughters, three adopted sons and four brothers. Although no systematic survey has yet been carried out on the extent of such practices, it is safe to say that this strategy of acquiring tenurial rights to larger areas than the maximum defined in the ISF programme is simply too logical to be an exception, especially in light of the fact that the elder children of forest migrants are entitled to Stewardship Certificates but often have full or part-time employment in other sectors of the economy. The case of this son of a former logging-company employee illustrates this:

*"In 1979, my father was employed here as a bulldozer operator with the logging company. He saw that the land was good here and so he established our farm and the house near a nice forest. In 1984, I also found a job in the company, as a chainsaw operator. When the TLA closed, I returned to being a farmer. Until that time, others had worked it for me, using the tertia system (sharecropping, GT). But lately, we hire workers on a per-day basis. I have one sister in Echague, one brother in Cabagan, he is a busdriver for REM, one in Angadanan who is also a busdriver with MaryAnne, one in Cordon and one working in Hongkong. For all of us, we have one CSC, the total area is 22 ha."* (Research diary, March 1996)

The ISF programme was intended to turn denuded forest lands into agroforestry farms, with sustainable combinations of food and tree crops, using combined soil and water conservation techniques. This approach was believed to contribute to forest conservation, because increased tenurial security and higher productivity would slow down the clearing of residual forests for agriculture. Cases such as the Ikalahan Foundation, and the Centre for People Empowerment in the Uplands in Ilagan, Isabela, a seven-hectare farm individually managed by a forest migrant and his extended family, demonstrate that degraded forest lands can indeed be turned into productive multi-functional forest farms (Rice 1994). However, these cases continue to be exceptions to the rule observed in most ISF sites in the Sierra Madre, where white and yellow corn are mono-cropped (see also section 4.6 and Chapter 9).

One sanction which DENR can employ to discourage upland residents from violating the terms and conditions specified in the ISF programme is to eventually deny a CSC-holder renewal of his land rights after 25 years. But the chances are minimal that, should that measure be taken, the tiller and his family would actually abandon the forest land and cultivation practices after these have provided a basic livelihood for so many years. HB 2966, Sec 80 provides heavy penalties for the unlawful occupation and destruction of government land: a fine of 20,000-100,000 pesos plus a maximum imprisonment of 6 years is slapped on anyone unlawfully occupying and "destroying" government land. Anyone caught in the act of carrying

out slash-and-burn agriculture risks a prison sentence of 10-12 years and a fine equivalent to eight times the forest charges for the products lost as a result of the clearing. But then again, drastic as these penalties may sound, none of them can be realistically imposed on a forest migrant living on the margin of subsistence. The Regional Executive Director of the DENR wrote in a conference paper on the ISF project and its successor, the Community Forestry Programme:

*"The ISFP program lacks the necessary strength to totally transform the people as the protector and manager of the forest resources in their immediate vicinities. The fact that the only resource, the people are entitled to are those benefits from their respective farm lots, they are deprived of the benefits from the forest which they are supposed to extract...Hence, to democratize further the distribution of natural wealth, the Community Forestry Programme emerged"* (Seraspi 1994:8)

#### COMMUNITY-BASED FOREST MANAGEMENT AGREEMENTS (CBFMA) AND CERTIFICATES OF ANCESTRAL DOMAIN CLAIMS (CADC)

Community Forestry was first adopted as a government strategy in 1989. During the first years of legal access of upland communities to publicly owned forest products, the CFP programme was merely one of several modes of forest management, as noted earlier. In July 1995, however, Presidential Decree N° 263 declared Community-Based Forest Management as *"the national strategy to ensure sustainable development of the country's forest land resources"*. In 1996, DENR specified the rules and regulations for the implementation of this decree. This was a far cry from past decades, when upland communities were depicted as the prime culprits in the national deforestation problem, the state now

*"...recognizes the indispensable role of local communities and indigenous peoples in the protection, rehabilitation, development and management of land and natural resources .... pursuant to its policy of people empowerment, seeks to entrust the responsibility for rehabilitation, protection, conservation and management of forest lands to local communities and indigenous peoples...."* (DENR DAO 34, 1996)

To operationalize the new strategy, a new tenurial instrument was introduced, the Community Based Forest Management Agreement (CBFMA). Like the Timber Licensing Agreement and the Certificate of Stewardship, the CBFMA is essentially a leasehold security with a validity of 25 years, renewable for another 25 years. The same DAO defines the CBFMA as a *"co-production agreement between the community and the government, for the former to develop, utilize and manage, consistent with the principles of sustainable development, a specified piece of forest land....The products harvested, or removed therefrom or the equivalent cash value thereof shall be shared by the said community and the Government"* The issuance of a community forestry concession starts with the application by an upland community. Three phases follow between application and the start of community management; the first phase is a verification step, in which the DENR assesses whether an area qualifies as a possible community-based forest concession. If this phase produces a favourable result, a 'community preparation' phase follows, in which the members of an upland community are trained and organized for their new resource management responsibilities. Once DENR deems the community to be adequately equipped to enter into a community forestry agreement with the government, this second phase ends with the formal signing of the CBFMA certificate by the head of the Cooperative and the DENR Regional Director. The third phase is the preparation and implementation of a Comprehensive Forest Management Plan. This plan specifies the terms and conditions for the use of the community's forest. The Ancestral Domain Management Plan performs the same function for indigenous forest communities with recognized claims.

All previous community-based programmes of the DENR are subsumed under the new

community forestry strategy. The importance the DENR attaches to it is reflected in the establishment of a series of new bodies for the specific purpose of administering the implementation of the community forestry programme. Both at the national level and in all regional offices, the *Multi-Sectoral Forest Protection Committees*, which were created under Executive Order 196, to oversee the implementation of activities under the Environment and Natural Resources Sectoral Adjustment Loan (see section 5.3.4), are reorganized into *Community-Based Forest Management Steering Committees*, chaired by the DENR Secretary and his Regional Executive Directors, respectively. A new Community-Based Forestry Coordinating Office has been added to the central DENR bureaucracy in Manila. This coordinating office also has regional counterparts in which the Regional Director and the heads of his technical units participate. Furthermore, the DAO has set a one-year period in which an entirely new Community Forestry Division will be developed at the Central Office, to oversee the implementation of the community-based resource management programmes of the DENR.

Community-based forestry entails the formal acknowledgement by the state of the resource-utilization rights of communities residing inside the public domain; the state's exclusive ownership of these lands remains uncontested. Tenurial security is linked exclusively to the agricultural and residential lands, for which forest migrants can secure Stewardship Certificates. Indigenous forest communities are the only exception to this rule; through DAO 2 of 1993, a Certificate of Ancestral Domain Claim (CADC) can be granted to indigenous cultural communities once it has been established that the land covered by the certificate has been in their actual, continuous and open possession and occupation since time immemorial. Access to resources is the central issue in a community-based forest management agreement, while the ancestral-domain claims deal primarily with the right to claim ownership to lands which successive colonial and independent Philippine governments have declared to be part of the Public Domain. Until 1995, DENR issued five Certificate of Ancestral Domain Claims to indigenous cultural communities, including the Bugkalot tribe in Quirino, which covered a total area of 248,243 ha of public lands. Two years later, in February 1997, the number of approved CADCs had increased to 75, covering a total area of 1,057,895 ha of lands in the Public Domain (PNA, 12/02/1997).

The policy shift towards community-based resource management complicates the possibilities for the Philippine government to keep track of the way licensees manage the resources entrusted to them. First, the number of licenced loggers is becoming much larger than it used to be under the corporate timber-licensing system. For a bureaucracy as hampered by lack of means and manpower as the DENR, monitoring their performance is thus going to be even more difficult than it proved to be under corporate forest management (see Ch 6). This constraint is compounded by the physical and social inaccessibility of upland communities to lowland officials. The DENR is, in effect, forced to rely on the communities' internal monitoring and enforcement capability. However, most migrant communities inside the Sierra Madre are relatively young and heterogeneous. These characteristics pose challenges to the formation of socially accepted leadership, a precondition for an effective community-based approach to monitoring and enforcement (Van den Top and Persoon, in press).

The 1995 sustainable forest management bill recognizes the '*vested rights of indigenous communities over the forest resources in their ancestral domains, and orders their delineation in accordance with the guidelines set out in DAO 2 (1993)*' (HB2966, Sec 36). The 1987 constitution prevents both DAO 2 and this bill from making provisions for the alienation of ancestral lands and resources inside the Public Domain, *i.e.*, granting indigenous forest communities real ownership titles to their lands. But at the time when this book was written,

the Indigenous Peoples' Rights Act and the necessary constitutional amendments required for the state to grant indigenous communities real titles to their ancestral lands had just been passed in the House of Representatives. This law has far-reaching implications for the future use and protection of the Philippines' last natural forests, most of which are inhabited by indigenous cultural communities and, for that reason, likely to be alienated from the State<sup>5</sup>.

At first sight, these recent legislative initiatives to 'democratize access' to the Public Domain has the appearance of true popular representation: elected lawmakers, clothed in the sacred rhetoric of granting underprivileged forest occupants the right to use the natural resources in their ancestral lands for their betterment, undo a social injustice of colonial origin. An alternative interpretation of these urban initiatives is that a coalition of local politicians is collaboratively disassembling central government control over the natural resources in their electoral districts. Once indigenous forest communities are give the possibility to convert ancestral land claims into ancestral land titles, access to these lands and their resources will no longer be determined by the - admittedly inept - DENR bureaucracy, but by the response of these forest communities to external economic, political and cultural influences. Formally, the State still has a say in decisions about the use, or sale, of ancestral land. For example, the sustainable-forest act only allows alienation of ancestral lands to "*a bona-fide member of the recognized indigenous cultural community*" (HB 2966, Sec 37). However, such restrictions are not watertight in a context where the use of dummy-names is a common business practice. In the Social Forestry Programme, the use of Certificates of Stewardship as collateral in informal loans has also caused alienation, in spite of the fact that this was prohibited by the contract between government and the Stewardship holder. The initial experiences of indigenous forest communities entering into disadvantageous contracts with mining companies and logging firms have already been reported from several Regions, including Cagayan Valley (van den Top & Persoon, *op.cit.*; PNA 9 Oct '97)

Section 37 also aims to safeguard the Philippines' ancestral lands from unsustainable, outsider-led resource extraction activities, by requiring the preparation of a Community-Based Forest Management Plan (in CADC areas an 'Ancestral Domains Management Plan'). For communities which have been granted a CBFMA, this plan must be prepared as soon as the Agreement has been signed, directly after the validation and community preparation phases. In ancestral domains, the development of a management plan only becomes necessary when the community wishes to engage in the systematic extraction of forest products. Recognized Forestry Specialist Organizations (FSOs) are invited to bid for government contracts to assist the community in the preparation of such a management plan. Most FSOs in Cagayan Valley are private organizations, registered as NGOs but basically functioning as small consultancy firms, which contract government personnel, academics, former employees of logging companies and young graduates for specific, short-term services. In the development and implementation of the plan, these experts collaborate closely with the community, an only after the community has been trained and organized to effectively participate in the planning process.

The preparation of the resource management plan requires technical skills that impose limits on the participatory quality of the design procedure. In the initial phase, consultants interact with the forest community on a wide range of issues, such as the setting up of a local NGO or People's Organization, the demarcation of individual and communal lands within the ancestral domain, land-use practices in these lands, and the prevailing rules regarding these land uses. Social and biophysical surveys are also carried out, including stand-stock inventories in the

<sup>5</sup> The PhD study of Dante M. Aquino will offer a more comprehensive analysis of the CADC programme.

forested parts of the domain. The community forestry rules and regulations require that the management plan should be based on a full inventory of the resources in the area. In the two - internationally funded - pilot community forestry projects of Wasid and Lindingan, Nagtipunan, Quirino, the preparation of the management plan included the production of entirely new topographic and thematic maps of the area (based on a new set of areal photographs made especially for the project). The new maps and the stand-stock inventories were entered into a GIS-linked database, by means of which extractable log volumes could be adequately determined. This technical process obviously takes place outside the community, in the computer rooms of the experts contracted by the FSO. Once the results of computer modelling under various assumptions and management choices have been optimized by the experts, the communities concerned are informed of the results, together with the major - assumptions made in the models underlying them. In addition to the management plan, the community is expected to prepare annual Operations Plans, which specify the activities to be carried out inside the community concession. These technical requirements, while necessary to monitor the sustainability of community-based forest concessions, also offer opportunities for certain groups within these communities, as well as for outside interest groups, to play a disproportionate decision making role in resource-management decisions.

Government prescriptions on the management of community forestry projects pertain not only to minimum stand-stock levels, extraction rates and logging techniques, but also to the way in which the revenues generated by the sale of these products are used. Memorandum Circular 95-18 (1995) specifies that 25% of the gross revenues from forest extraction (market value minus logging cost) must be paid to the government in the form of forest charges. Of the gross income that remains after the forest charges are paid, 30% must be deposited in a Community Development Trust Fund *"to finance forest rehabilitation activities as well as urgent augmentation of necessary basic services"* (Sec. 6.2.1). The remainder of the revenues is placed in a Community Development Investment Fund. This fund may be used for loans, community projects, and the purchase of tools needed in alternative-livelihood options. In bold type, the Circular specifies that *"the CDIF and subsequent net incomes shall not be used to finance activities that are based on harvesting from the natural forests"* (Sec 6.2.2) Section 5 of the same Circular states, again in bold type, that the principal focus of planning should be on *"activities outside rather than inside the natural forest"* and on the identification and development of alternative livelihood activities *"not dependent on existing forest resources"* Community residents are encouraged to invest their *"time, labour, effort and other resources"* into these alternatives, because *"...income from forest products should only provide temporary, supplemental finance as needed"*

Besides these symbolic warnings against over-reliance on existing forest products, the guidelines for the preparation of the annual Operations Plans (based on the comprehensive resource management plan) contain no guidelines on how to develop alternative-livelihood options, but are devoted entirely to a definition of the extractive activities which will be allowed in the natural forest. In fact, the overall rationale of the comprehensive resource-management plan bears a strong resemblance to the one that used to underlie corporate logging operations. Holders of Timber Licensing Agreements were allowed to extract timber from natural forest stands in exchange for forest protection and the re-investment of part of the logging revenues in the long-term productivity of the concession area. Likewise, community-based licensees are allowed to

*"BORROW FROM MOTHER NATURE [capitals in original text], convert part of the standing capital (natural forests) into liquid funds (cash) and use/reinvest part of the proceeds for forestlands*

rehabilitation, agroforestry development, community strengthening, forest protection and forest management" (DENR Memorandum Circular 95-18, Nov 1995)

Loggers with a strictly economic rationality do not make these investments, as we saw earlier in this section, because the time horizon within which these investments will start producing returns is far away, making them risky and of questionable economic rationality. Thus the community-based forestry policy appears to be based on the expectation that, unlike the concessionaires and their contractors, communities of forest migrants do not conduct themselves as the perfect *homo economicus*, but also apply, as de Groot (1992) calls them, care-driven and honour-driven motives. There are hypothetical grounds on the basis of which communities might indeed be expected to re-invest part of their logging revenue in more environmentally friendly ways than lowland-based timber concessionaires include the following:

– *Importance of agricultural income*

Loggers are only interested in logs, upland families also need productive soils. The importance of agriculture gives upland families more reason to make investments in the long-term productivity of lands that they perceive as theirs.

– *More rapid returns on investments in agroforestry*

Investments in agroforestry are likely to produce returns within the first few years, at any rate within a shorter time span than the 25-to-30-year cycle required in the selective logging of natural dipterocarp forest.

– *Permanent residence versus mobile capital*

Logging companies can move their operations or capital to other areas or sectors of the economy. Forest migrants tend to build up permanent settlements inside the forest lands. Although migrants have shown their preparedness to move family and residence to the forest lands, few would opt to move for a second time, especially after having made investments in permanently cultivated lands. Unlike mobile logging companies, forest residents are motivated by self-interest to take good care of resources that they perceive to be the foundation of their future and that of their children.

In the Comprehensive Management Plan guiding the community in the use of its forest concession, these other values are made subordinate to economic feasibility, the first touchstone in the evaluation of the management plan. In an internal brainstorming document, a foreign consultant to the community forestry programme openly questioned the economic feasibility of the approach embodied in its strict management prescriptions. The main problems, according to the consultant, were the high 'pre-implementation costs', such as the drafting of the management plan, and the preparation and organization of the community (Seve 1996) Most of the economic costs of community forestry, such as those involved in reforestation, the establishment of agroforestry systems, and providing external technical assistance to the community, make themselves felt in the initial years of the project. Forestry investments, on the other hand, generally take at least a decade to bear fruit. At the prevailing official interest rates of 30% per annum (which is considerably lower than the rates in the informal finance sector), the income to be generated by the harvest of a reforestation area depreciates in year 8 to only 12% of its net present value. The importance of the economic evaluation criterion for the resource management plan, both for the communities concerned and for investors in these schemes, is liable to cause additional pressure on the DENR to relax existing limitations on

timber extraction from marginal lands<sup>6</sup>.

The continuing forestry bias of the community-based forest management policy fails to address the more fundamental discrepancy between the production horizon of trees and the needs horizon of tree-growing forest migrants. Unless community forestry incorporates a more significant investment component in agro-forestry and the production of rapid-turnover annual crops, loans from the bank of nature are unlikely to achieve a high recovery rate.

The community-based approach to forest management also differs from the former, corporate approach in the limited use of mechanized extraction and log-hauling equipment. With the exception of chainsaws, forest communities have to rely entirely on labour-intensive logging techniques and on the pulling power of the carabao, much like the system prevailing before the introduction of mechanized corporate logging, which Tamesis described as a "slow, wasteful, and tedious process" (Tamesis 1963:85). While, technologically speaking, community forestry resembles nineteenth-century logging practices, it also comprises modern legacies from the corporate mode of logging. For example, the contemporary extraction regime is not, as in the nineteenth century, set by local wood requirements and a limited demand in the local market, but by the Comprehensive Management Plan, which is based on expert assumptions and models made outside the community. Taking into account that in most residual forests commercial timber stocks are located at greater distances from forest settlements, and that many forest migrants have witnessed, if not personally experienced, the mechanized mode of logging, this aspect of the community forestry policy is bound to meet with increasing resistance. The first cases of communities hiring trucks and a bulldozer for their logging activities have already been reported from the Sierra Madre.

By 1996, 26 Community forestry projects had been approved in Cagayan Valley, covering a total of 146,350 ha of secondary forest lands in the Sierra Madre. Only five of these sites were already allowed to extract a Sustainable Allowable Cut from these areas in 1996: 718 m<sup>3</sup> of Narra and 4,185 m<sup>3</sup> of other hardwoods. In addition, DENR awarded a CADC for 108,000 ha of forest lands to the Bugkalot tribe in Quirino. Another eight projects covering 81,558 ha in Cagayan and Isabela were still under consideration by the end of 1996.

#### 5.2.4 Reforestation and conservation policies

The previous sections dealt with DENR policies aimed at regulating the two primary activities most clearly linked to the deforestation problem: timber extraction and upland agriculture by forest migrants. But the rapid loss of natural forest areas in the country also prompted the Philippine government to engage directly in the establishment of tree plantations, and to enhance the protected status of the Philippines' remaining areas of natural forest.

#### REFORESTATION

Between 1940 and 1970, reforestation projects in Cagayan Valley were based on the simple concept of hiring casual labour to plant trees on public land. Some of these projects began to yield fruit in the 1960s, such as the Magat reforestation project, the Benguet pine plantations of Santa Fe, the enrichment planting project in logged over forests in Diadi (all in Nueva

<sup>6</sup> In one Community Forestry Pilot project in Quirino Province, the consultants who prepared the management plan found that these residual stands were inadequately stocked for timber harvesting; they would not be able to generate sufficient logging income if DENR restrictions on minimum standing stock and maximum slope and elevation of areas to be logged were maintained. To create a feasible management plan, the consultants negotiated with the DENR for a relaxation of these restrictions and were allowed to include some areas above 50% or 1000 m elevation in their harvesting plan.

Viscaya), the Liwanag reforestation project in Isabela and the Callao Reforestation Project in Cagayan. De Frel (1993) quotes reports by foresters in the academic world and by former labourers of the Liwanag project claiming that, by the end of the 1960s, 1400 hectares of rolling land in the foothills of the Sierra Madre had been reforested with thick stands of Benguet Pine, Teak, Narra and Mahogany.

As the boom in corporate logging in the Sierra Madre began in the late 1960s, timber licensees took the lead in reforestation in Cagayan Valley: for every hectare logged in their concessions, they were obliged to reforest a hectare of denuded land. During the rainy season, between July and November, when the forest becomes inaccessible and logging activities slowed down, company employees worked in the reforestation areas, clearing vegetation<sup>7</sup>, digging holes and planting seedlings from government-owned and company nurseries.

Fast-growing species like *Eucalyptus sp.*, *Ipil Ipil*, *Acacia aureculiformis* (Japanese acacia), and *Acacia mangium* (Mangium) were most often planted in these areas. During the 1980s *Gmelina arborea* (Yemane or Papertree) became the most popular reforestation species; it can be planted using bare-root seedlings, which enables workers to carry more seedlings on each trip from the nursery to the planting site. Other major advantages are the fact that it can be propagated vegetatively and, even more important, its ability to survive incidental fires.

As in other regions of the Philippines, fires are the most important cause of the failure of reforestation projects in Cagayan Valley. Timber concessionaires, who engage in reforestation solely because it means that they can stay in the logging business (Vermeulen 1991), were required to maintain the reforestation areas and protect them from fire for only two years. After that initial period, the government would take over this responsibility, an impossible task for a bureaucracy, as its local officials charged with the frustrating duty to manage these projects invariably found out. Reforestation sites burned down for a variety of reasons:

- Grasslands used for reforestation were often located in the proximity of ranches or areas under Pasture Lease Agreement. Adjacent ranches were burnt to allow young, palatable grass shoots to sprout, and fire could easily spread to the plantations.
- Government reforestation projects were perceived to be nobody's property, and this lack of responsibility and accountability paralyzed the willingness of local people to prevent and combat fires.
- Concessionaires, who had only partially complied with reforestation requirements, used fire to destroy the evidence of their failure, so that they could claim bad luck.
- Plantations were intentionally set on fire by nearby communities, to protest against employment disputes, such as overdue salary payments or the lack of job opportunities in cases where reforestation was carried out by company employees or labourers brought in from elsewhere.
- If people from nearby communities were being hired, intentional burning could be a strategy to secure future employment via reforestation programmes.
- Some areas picked for reforestation were deemed incompatible with other land uses practised by local people or were perceived by them as an effort on behalf of the government to undo their usufruct or occupancy rights in these areas.
- Many reforestation projects were planned in or near settled areas, on lands with good agricultural potential or, as in the case of the Liwanag project, in the proximity of the

<sup>7</sup> To reduce the risk of fire on the reforestation sites, and to drive out snakes that could pose a danger to the tree-planters, the natural vegetation (mostly cogon grass *Imperatata cylindrica*) is often burned prior to hole-digging and planting. The disadvantage of this method of site preparation is that it destroys the natural regrowth of shrubs and trees already present in areas selected for reforestation, and carries the risk of fire spreading to adjacent forest areas and tree plantations.

national highway. Money-lending land speculators sometimes financed farmers, to help them to encroach on these areas, thus opening them up for agriculture. By the time a community of more than 1000 people (200 families) has settled here, the area qualifies for barangay status and the value of the land is bound to rise along with the demand for residential and commercial lots.

As a result, the initial reforestation successes of the fifties and sixties were virtually undone in the next two decades. The deforestation crisis of the late 1980s catalyzed the resolve of the Government to draw conclusions from the disappointing experience of reforestation by the government and logging companies. As in the case of other forest policies, local people emerged as key actors in the process of change. In 1986, the Government initiated the National Forestation Programme, an ambitious effort to reforest 1.4 million hectares of denuded public land before the year 2000. Aside from stimulating private enterprise to develop commercial forest plantations, Contract Reforestation was the second pillar under this programme. International donors, including the Asian Development Bank and Japan's Overseas Economic Development Fund pledged over 600 million dollar in international aid to assist the Philippines in realizing this goal (see also section 5.3.4).

In general, the contract reforestation projects consisted of a sequence of paid labour followed by leasehold tenure of local communities, either on an individual or on a household basis. The tenurial instrument offered to groups or communities engaged in contract reforestation was for them to be issued a Forest land Management Agreement. FLMAs are awarded after a period of three to four years of plantation establishment, provided that the contractor has achieved an 80% seedling survival rate, and the young trees have reached an average height of 2 to 2.5 metres. An FLMA hold , which is valid for 25 years (renewable for another 25 years), grants the owner the right to harvest, sell or otherwise utilize the products of the trees grown in the area. During this period, the FLMA holder is also allowed to interplant other crops on the land for his livelihood.

In his comparative analyses of contract reforestation projects in Cagayan Valley, Pasicolan (1996) indicated a number of factors that determined the success or failure of reforestation projects in public lands in which paid labour had been employed. First, he concluded, the flow of payments should be regular and if this is not the case (as often happened in contract reforestation projects), local contractors should be wealthy enough - and willing - to buffer these delivery failures, in order not to disturb local confidence in the undertaking. The second factor identified by Pasicolan was clarity on the tenurial status of the land; farmers who were under the impression that tree-planting meant the eventual loss of whatever informal land rights they assume they have over the lands they cultivate, tried to sabotage the project. If, on the other hand, the success of the reforestation project was understood to be an instrument to gain formally recognized tenurial rights to these lands (such as the Forest Land Management Agreement), local people were more likely to assume responsibility for the plantation. Local participation was also enhanced by If the giving farmers a say in the selection of the species planted in reforestation projects; the same held true when farmers were given the option of cultivating annual crops between the seedlings for as long as this is feasible. Pasicolan pointed critically at the impact which financial incentives may have for community-level cooperation, concluding that in some project areas "*everything revolved around money*" (*ibid*:85), including the willingness to participate in fire-fighting. When the impression is created that money is being thrown around, the participants' own sense of ownership, responsibility and initiative is reduced. Complications occurred more often in community-based contract reforestation projects

than in the family-based contracts and those granted to indigenous tribes. The main cause of this difference was, according to Pasicolan, that "*most community contracts did not evolve from a common interest among members, but usually from a one-person initiative*"; dissent over the distribution of benefits of contract reforestation quickly grew when the project initiator "*takes a bigger share and treats the other members of the community as subcontracted wage labourers*" (*ibid*:94-95). Although an ADB evaluation mission in 1990 concluded, on the basis of the rapid increase in areas planted in the first two years, that the National Forestation Programme "*has shown commendable progress, with all the targets having been met or substantially exceeded*" (*ibid*:50), these successes did not prove very sustainable. Three years later, government sources, quoted by Pasicolan, estimated the average seedling survival rate in the programme at between 10 and 15% (*ibid*:3).

Section 20 of the Sustainable Forest Management Bill (HB 2966, see 5.2.1) exempts plantation-grown timber from the ban on the export of raw logs and lumber from the Philippines. The bill offers a comprehensive package of incentives encouraging private investment in reforestation: prospective investors in forest plantations, in both public and in private lands, are offered tax holidays, exemptions from import duties and preferential access to cheap Government credit schemes. Sargent and Bass (1992) point to the risk that such a policy of indiscriminate support for the establishment of plantations will lead to a reduction in the urgency, effort and capital invested in the protection of natural forest. Plantation forests do not represent the same diversity of natural functions and values, and they reduce the need to safeguard the productivity of natural forests. Quoting cases from Nepal and Papua New Guinea, the authors caution policy makers against rushing into plantation forestry without an adequate demand forecast, and advise them to look into the social, economic and environmental implications of plantation establishment:

*"Plantations are a complement to natural forest, not a substitute. At present, because intact natural forest has a relatively low perceived and realizable value, it is being lost...Many of the lands which now support uniform areas of fast-growing, sometimes alien trees have been converted from natural forest"* (Sargent and Bass 1992:32)

#### THE NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

The signing of Republic Act N° 7586, the National Integrated Protected Areas Act, on the first of June, 1992, was one of the last acts of President Corazon Aquino. By the end of that same month, Secretary Fulgencio Factoran signed Department Order N° 25 (Series of 1992), which contained the implementing rules and regulations of the NIPAS Act. The act pertains to all areas previously protected as wildlife reserves, sanctuaries, wilderness areas, old-growth forests and other protected areas. It provides that within three years from the time it goes into effect, DENR must provide the House of Representatives with maps, legal descriptions of the boundaries of these protected areas, and an assessment of their suitability for protection under the act. Within the DENR, the Parks and Wildlife Bureau is the unit which coordinates the implementation of NIPAS.

The Global Environment Facility (US\$17.13 million) and Philippine government (US\$ 2.87 million) provided the basic funds for the first seven years (1992-1999) of NIPAS implementation on 10 priority sites. A consortium of 10 Philippine NGOs for Protected Areas (NIPA) has been contracted to assist the DENR in this effort. DENR, the World Bank (which administers the NIPAS/GEF funds), and NIPA attach great importance to gaining support from local communities for the conservation effort. This concern is reflected in the decision to earmark half of the budget for an Integrated Protected Area Fund IPAF; the Fund provides commercial loans to local initiatives aimed at developing economically viable "*non-degrading*

*sources of livelihood*" (World Bank 1994:18), which can sustain themselves in the longer run. In this manner, the IPAF is designed to perpetuate itself as a revolving fund. DAO 25 specifies the sale of flora and fauna from the area, leasehold income from multiple-use areas (including tourism), fines, entry fees, grants and other donations as additional sources of income for the IPAF. Profits may be used for small grants to handicrafts projects, and support for ecotourism, agroforestry and other employment-generating projects.

In 1979, President Marcos declared all forest lands within a 45-kilometre radius from the coastal town of Palanan to be wilderness area (Letter of Instruction N° 917, 1979, Appendix 8). Although logging companies with concessions on the southern, western and northern boundaries of the wilderness had penetrated into the area at several places, the greater part of the wilderness had indeed remained intact. Outside this large reserve, all TLA holders were required to conserve a wilderness section within their concession, an aggregate area of 11,560 ha. TLA holders naturally opted to conserve the highest, most inaccessible areas in their concessions, mostly areas of mossy forest. The Fuyot Springs and Callao Caves, both established in the 1930s, are the two national parks on the western slopes of the Sierra Madre. Although their condition deteriorated under poor management, the Callao Caves continues to be a site of both recreational and archeological interest.

The Palanan Wilderness Area on the eastern slopes of the Sierra Madre is among the ten priority sites selected by the Philippine government for the implementation of NIPAS. To allow a redefinition of its boundaries based on ecological considerations, the area was renamed the Northern Sierra Madre Nature Park. Each NIPAS site is managed by a newly established Protected Area Management Board (PAMB), chaired by the DENR Regional Executive Director. Section 11 of the NIPAS law stipulates that each municipality and each barangay affected by the law should have a representative on the Board, as well as one representative from each tribal community, three NGO representatives, the Provincial Development Officer and representatives from other departments or national government agencies involved in protected area management. The Northern Sierra Madre Natural Park encompasses a surface area of 331,000 ha, administered by four Municipalities, and a host of barangay- and tribal leaders in the area. A full meeting of the 85-member PAMB takes place only once a year.

In 1996, the Netherlands Government granted an additional budget of 5.6 million dollar to an intersectoral consortium of NGOs and GOs, to be set up and led by PLAN International, for the conservation of the Sierra Madre Nature Park. These added means are being used for the establishment and demarcation of the boundaries of the park, the development of an integrated management plan for the area, and more substantial investments in community development and alternative livelihood opportunities.

The private sector, landowners in the Pacific communities, Local Government Units and NEDA are engaged in a continuous and concerted effort to realize the construction of lateral roads across the Sierra Madre (see also section 5.3.1). DENR counteracts this pressure with the 1992 logging ban on old-growth forests, and two other presidential decrees. Any undertaking that significantly affects the quality of the environment is required by law to be subjected to an Environmental Impact Assessment. Presidential Decree 1586 (June 1978) established an EIA system, with special emphasis on environmentally critical projects and areas. Heavy industry, resource-extractive projects, and major infrastructure works, such as the construction of roads, dams and bridges require an Environmental Compliance Certificate, issued by the Environmental Management Bureau in Manila. Non-critical projects planned in environmentally critical areas require Environmental Impact Statements issued by the DENR Regional Offices. Many of the criteria defining an area as 'environmentally critical' apply to

the Northern Sierra Madre: it contains a nature park of international significance, as well as large tracts of ancestral domain, serves as the recharging aquifer and watershed of the lowlands of Cagayan Valley, and it is also one of the last habitats of the Philippines' largely endemic flora and fauna, including the Philippine Eagle (*Phytocophaga jefferyi*). In July 1995, the Sierra Madre received additional protection status through presidential proclamation N° 615, declaring the Philippine Eagle as the national bird of the Philippines, and directing the DENR to create sanctuaries in the eagle's known habitat. On the other hand, the greater budgets that Local Government Units will have in the near future, because of the Local Government Code (which is discussed in more detail in the next section), provincial governors, municipal mayors and the private sector will soon no longer rely on national or international assistance to fund the construction of lateral roads. While physical barriers will continue to block the construction of roads across the central body of the Northern Sierra Madre Nature Park, circumferential roads across lower ridges to the north (the Baggao-Valley cove and Tumauini-Maconacon routes) and to the south (San Guillermo-Dinapigue) will pose new challenges to the conservation prospects of the area.

### 5.3 The forest policy actors in Cagayan Valley

#### 5.3.1 Line agencies

##### DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES (DENR)

*"Despite complaints by activists that this department is too tame and too slow, it is surely the most assertive in Asia" (Rush 1991: 82)*

The Department of Environment and Natural Resources is responsible for the sustainable management of all terrestrial and coastal areas of the Public Domain, and for the monitoring and enforcement of all national laws governing overall parameters safeguarding the quality of water, air, landscape and biodiversity. In 1993, a Philippine Council for Sustainable Development was established by presidential decree. Representatives from many sectors of society sit on this council, which advises the Government on policies required to meet the objectives spelled out in Philippine Strategy for Sustainable Development and Agenda 21, the national environmental action plans that grew out of the 1992 Rio Declaration. The DENR is composed of the following Bureaus:

##### - Forest Management Bureau

Traditionally the most influential technical unit of the Agency, the FMB handles the responsibilities of the former Bureau of Forest Development (scathingly referred to by critics of the Marcos administration as the Bureau of Forest Destruction), which was integrated into the newly created DENR<sup>8</sup> in 1986. The former dominance of this Bureau emanated from its mandate to issue and monitor private licenses for the extraction of forest products, a responsibility which led to frequent contacts between the director of this bureau and the Office of the President of the Philippines (Vitug 1993). Rapid deforestation and the decline of corporate logging after 1986 reduced the bureau's political and administrative leverage. FMB continues to handle all government programs pertaining to forest utilization and -protection, including internationally funded projects in support of these policies and programmes, such as the development in 1992 of the Master Plan for Forestry Development and the ADB funded National Forestation Program.

<sup>8</sup> Initially as the DEENR (Department of Environment, Energy and Natural Resources).

- **Land Management Bureau**  
Charged with the classification, lease and sale of lands in the Public Domain.
- **Bureau of Mines and Geo-sciences**  
Supervises the exploration and extraction of mineral resources
- **Environmental Management Bureau**  
Handles the DENR's environmental awareness campaigns and issues Environmental Compliance Certificates (after an Environmental Impact Assessment has been carried out) for infrastructure, industrial and extraction projects in environmentally sensitive areas.
- **Ecosystems Research and Development Bureau (ERDB)**  
Carries out and coordinates research (mainly applied studies) in fields relevant to DENR policy development. This bureau is located on the Los Baños campus of the University of the Philippines.
- **Protected Areas and Wildlife Bureau**  
In charge of all matters pertaining to the establishment and management of National Parks and the protection of Philippine wildlife, e.g., from illegal trade. In addition to these technical bureaus, the Department includes a support-services division for legal, financial, administrative planning and management.

Table 5.1 Staff structure of DENR, Cagayan Valley, by organizational unit (1996)

	<i>technical</i>	<i>support*</i>	<i>total</i>	<i>% of total</i>
<b>Regional Office</b>			558	34
Office of the RED	6	7		
Fin/Adm/Legal	6	130		
ERDB	13	24		
Env. + Protected Areas	11	4		
Lands	81	179		
Mines	14	2		
Forest management	69	12		
Forest Resources Devm't	20	8		
Forest Conservation	15	2		
Land Evaluation	34	2		
<b>PENROs (5)</b>	20	47	67	4
<b>CENROs (16)</b>			1,008	62
CENROs + Admin. Support	16	96	112	7
Environment	16	4	20	1
Lands			67	4
Forestry	712	97	809	50
Forester III	16			
Forester II	66			
Forester I	121			
Tree markers	130			
Forest rangers	379			
<b>Total</b>			1,633	100
Personnell cost (million pesos)			89.120	
Total Budget (million pesos)			106.514	
Personnell cost as % of total budget			84	

\*clerks, secretaries, utility workers, assistants

DENR is the least affluent Philippine government agency. In 1992, only 0.4% of the annual government budget, or 3.6 Billion pesos, was allocated to operations and programmes of the DENR (PDI 14 Sep. 1992). The department has a decentralized organizational structure, deploying 85% of its 24,000 employees in the regions (Clarke 1995:81). Law enforcement has also been entirely decentralized, and is the exclusive responsibility of the Regional Offices (Remigio 1994, cited in Huijbregts 1996).

In Cagayan Valley, all Regional Offices of the National Line Agencies, including the DENR, are based in Tuguegarao, the regional service centre and capital of Cagayan Province. The highest DENR representative is the Regional Executive Director (RED), a presidential appointee who reports directly to the Secretary. Between 1990 and 1994, the Regional Director was an Engineer from the Bureau of Lands. The appointment of a non-forester as the highest official in the region, which had been pending for over a year, was considered exceptional by many inside and outside the DENR, because of the continuing importance of the forestry sector in Cagayan Valley. Combining humility with tenacity, and building up good relationships with NGOs and academics in the Region, this RED remained at his post for almost five years (see also section 5.3.3). His long tenure was all the more remarkable in the light of his uncompromising stand with regard to the corporate logging industry. A large number of corporate timber concessions were suspended or cancelled under his leadership, triggering several attempts to have him removed from the region. DENR officials are subjected to regular reshuffles, or transfers to other regions or positions in the bureaucracy, for reasons discussed in section 6.3.1.

Technical Directors, who serve under the Regional Director, manage divisions which parallel the bureaus described above. Five PENROs and 16 CENROs implement DENR policies at the provincial and municipal level, respectively. In the Cagayan Valley Region, more than 60% of the DENR's 1633 employees are assigned at the CENRO level (See table 5.1). Still, this is a minimal staffing level in relation to the resources that DENR manages. In 1996, employees with a forestry-related position comprised roughly half of the total staff; they included 379 forest rangers and 130 tree markers. Many of the forest guards spent only a small portion of their official time inside the forest lands<sup>9</sup>. This means that every forest guard or tree-marker was expected to monitor activities in an area covering over 2000 hectares of forest land. In the early 1990s, the average salary of a forest guard was between 3000 and 4000 Pesos (US\$ 150. =) per month. In 1995, when the NIPAS programme was implemented, the whole of the Palanan Wilderness Area, 255,000 ha of mountainous forested land and a coastal zone with a length of over 70 km was monitored by only eight forest rangers, without field gear or other surveillance equipment. The area was regularly visited by foreign fishing boats and by armed illegal loggers from Quezon Province. The CENRO personnel of Palanan had one small motorboat to monitor these movements and, where necessary, to confiscate boats suspected of carrying illegal forest or fishery products.

DENR's mandate places this agency at odds with most other line agencies in the region, as I will demonstrate below. Its leverage on this uneven playing field is further weakened by a credibility crisis: the idealistic objectives of the DENR are in sharp contrast with its public image as a corrupt and inefficient organization.

---

<sup>9</sup> According to the press officer of the DENR in Region 2, forest rangers are often reassigned to ease staff shortages in the CENRO offices.

## NATIONAL ECONOMIC DEVELOPMENT AUTHORITY (NEDA)

"Without a road, the Sierra Madre is useless for mankind, a flower in the dark."  
Former NEDA Regional Director for Cagayan Valley, 18 May 1992, Palanan, Isabela

Economic growth, employment, education, and public health are the four main objectives that the National Economic Development Authority uses in the planning, monitoring and evaluation of the Regional development, and in the coordination of plans and programmes by other line agencies, such as the departments of Agriculture, Health, Trade and Industries, and Public Works & Highways. Until the early 1990s, NEDA occupied a central position between the national government, on the one hand, and the regional offices of all other national line agencies together with the local government units, on the other. The Regional Development Council, a multi-sectoral board in which these organizations participate, supplemented with members from NGO and private sectors, is chaired by the regional director of the NEDA. Endorsement by the Council was almost a prerequisite for local projects requiring national government approval or funding. In this coordinating and brokerage task, the NEDA Regional Office is guided by the aims and objectives set out in five-year regional development plans. Although smaller than most other line agencies in terms of staff numbers (only about 40 staff work in the cramped quarters of the regional office in Tuguegarao), NEDA has traditionally been a relatively influential government actor in the region. In the 1988 FFARM report, the World Bank qualifies NEDA as "*extremely strong*" in the field of macro-economic planning, but "*underdeveloped*" in its capability to integrate natural resource and environmental issues into these plans, both at the national and the regional level (World Bank 1988). With the progressive implementation of the recent devolution policies, however, NEDA has been matched, if not overtaken, by the Department of Interior and Local Government.

In 1991, NEDA produced a Regional Physical Framework Plan (RPPF), a 25-year master plan defining the economic growth centres and sectors in the region and setting priorities for the infrastructure works needed to stimulate this economic growth. The RPPF characterizes the inaccessibility of the region as one of the most important causes for its sluggish economic growth up until 1990. The northeast coast of the Sierra Madre between Santa Ana and Baler, Quezon Province, can only be reached by sea or by air. As a result, the rich fishing grounds and mineral resources that are known to exist on the Pacific coast of Region 2 cannot be accessed and put to greater economic use. In addition to a series of roads, bridges and agro-industrial zones in the lowlands of Cagayan Valley, the Physical Framework Plan therefore envisages the construction of nine lateral roads across the Sierra Madre. Recognizing the limitations imposed by such recent policies as the ban on logging in virgin forest and the NIPAS law, NEDA has given priority to two routes. According to recent reports from Cagayan Valley, the first one, from Angadanan/San Guillermo to Dinapigue, which only required the opening up of a short stretch of forest separating logging roads from the eastern and western slopes, was indeed opened in 1997 in a combined operation of the Province of Isabela and two operational logging concessions in the Pacific forests of Isabela and Aurora. The second crossing, connecting the lowland town of Tumauni and the coastal logging town of Maconacon, passes through more steep and rugged terrain and may therefore require a higher investment. The municipality of Tumauni sees this road not only as its gateway to the Pacific coast, but to the Taiwanese market as well.

The "*plight of the people in the coastal towns*" is an argument that both NEDA, local politicians and companies use to defend the decision to construct these lateral roads. The coastal towns are relatively small communities with only basic facilities for public health, primary and secondary education and other public services (which do not include public

telephones or electricity). In the absence of roads across the Northern Sierra Madre, the people in the quiet coastal towns can only reach outside markets and essential services by plane or by boat. The private companies servicing the coastal towns charge fares that only the better-off can afford. Travel by boat is a cheaper option, but entails a 10-12 hour journey along the dangerous Pacific Coast that is only feasible in calm weather. The total number of people residing along the Pacific coast is just over 20,000, roughly equivalent to the population of one rural town in Cagayan Valley.

NEDA and DENR represent opposing interests on the controversial issue of whether or not to construct roads across the Sierra Madre. DENR and conservation-oriented NGOs emphasize that the construction of lateral roads would complicate the implementation of the NIPAS law in the Northern Sierra Madre Nature Park by enabling settlers, businessmen and other newcomers to gain access to the forest products and minerals of the Sierra Madre and the lands and fishery resources on the Pacific coast. Advocates of the road, (led by local government units and NEDA), claim that it is precisely the absence of a road which cripples the government's ability to enforce laws and policies<sup>10</sup>. Landowners with title to agricultural and residential land in the coastal towns are in favour of the road, knowing that the value of their properties is certain to rise as a result of better connections between Cagayan Valley and its coastal towns.

#### DEPARTMENT OF AGRICULTURE (DA)

Cagayan Valley is one of the granaries of the Philippines. With a brief interruption of about twenty years, when the logging industry took the lead in the economy and Cagayan Valley became a large timber exporter, the production of agricultural crops - first tobacco, later rice and corn - has always been the mainstay of economic activity in the Region (see also Ch 8). In 1988, 68 % of the labour force were employed in the agricultural sector, producing 55 % of the Region's Gross Regional Domestic Product (NEDA 1991). Like NEDA, therefore, DA is an important line agency in Region 2.

When in 1986 the Department of Agriculture and Natural Resources (DANR) was reorganized and the bureaus of Mines, Lands and Forestry were lumped together in the newly formed DENR, the Bureaus of Agriculture, Soils and Fisheries were merged, forming the new Department of Agriculture. One could say that this move split responsibility for land use in the Cagayan Valley Region equally between DA and DENR, the former confining its role to the lowlands, the latter to the forest lands. From a national perspective, DA appears to be a somewhat decentralized organization, with 86% of its 21,000 staff detailed in the regions. The organization of DA in the region continues to be quite centralized: its Regional Office in Tuguegarao is the largest among the line agencies. In addition, DA has well-equipped demonstration farms and breeding centres for animal husbandry in the provinces. Agricultural officers with a basic support staff hold office in all five provincial capitols and 93 municipal buildings in Cagayan Valley.

Increasing farm productivity and stimulating agri-business is a primary function of DA. In Region 2, the extension programmes of the department concentrate on the production of commercial grains. To increase production levels, DA promotes technological innovations such as farm mechanization, the introduction of new, high-yielding varieties of rice and corn, and

<sup>10</sup> This argument is not supported by the empirical evidence; the largest area of medium- to high forest cover areas is located on the inaccessible eastern slopes, while low forest cover classes dominate the western slopes, where a dense network of logging roads was constructed by timber concessionaires (see Chapter 3).

the proper use of the agrochemicals which they require. Increases in production and fertilizer turn-over are important performance indicators for the Regional Office. Fisheries and livestock production are other areas where DA pursues this policy of boosting agricultural output. For long, animal husbandry was an ailing sector that consisted primarily of government-sponsored carabao breeding centres as private ranches were abandoned due to cattle rustling and the insurgency. Since the early 1990s, this sector has seen a rapid expansion in broiler farming and pig husbandry. This development has taken place simultaneously with the introduction of new hybrid corn varieties in the croplands of Cagayan Valley. The most commonly cultivated yellow varieties are used almost exclusively for the production of animal stockfeeds (see Chapter 9).

Despite a long coastline and the presence of the Cagayan, the largest river of the Philippines, commercial fishery industries of any significance have not developed here and Cagayan Valley's local fish demand is met in part by fish imported from other regions (pers. com., Regional Director of DTI, Oct 1994).

Since the aims pursued by DA are synergetic with those of the agribusiness sector, it is not surprising that DA research and extension programmes are often co-sponsored by companies in the business of producing agrochemicals or buying agricultural products; DA produces leaflets and sends extension workers to the *barrio*, while the company provides a free bag of fertilizer or certified seeds as incentives for farmers to respond positively to the extension programme.

Agribusiness companies are the main sponsors of the annual agricultural fair organized by DA. During the 1996 fair, DA officials in the organizing committee were wearing prized jeans jackets which prominently displayed the name of a national agribusiness company. Graphs indicating the quantities of seeds and chemical fertilizers distributed in the Region were on display, as evidence of DA's performance. Producers and traders of farm machinery and agrochemicals have been the principal beneficiaries of DA's farm modernization programme. While fertilizer sales in the region doubled between 1980 and 1995, yields of rice and corn barely increased during the same period (DA Regional Director, cited in PNA, 23/10/97), averaging 2 and 3 tons per hectare for rice and corn respectively. In 1997, DA organized special "fertilizer watch teams" to establish the role of the inappropriate use of fertilizers and other agrochemicals in these disappointing yield levels.

As noted above, DA's activities are officially confined to the Alienable and Disposable lands, where the bulk of the region's principal commercial crops are produced. However, forest migration and the concomitant opening up of forest lands for upland agriculture are currently creating increased demand for agricultural extension in the public domain, traditionally the 'territory' of the DENR. Although the official distribution of responsibilities between DA and DENR remains in place, the spontaneous conversion of public forests into private, though untitled, agricultural farms by forest migrants places DENR in an awkward position, caught between the need to develop and implement agricultural extension programmes in the uplands and the risk of duplicating a technical government service already offered by its former "mother institution". DA has no immediate reason to be concerned about the expansion of arable land into the public domain<sup>11</sup>. Quite the contrary, since agricultural expansion into

<sup>11</sup> In the longer run, the conversion of watershed forests into upland farms may indeed have negative environmental impacts on lowland agriculture, by altering the hydrological characteristics of the river basin. To date, however, these impacts have been poorly quantified in economic terms. They are depend largely on area-specific physical characteristics and the kind of forest modification or land use practised in the watershed area (cf Bruijnzeel 1990; Bruijnzeel and Critchley 1996; Hamilton and Pearce 1987; Oosterberg 1997).

the forest lands reflects positively on the principal performance indicator of the agency: increased agricultural output. The implications of this development for the deforestation problem in the Sierra Madre are examined in Chapter 9.

#### DEPARTMENT OF AGRARIAN REFORM (DAR)

The organizational structure of DAR is comparable to that of DA. The majority of DAR employees work at the provincial and municipal level, under the respective Provincial and Municipal Agrarian Reform Officers. These officials implement the redistribution of large agricultural landholdings among sharecroppers, leaseholding tenants, and landless people. In 1972, after one of several failed attempts since the Commonwealth period to carry out land reform, President Marcos decreed the implementation of Operation Land Transfer (PD 27, 1972). The scope of this programme was limited to private rice and corn lands and only allowed re-distribution to tenants actually occupying these lands. The 1988 Comprehensive Agrarian Reform Act (Republic Act 6657) expanded the scope of agrarian reform to both tenanted and untenanted lands, irrespective of the crops cultivated there, and stipulated that no land owner would be allowed to retain more than five hectares of land, plus three for each heir, provided the person was 15 or older and was actually engaged in tilling the soil or managing the farm. Areas under Pasture Lease Agreements are excluded from re-distribution. Land acquisition is either financed through the Land Bank of the Philippines or arranged through a direct payment scheme between land owner and tenant.<sup>12</sup> Overall, CARP aims to re-distribute 10.3 million hectares among 3.9 million farmers over a period of ten years. Half of this area is inside the public lands; here, occupants are either issued Stewardship Certificates by the DENR under its ISF programme, or DAR Certificates of Land Ownership Awards (CLOAs). The latter apply to areas consisting of foreclosed estates and other publicly owned, non-forested lands (Plugge 1992).

Between 1987 and 1990, the Aquino administration realized only 4.6% of the projected land areas to be distributed (Putzel 1992b:358). Actual budgets made available for CARP have remained under those projected, and tend to be overly used for landlord compensation. Delays in actual disbursements of these amounts are slowing down CARP implementation even further (Clarke 1995:84). Much of the delay is due to resistance on the part of influential landowners, anxious to avoid the disintegration of their holdings. Some were able to re-title their lands in favour of members of the extended family clan, while others employed delaying tactics on the issue of the appropriate price to be paid for the land. President Aquino's relatives protected their Hacienda Luisita in Tarlac from re-distribution by developing a stock-distribution alternative. The majority of their tenants voted in favour of this second option. Conversion of agricultural lands into industrial and residential estates is another way of evading land reform<sup>13</sup>. In chapter 8 several local instances of CARP-related tactics by landowners are mentioned, as part of an analysis on the respective roles of credit and land ownership in agrarian change and forest migration.

The policy objectives of DAR and DENR are compatible and mutually supportive: alleviating rural poverty and landlessness combats one of the major driving forces behind forest migration. The ISF programme of DENR is important for DAR, in realizing the ambitions set

<sup>12</sup> Direct payment schemes tend to protract the tenancy relationship between landowner and cultivator, if the latter fails to pay amortization terms for the land.

<sup>13</sup> For a comprehensive discussion of Agrarian Reform in the Philippines, see Putzel (1992).

out in RA 6657; it is easier to grant 25-year public land leases to people residing there than to take away land from families who strongly identify with the land holdings accumulated by their ancestors. In the lowlands, the impact of the CARP law remained limited, in spite of optimistic official records on land distribution accomplishments. Leasehold arrangements recorded as having been agreed upon do not guarantee the eventual turnover of land titles from landowners to cultivators; in cases where the Land Bank has already paid the landowner and is receiving amortization payments from the cultivators, these loans have to compete with other personal loans for both capital inputs and personal needs during the cropping season.

In addition to land re-distribution, DAR also handles a CARP Beneficiaries Development Programme, intended to identify and strengthen so-called Agrarian Reform Communities (ARCs). After a community has been identified as ARC, training programmes for the development of local organizational and other skills are implemented there, and financial support is given for the development of economic and physical infrastructure. Included in these support services are credit assistance (production loans, trading capital, emergency loans), construction of roads and bridges, and grants for the acquisition of post-harvest facilities and the construction of warehouses. In 1993 the ARC programme received a considerable boost in the form of a grant from the European Community in support of this component of the CARP programme (Clarke 1995:86)

The Beneficiaries Development Programme concentrates its activities in the lowlands. The Land Bank of the Philippines, the privatized former financial arm of DAR, has been reluctant to support upland farmers holding Stewardship Certificates. It prefers to finance farmers cultivating A&D land; the title these farmers are amortizing is the collateral against which the Land Bank can provide loans. Loans by the Land Bank are attractive because interest rates are much lower than those charged in the informal sector. Still, the number of farmers borrowing from these informal sources far exceeds those lending from formal institutions. The issue of informal credit, and its implications for forest migration and cropping patterns in the Sierra Madre is dealt with in greater detail in Chapters 8 and 9.

#### DEPARTMENT OF INTERIOR AND LOCAL GOVERNMENT (DILG)

While officially the DILG is not directly involved in land use or forest management, it is an actor of increasing significance for the deforestation problem. This line agency manages the administrative affairs of the Philippine national police and the Local Government Units (LGUs). Since the enactment of the Local Government Code (Republic Act 7160) in 1991, many responsibilities and funds formerly handled by national line agencies, such as DA and DENR, have gradually devolved to the LGUs. DILG represents these units, ensures they receive their share of the Internal Revenue Allotment and monitors their financial and administrative management; it is also involved in the appointment and resignation of elected officials, builds up the institutional capability of the PNP and LGUs, and regularly conducts inventories of the services and facilities they provide. Table 5.2 shows the three levels of local government, the criteria which define these levels, and the respective number of units which each has in Cagayan Valley. The first level, the barangay, has a population of at least 2,000 people (5,000 in Metro Manila), and receives a standard Internal Revenue Allotment of 80,000 Pesos. The elected officials heading these local government units are a governor and vice-governor, a mayor and vice mayor and a Barangay captain, each assisted by an elected council. There are no elective positions at the regional administrative level of government.

**Table 5.2 Local Government Units, criteria and number in Cagayan Valley**

	Minimum Income	Minimum Population	Minimum Land Area	Number in Region 02
Provinces	P 20 M	250,000	2000 km <sup>2</sup>	5
City	P 20 M	150,000	100 km <sup>2</sup>	1
Municipalities	P 2,5 M	25,000	50 km <sup>2</sup>	93

Sources: Nolleto 1991; NEDA 1991, NSO 1990

As a result of the Local Government Code, the power and responsibilities still vested in the regional levels of the National Government Agencies have been reduced to such an extent that questions are being raised about the necessity to maintain this administrative Government layer in future (Brillantes 1997:3). Section 26 of the Local Government Code states the "Duty of National Government Agencies in the Maintenance of Ecological Balance"; through this article, DENR maintains the ultimate say in deciding whether resource management plans developed by Local Government Units are acceptable in the light of national environmental considerations. DAI (1995) notes that DENR has watered down and delayed the devolution of its tasks to Local Government Units. Both the Code and DENR DAO 30 (1992) contains many phrases that emphasize the central role which is still played by DENR. The consultant writes that one of the reasons for DENR reluctance to hand over tasks to the LGUs is the "prevailing centralist attitude of many DENR personnel and the general negative view of local Government leaders as motivated purely by 'politics'." (DAI 1995:3). In my concluding analysis, and in section 6.5 of the next chapter, I will come back to this debate, and to the bearing its outcome may have on future forest management.

Before the *Local Government Code* was enacted, the 1988 FFARM study of the World Bank reported that local government units were characterized by stagnant and insufficient resources (only 10-12% of national expenditures was spent by the LGUs), and that they were overly dependent on money transfers from Manila, because they could not raise revenues of their own. The Local Government Code boosted the financial resources of the Local Government Units; from 1993 onwards, all cities and municipalities received a larger increase in Internal Revenue Allotment (IRA) than required to finance functions and personnel devolved to them (LDAP 1994, cited in Rood 1997:4), and by 1996, all Local Government Units had substantially greater financial means at their disposal<sup>14</sup>. On the other hand, their dependence on funds from the Internal Revenue Allotment has largely remained, despite provisions in the Local Government Code to enable these offices to raise their own revenues. Hence, it is in the interest of a municipality or province to try and increase its tax revenues by attracting manufacturing and service industries, developing its natural resources, and attracting more people to settle within its borders.

One of the local economic opportunities recognized by many politicians is the proximity of the northernmost region of the Philippines to Taiwan, which is seen as an advantage in attract Taiwanese investments in the region. In 1992, the Governor of Isabela revealed plans for the establishment of an *Isabela Industrial and Tourism Estate* within the boundaries of the Northern Sierra Madre Nature Park. A group of Taiwanese investors who were visiting Subic

<sup>14</sup> The LGC specifies that 40% of the taxes raised by the Bureau of Internal Revenue may be distributed over the Local Government Units (23% each for provinces and cities, 34% to the municipalities and 20% to the barangays. The distribution of this budget among the provinces, cities and municipalities is based on the following key: 25% across the board, 25% based on the land area and 50% on total population. BIR revenue is generated by local taxes on real estate, banking and natural resource utilization (forest charges, mining fees) and other sources of local income. In addition, the Local Government Units have a 40% share of the gross collections made from "National Wealth", including mining taxes, royalties, forest and fisheries charges and other taxes, alongside fees and charges related to the use of public natural resources.

Bay were brought to Cagayan Valley for a two-day visit. The group flew over Bicobian Bay, a well-sheltered natural harbour north of Palanan, where the Governor offered investment opportunities for a fully Taiwanese-owned knock-down furniture manufacturing industry and fish canneries.

#### DEPARTMENT OF TRADE AND INDUSTRY (DTI)

The Department of Trade and Industry is a relatively distant player in the deforestation policy field. It maintains a modest Regional Office in Tuguegarao and has no decentralized offices at the provincial or municipal level. Its main role is to attract and stimulate private enterprise in Cagayan Valley and to keep track of the flow of commodities in and out of the region. DTI's main thrust is to stimulate industrial activity in an economy which concentrates on agriculture and trade or services; together, these two sectors account for 89% of GRDP (NEDA 1991). Region 02 is a net importer of eggs, chicken and beef, produced in part using grains produced here (pers.com. DTI Regional Director Hipolito, July 1994). A similar situation is still seen in banana processing: 30,000 tons of banana are exported from Cagayan Valley annually, while processed banana ketchup is imported from the National Capitol Region.

Investment records in Cagayan Valley suggest that entrepreneurs are not very interested in developing an industrial base here; between 1988 and 1992, capital investments by manufacturing corporations in Region 2 totalled 2.4 million pesos annually (NSO 1995). Because of its proximity to the National Capitol Region and Taiwan, the region would be well-positioned to create added value to the products of its primary sectors, i.e. agriculture, forestry and, in the near future, mining. Several factors have, so far, prevented the unfolding of this potential:

- The business preferences of the Region's principal capitalists, many of whom are of Chinese background. The Regional Director of DTI analyzed their role as follows "*you know about the Chinese here. They are traders, not industrialists, entrepreneurs. Their capital is their industry. And now here comes my brother the Filipino; he says I do not have any capital, so how can I make money!*" (Research diary, Sep. '91).
- The Region's poor infrastructure and other public services. Road connections with the biggest internal market for industrial products, the National Capitol Region, are slow and unreliable. With a local population of only 2.5 million people with a low per capita income, a viable manufacturing enterprise has to produce for export from the region, either to the rest of the Philippines or to foreign markets. Electricity supply, telephone services and educational facilities are weak as well, affecting product quality and output. Even in the Narra furniture industry, the best products are made in the Metro Manila area, not in the region itself (Huigen 1997)

The second type of constraints have been remedied to some extent in recent years. Should the Peace and Order situation continue to improve, and the Region's mineral, or marine natural resource reserves can be more systematically explored, industrial development may be expected to gradually pick up, too.

Thus, DTI's industrialization drive represents two agency interests or motives which are of relevance for deforestation. First, the Sierra Madre still harbours a considerable volume of valuable timber and other forest products, as well as mineral reserves. As is the case of the Pacific fishing grounds, these 'untapped resources' attract processing industries that could further reduce forest cover and quality in the Sierra Madre. The second influence pertains to the emphasis which present industrialization policies place on stimulating investments in agro-industries. DTI would like to see DA promote the introduction of other crops, such as yam,

soya and certain fruit trees, which offer better local manufacturing potential. However, with both farmers and the extension programmes of the agricultural sector still dedicated almost exclusively to the production of rice and corn, there are few other prospects for processing industries than the bio-industrial piggeries and broiler farms that are currently mushrooming in several places in the region. This means that for some time to come the Cagayan Valley economy will probably continue to be characterized best by the image one sees in the Dalton Pass across the Caraballo mountains: convoys of trucks carrying fertilizers, other agrochemicals, cement, and manufactured consumption goods to the north, and others travelling in the opposite direction which are stacked full of grain bags on their way to the industrial centres of Central Luzon and Metro Manila. The implication of this development for forest migration and upland agriculture are assessed in Chapters 8 and 9.

### 5.3.2 *Elected government officials*

*"It seems it is getting harder for us in politics, I am sure you occidentals have noticed this, there are more and more people coming to us, not like when we started. It is all because of the things the old man did, he had a different kind of politics if you know what I mean, I mean a sort of dispensation type, you just pay and pay and there is no law, keep on giving money to everybody and they will not stand in your way. But we cannot do what he did and this is now the problem he has left behind in Isabela".*

(Research diary, July 1994)

This exasperation, by the wife of a ranking politician in Cagayan Valley, catches the increasing importance that wealth has obtained for the maintenance of political power in the contemporary Cagayan Valley. A basic understanding of the role of money in Philippine politics is thus essential to explain the actions of politicians in the deforestation actors field. Without entering here into details on the Philippines' electoral system, and its colonial origins, as I will in sections 6.5 and 7.2, it may be safely stated that anyone with the ambition to be nominated, voted for, and recognized as the winner of an elective office, needs to spend "*prodigious amounts of money*" (Rocamora 1998:22). Once elected, a sound cash flow remains indispensable in the exercise of that office.

The distribution of cash money among the electorate, often referred to as 'vote buying', is a major cost factor. In the last weeks of an election campaign, teams of the various candidates go around the villages, and distribute money bills among the electorate, sometimes on a per household basis, and sometimes individually. In part because of this mechanism, the cost of election campaigns relates to the size of the constituency of that position. During the 1992 synchronized elections for the country's more than 17,000 elective posts, Eduardo 'Danding' Cojuangco, Ramon Mitra and Fidel Ramos spent 3 billion, 2 billion and 800 million Pesos, respectively, in their bids for the Presidency (Landé 1992: 109; Rocamora 1998). A Congressman gave the following indication of the cost of an election campaign:

*"We have decided to postpone the barangay captain elections. When the press asked me about our position I said this election will require 600 million Pesos of taxpayers' money, and our interest will go up, we will again face more budget deficit. But of course I discussed with my colleagues in the House: let us be realistic. Do you really think we are not going to spend money on these elections? Of course I will need to support my barangay captains [one of the others says "and get their support later" to which he responds "of course", GT] Imagine I have 26 barangays, I will need to spend at least 100,000 per barangay, are you ready for that, I asked them. Of course they do not want that. What we tell the Channel 4 is that this is a matter of inflation etcetera, but inside we all know what is really behind it".* (Research diary, Feb 1994)

In his town alone, this Congressman must spend around 3 million Pesos during the barangay elections to ensure that 'his men' are elected in these lower offices. By the time elections for his own position are on, the Congressman will need to spend a similar amount again. In hotly contested areas, and depending on the financial capability of the candidates, and the prospects of recovering the investment after the elections, candidates spend between 200 and 500 Pesos per household. In the following case, much higher expenses were made to defeat an incumbent mayor, who had used his position to build a strong financial basis in his town:

*"Before Mayor Molina was just a truck helper of a logging company, but he became rich because the Dragon Valley Timber Company was put in his name by the Chinese concessionaire. When this Chinese died, the company became his. Nowadays, here in Santa Rita, from medicines to the supply of goods to the construction industry, it is all for Molina. But Junior [member of a competing clan, GT] helped the other candidate, Rodriguez, and also his sons in Manila, and Nick Talaue, who is now logging in Dinapigue. The first money that Junior gave was an amount of 240,000 Pesos, I know because I was the one who held that money for Jr. He also gave 3,000 Pesos per barangay to prepare food and gave us a brand new 4WD Ambulance. During the last two days before the elections, Jr. spent 2 million pesos in those barangays where Molina was strongest. Each family received 2000 Pesos. This was in addition to the 20,000 Pesos he gave to all barangays before the elections. He also has students that he supports in all 37 towns of Isabela. Here in Sta. Rita, he has more than 20 and they all get 2000 Pesos per month". (Research diary, March 1996)*

Politicians may use the private and official funds at their disposal in various ways, but always such that those who benefit from these funds know from whom the money comes. I subscribe to the view of Alejo *et al.* (1996) that votes cannot simply be bought, in other words that *utang na loob* mechanism may not work as rigidly as has sometimes been suggested. Voters still have the freedom to weigh their loyalties, and "*the efficacy of a reciprocal transaction rests not [only] on the form and quantity of the gifts but [also] on the time element involved, i.e. when repayment is considered desirable and important*" (*ibid*:87). Nevertheless, the distribution of petty cash among voters shortly before election day is an almost indispensable component of a successful election campaign. These dole-outs achieve the highest impact if they are personalized as much as possible. A barangay captain, who acted as campaign leader for an incumbent mayor, advised him to capitalize on this aspect, by keeping the actual distribution of the money-bills to himself, instead of using the captain as his relay-station. To overcome the problem, which barangay captains do not have, that the electorate is too large to know all voters personally, the captain suggested the Mayor to simply use his voters' list, to keep track of his payments:

*"During the last elections [1992, GT] the Acays were not sure of winning the Mayor's elections. And so one evening Rosita [wife of the candidate, GT] came to me and she said: we also need to give some assistance to those here in Ugad. She asked me how much she would have to bring. But I said no, it is better if I will not be the one to hold the money. I proposed we will use the precinct, the list of voters. And so we will mark all those who have already received from you; maybe 8 or 10 came to my house and I wrote a note so they went to the big house and came back to me and all received 100 Pesos. The family spent 1 million for the election. When I went to see them at their house, on the voting day, Rosita was quite worried about whether they were winning, but I said you need not to worry, because it is all individual, we did not go through the barangay officials. The mayor won an easy victory". (Research diary, Nov. 1994)*

One aspect of Philippine politics that the above quotes reveal, is that the socio-political networks and campaign strategies for all elective positions are intertwined, even though the election of barangay captains must, by law, be held separately from those for higher elective positions. Nevertheless, candidates for a seat in the House of Representatives need to invest in

these elections, to put a network of political allies in place at the grassroots level. Inversely, a farmer running for the position of barangay captain can hardly win without external support from an overall party ticket, as shown below.

Once the election victory is there, the money-flow continues, for a variety of purposes, and in a variety of ways, of which I will enumerate a few for illustrative purposes.

– *Patronage*

Hardly a single day passes in the life of a Governor, a Mayor or a Congressman, without a string of people waiting in the veranda of his or her house in the early morning hours: a farmer whose son died on a construction site in Manila, and who lacks the money to bring him home and finance the funeral; people with health problems, needing financial help for an operation; teenagers looking for an endorsement of a job application. Political leaders in Cagayan Valley perform roles that, in different contexts, are taken care of by private and government security systems. Politicians can neither ignore the financial obligations of sponsoring social events, such as the annual town fiesta, or weddings and baptisms.

– *Projects*

During their term in office, elected officials are expected to deliver tangible evidence of progress to their constituents. Community level 'projects', such as a multi-purpose pavement, a road, village basketball field, or a barangay hall are of significant value for voter approval of a politician (Carroll 1994, cited in Landé 1994:11; Alejo *et al.* 1996).

– *Life style*

To stay in power, Members of the House of Representatives must mingle with other members of the Metro Manila-based elite, and maintain a residence and lifestyle that meets standards there. In addition to the Manila residence, there is a need to maintain a fully operational home base in the province as well, to keep in touch with the electorate. The children of local political leaders enroll in prestigious schools, often in the United States, where they are technically and intellectually prepared for their future task in the clan, either in business or as the successors of those serving in elective offices.

On his introductory tour of the Cagayan region, one of the region's leading politicians led a colleague of mine, and several ISU staff, through his parlour and into his office. Responding to my colleague's naive question what the 50-odd people were doing, who silently sat in the parlour, Dy explained that these had all come to see him about their worries, and ask him to help him out. Then, in a personal aside, he explained: "*you see, it is not very difficult to be popular here. You have to take it from the people in the dark, and give it back to them during the day*". While that statement probably over-emphasizes the role of what Gloria (1997) refers to as politician's 'non-traditional' sources of revenue, the question remains how elected officials finance expenses such as the ones mentioned above.

Most of today's leading politicians in Cagayan Valley are self-made leaders, often of humble, immigrant origin, who started as effective leaders in their own localities, and gradually expanded their political clout during the fifties and sixties. According to elderly people, personal wealth was not so important in these early years of politics in Cagayan Valley:

*Before, there was no need to have money in the election. It all started in 1955...no, only after the second term of Delfin Albano, after 1963, because during his first election campaign, the Albanos were very poor. Delfin was informed that Reyes and Singson, his opponents, had money. But Manang Iday [his wife, see Box 5.1, GT] had so many relatives in Casibarang, and she went with him campaigning. Later, we were able to go around the barangay to collect from the people for his campaign! And nowadays, all the candidates are the ones to pay to get the vote! (Research diary, Nov. 1994)*

Government intervention in the tobacco and grains trade, and in the booming timber industry of the seventies and eighties, turned elective positions into private goldmines. Combined with the political stagnation of the Martial Law regime, which allowed politicians loyal to the Marcos regime to stay in power for decades, those who were in power in the mid '60s were able to build up considerable wealth. The political families described in boxes 5.1 and 5.2 are examples of this mechanism.

#### Box 5.1 The Albano clan: from cow-traders to Congressmen

The first district of Isabela has been the electoral territory of the Albano clan since 1957, the year when Rodolfo Delfin Albano became member of the House of Representatives. His father, **Francisco**, was a carabao trader from Baccara, Ilokos Norte. In the early 20<sup>th</sup> century he sold his properties in Ilokos and migrated to Cabagan because he saw that there was still free land and started to cultivate rice and tobacco here. He was still single at that time and produced for the Tabacalera company, which was then owned by a Spanish man named Ortega. When Ortega found out he had impregnated one of his maids, he asked the young Francisco to marry her. This is why their eldest son Dodoy (Florencio) had Spanish looks, just like his descendants Al and Jojo, who became politicians as well, but not nearly as successful as the second child **Rodolfo**. The latter started as a poor teacher, "who slept at the warehouse of the Tabacalera". His marriage to Alfreda 'Iday' Bagunu, a member of a big family from Casibarag owning large lands, was of significance for a political career that started more or less by accident on the day President Manuel Quezon visited the Isabela Highschool in Ilagan. Manuel Nieto Sr, a prominent citizen of Ilagan town, owner of Hacienda Sta Isabel and the private secretary of Quezon, asked Rodolfo to be the Master of Ceremonies during the event. Quezon liked his aggressiveness, here was a man who could not be pushed around. He inquired with Nieto Sr. who this person was. Nieto introduced him as Delfin, the nickname under which Rodolfo had taken his oath of office as a member of the Provincial Board (Sanguinang Panlalawigan) of Isabela. In 1947 Delfin first ran for the office of Isabela Governor and lost. In 1953 he ran for Congressman for the first time but again lost to former Governor Reyes. According to my informers, Reyes victory was won through fraud: "*they simply threw the ballot boxes in the river or they would stain the forms with ink, erasing everything*". But Delfin filed a case and won just in time before the next elections in 1957, in which he beat Reyes. In 1961 he was re-elected as Congressman until 1965. By then, the only son of Delfin and Iday, **Rodolfo Jr.** is 31 years old, had gained political exposure as the secretary of his father, and as Vice-Governor of Isabela. In 1969, Rodolfo Jr. ran for Congressman, and became one of the leading personalities in Marcos' New Society Party, the KBL. He was re-elected as assemblyman in the *Batasan Pambansa* in 1974 and 1985 and, despite his close association with the Marcos regime having been deposed in 1986, re-elected as Congressman for the first district of Isabela in 1987 and 1992. Throughout the Aquino presidency, Albano remained openly loyal to the Marcoses, and spearheaded efforts in Congress to allow the body of the deceased president to be returned home. In the 1992 elections, Albano joined Danding Cojuangco's campaign, but when Ramos had won the elections, he was asked by the new President to join his Rainbow Coalition and become its Majority Floorleader in the House of Representatives. Rodolfo Jr. and his wife, Josefina Taguinod have three children, the eldest of whom, **Rodolfo III**, served as mayor of the family's *bailiwick* town of Cabagan, Isabela. He is married to Mylene Garcia, daughter of Davao City Representative Manuel M. Garcia, the law partner of Rodolfo Sr in the Albano, Garcia, Diaz Law Office. In the 1998 elections, he succeeded his father as Congressman for the first District of Isabela.

(Sources: research diary, various notes made between 1990-1996; Comelec Website (1998 election results))

With the exception of one, the Respicios of Isabela, who own an old tobacco estate and occupy several elective positions in the third district of that province, none of today's political leaders in the Region have a history of wealth, or landed estate ownership that dates back to the American or Spanish period (see section 8.5.1). Juan Ponce Enrile, one of the Region's most prominent politicians, is a special case. His father was a prominent lawyer and businessman himself, who represented the first district of Cagayan between 1922 and 1925. Being an illegitimate child of his father, however, he was raised as a poor boy by his mother, a simple

teacher in the town of Lallo, Cagayan, who had other children of her own to take care of as well. After graduating from Highschool, at age 22, Juan Ponce managed to track down his father in Manila, and was allowed by him to study law, first at the University of the Philippines, and then at Harvard. In 1965, he was hired by Marcos as undersecretary for finance and commissioner of customs. In 1978, he was first elected as Assemblyman, capitalizing, according to my informers, on the misfortune and poverty of his youth, which was "poored out in his campaign leaflets". After serving in several other positions in the Marcos administration, he switched to the Aquino camp during the EDSA revolution in 1986, then became one of Mrs. Aquino's staunchest opponents in the Senate. In the meantime, he had built up such wealth, that he was able to finance his own (failed) senatorial race in the 1995 elections. While his declared net worth was just over 64 million PhP (or 2 million dollars), the Jaka company that he established while he was in the Marcos cabinet, reported 3.2 billion PhP in assets, and 1.3 billion in gross revenues in 1992. He succeeded in securing his re-election as Congressman for the first district of Cagayan in the 1998 elections.

In his study on the business interests of the members of the Ninth House of Representatives (elected in 1992), Gutierrez (1994) found that the percentage of representatives who combined their political office with private businesses rose from 10% in 1940 to 30% in 1970. In the Ninth Congress, 36% were full-time businessmen or corporate executives prior to their election to the House, while 15% continued to manage business interests while in public office. Out of 199 Congressmen and -women<sup>15</sup>, 132 were found to have interests in land and agriculture, 45 in real estate companies, 50 in trading and retailing companies, 17 in logging, 14 in mining and 18 in construction.

For most politicians, approximately half the cost of election campaigns comes from businesses and business associates. Officially, businessmen would not easily admit to perceiving these payments as investments in future government favours, such as licenses, or obstruction of laws hurting their interest. Many Chinese traders state, nevertheless, that they distributed their contributions evenly among the candidates, so as to facilitate, and secure, a favourable policy context for their businesses (Te Velde 1994). Likewise, political patronage over corporate logging concessionaires, as Philippine journalists repeatedly reported (Manila Chronicle, 20 Nov 1991; Vitug 1993) is likely to be rewarded with a share in the proceeds of continued forest access (see also Chapter 6). Logging interests of elected officials became harder to trace after the mid-1980s, when holding an interest in the corporate logging industry became a political liability for elected officials. Politicians either withdrew their interests or handed these over to close associates, acting as their dummies in the management of the industry. At the national level, several studies have brought to light direct links between national politicians and the logging industry (PCIJ; 1991; Vitug, 1993, Gutierrez 1994). Gutierrez looked at membership of the Board of a TLA holder or other official ties with the logging industry of members of the house of representatives and the senate or their relatives. Of the eight representatives of the provinces of Cagayan, Isabela and Quirino in Congress after the 1992 elections, 5 had direct or indirect interests in logging enterprises.

The largest source of financial revenue during the politician's term is in the implementation of the infrastructure projects mentioned above. For Congressman, the annual Countryside Development Fund, also referred to as the *Pork Barrel*, offers by far the most important instrument for personal largesse and financial gain. In 1994, for example, each Congressman had 12.5 million pesos in CDF funds at his discretion, for projects in his district (Landé

<sup>15</sup> Women comprise only 4% of all Representatives elected in the House since 1907 (*ibid*).

1996:111, see also section 7.2.3). Aside from the political benefits to be gained from the construction of these projects, there are often financial gains as well, for example through special arrangements with local contractors, or by setting-up one's own construction firm, under a dummy name. A local contractor *cum* business manager of a political family explained how construction projects were used to build up a fund for the re-election of one of its members:

*"I told Carlito [the son, now a mayor, GT] we will only get projects above 5 Million and we leave the rest to other contractors, we do not mind. The 10 Million Highschool building has been awarded to us and also the road improvement in our town, that was contracted to my son Marlon. We have already agreed that the profits will go to Carlito. It is better for us to help him than for him to steal from the government coffers."* (Research diary, March 1996)

A third source of revenue, which the politician quoted earlier probably indicated when he talked about taking things at night, relates to the informal power of politicians to protect selected people from the rule of law. The illegal *jueteng* number game, for example, is tacitly tolerated, or even actively protected by local politicians in several towns in Cagayan Valley, and in other places in the Philippines (Gutierrez 1997:39; PNA 27 March '98). *Jueteng* revolves around the drawing of a number; there are 37 numbers, and players bet a small amount, usually one or two pesos, on the number of their choice. In some places there are three draws per day: those who betted on the right number win 450 pesos for every peso invested (that is: if no irregularities occur in this 'wild game'). Every day, collectors make their rounds to see who wants to bet, at what number, and to collect bets. Because of the small amounts with which one can play, and the regularity with which the collectors come around, many poor people are said to '*feed their number better than they feed their pig*'. The compensation received for permitting the game (a Mayor of an average town in Isabela could receive up to 30,000 pesos a month) appears to be more relevant for local campaigns, than for national elections. Other sources of income in this realm will surface as we examine the role of elected officials in the implementation of forest policies, in the next Chapter.

National party 'machineries' are a fourth important source of election funds, that is, provided a candidate is adopted by one. Ever since its establishment in 1907, the Philippine party system has been characterized by frequent switches of candidates between parties (Wurfel 1988). As Coronel (1998) points out, this practice did not change the structure of the two-party system until Martial Law, because the parties had no shared political or ideological commitment, but were merely "*fleeting alliances based on political horse trading for the furtherance of individual or family ambitions*" (Coronel 1998:57) With an interruption during the Martial Law period, when the Philippines was a virtual one-party state, the old party-switching practice combined with the fragmentation of the party system, every election producing new 'parties'. One veteran politician and Presidential aspirant in the 1992 elections openly likened the Philippines' political parties with a particularly popular vehicle, which allows a mix of people jump on and off at destinations of their choice: "*You need Jeepneys to take you to a destination, just like political parties*" (Jovito Salonga, quoted in Gloria 1997:1). Out of 151 Congressmen who won as re-electionists in the 1995 elections, 87 won under different parties in the 1992 and 1995 elections; 51 out of these 80 transferred from one ruling party (Laban Demokratikong Pilipino, 1992) to another (Lakas, 1995) (Querijero 1997:42). Since political parties, therefore, are first of all "*vote getting machines and alliances of convenience*" (Coronel 1998:56), candidates must look strong in their constituency before they can secure the financial and logistic support from a national party-ticket. Once that has happened, significant contributions can be expected, especially if the party is sponsored by the

incumbent administration.

### Box 5.2 The Dynasty: immigrant rulers in Isabela

**Faustino N. Dy**, the founder of this political clan, was the mestizo son of a Chinese immigrant, who established himself in the small town of Guimba, Nueva Ecija. Dy himself started as an ambulant trader travelling between Nueva Ecija and Cauayan. After his failed first marriage, from which his first son Faustino Jr. was born, he remarried Natividad De Guzman, a sister of Nueva Ecija warlord Grasing de Guzman (Fegan 1993) and settled with her in Isabela. Faustino quickly established a popular reputation as a *matapang* (ferocious, brave) person. One of my informants told me of an occasion where some of his helpers were threatened by armed thugs to surrender their money to them; Dy happened to be in a nearby shop and when he heard about this he immediately came to their aid, pulled his gun, firing and nearly missing them. According to my sources, word of mouth quickly spread about the event and his popularity grew quickly. In 1962 he was elected municipal councillor in Cauayan, where he became Mayor in 1964. Dy was elected Governor of Isabela in 1971 and remained there until 1986. A close friend of Ninoy Aquino, the Dy Sr. alleged he was one of the last Governors to give up his resistance to Marcos and his decision to impose martial law. His mediation between the New People's Army and crony logging interests, allowed logging to proceed, and the NPA to build up considerable logistics inside the Sierra Madre during the seventies and eighties (Jones 1989; Lopez 1994).

When Corazon Aquino came to power, she initially removed the old Dy from the Governor's office but one year later, the old family ties were re-established and she welcomed him under her administration ticket. Dy regained the post of Governor in 1987 and stayed there for another 5 years. During the last one-and-a-half year of her administration, in an effort to secure his support for Fidel Ramos, her anointed candidate in the 1992 elections, Mrs. Aquino helped Dy Sr. to realize what he would call "*the obsession of the people of Isabela*", a new Provincial Capitol building, costing 300 million Pesos (12 Million US\$). Until the inauguration of the building, in April 1992, Dy stood by his words, or at least refrained from openly supporting other candidates. His three sons running for elective positions initially also used the administration's support under the Lakas-NUCD banner, but shortly before the elections, the clan switched parties. They all won their bids, one of them, Benjamin, as his father's successor in the position of Governor of Isabela. By the end of his life, one year later, the 'old man' had built up a well-founded political dynasty:

**Benjamin Guzman Dy** was mayor of Cauayan until 1992 and was then elected his father's successor as Governor of Isabela. In 1995, he successfully defended himself against an Albano-led initiative to hold a referendum to split up the province before the next elections. Although Albano succeeded in getting the support of President Ramos, who made a special visit to the province in support of the split up, Ben Dy won, and was re-elected in the 1995 and 1998 elections.

**Faustino Sanchez Dy Jr.**, the eldest son of Dy Sr., was elected Congressman for the second district of Isabela in 1992. He is the wealthiest of the descendants, and made his fortune in the logging industry (Chairman of the Isabela Wood Producers Association) and through a construction firm, Jundy and Co. During the Marcos time, he was closely associated with the Secretary of Public Works and Highways, and won several bids for construction projects throughout the country. The company continued to secure DPWH contracts during the Aquino Administration, including rehabilitation works after the Pinatubo eruption. He owns landed estate in San Manuel, Roxas, Isabela, and owns a garment manufacturing establishment in Manila. Faustino Jr and his wife Christy have nine children.

**Faustino G. Dy III**, the younger brother of Benjamin, used to be the Chairman of the Association of Barangay Captains, and succeeded Benjamin in 1992 as Mayor of the family's home town of Cauayan. He was also elected as Chairman of the Cagayan Valley Mayors League.

**Cesar G. Dy**, another brother of Benjamin manages the family's recreational businesses, including the Casino and Isabela Hotel in Cauayan, owned by the Dys.

Sources: Fegan (1993); Gutierrez (1994); PCIJ 1991; research diary 1990-1996; Comelec Website.

The 1987 Constitution stipulates that no elected official may occupy the same elective position for more than three 3-year terms. In the case of the Presidency and the Vice Presidency, re-election is not allowed at all. These provisions were intended to

discourage the formation of so-called political dynasties, which could cling to particular elective positions for generations (see, for example, McCoy (ed.) 1993). Two thirds of those elected in the 1992 House of Representatives came from families who held public office and maintained political influence for at least one generation, and one of every three from a family in power for several generations (Gutierrez 1994:17). The 1987 Constitution obviously requires greater flexibility on the part of politicians to stay in power. So, Congressmen become competitors for a gubernatorial seat, Senators must run for Congress and so on. Clans that are large, and smart enough to position children or other relatives in the offices previously occupied by another member, still have good possibilities to hold on to political power for quite some time, as the family chronicle described in Box 5.2 shows. Aside from the political skills and determination of its founder, major strengths of this political clan are its size, its wide representation across the electoral chessboard, and the strong synergy between its business- and political elements, which mutually reinforce each other.

Finally, elected officials cannot gain legitimacy simply by acting as automated teller machines. Capital is an essential, but not a sufficient asset for a successful political career. Moreover, as we saw earlier in this section, some sources of capital are based on, often implicit, expectations about the way the politician will use his influence, once in public office. In Chapter 6, I will describe a number of alternative avenues, through which elected officials can prove their worth to their constituency, and the consequences this has for the implementation of forest policies.

### 5.3.3 The NGO sector

#### MARTIAL LAW ORIGINS

What may presently be "*one of the largest and most highly organized NGO communities in the developing world*" (Clarke, 1995:67) originated from the violent student protests and other forms of social unrest facing Ferdinand Marcos at the start of his second term as President of the Philippines in 1969 (Anderson 1988:16-19). Three years later, when martial law was imposed in reaction to the growing political instability, the movement was forced to go underground or adopt an official agenda and identity that could not be labelled as anti-administration and thus 'subversive' or 'communist'. The birdwatching club known as the *Haribon Foundation for the Conservation of Nature and Natural Resources*, founded in Manila in that same year, grew into what is still considered the Philippines' most influential local NGO in the field of the environment.

Haribon initially kept a low profile, identifying itself with activities in the area of research and public education. But it also began to express its first carefully-worded criticisms on forest policies, such as the system of licences for the extraction of natural resources which "inevitably belong to the high and mighty" (from a Haribon White Paper by Celso Roque, quoted in Rush 1991:79). It was only after the Marcos presidency and its military and economic network had fallen apart during the EDSA revolution that Haribon could afford to proclaim more openly the "*democratization of our natural resources*" (Maximo Kalaw Jr, Haribon President in Rush 1991:79), a phrase which ten years later was to become one of the cornerstones of Philippine forest policy.

Not only Haribon benefited from the new openness in Philippine society brought about by the EDSA Revolution; a large informal network of other NGOs in the making took this opportunity to come out into the open and register with the Securities and Exchange

Commission (Aquino 1996). Many entered into agreements with national and international organizations sympathetic to the new Aquino administration; the number of registered NGOs rose from 27,100 in 1986 to 58,200 in June 1993 (Clarke 1995:70). In 1989, Haribon organized the Green Forum, a loose coalition of NGOs, People's Organizations and church-related groups promoting not only sustainable development but also linking this objective to the need for social reform, poverty alleviation and the revival of Philippine indigenous culture (Rush 1991:78).

The initiative to bundle NGO forces increased Haribon's leverage on DENR policy. When the World Bank was about to grant the Philippines US\$ 18 million for the implementation of the NIPAS law in 1992, DENR initially contracted the Philippine Rural Reconstruction Movement to handle the programme. After strong objections from other NGOs, led by the president of the Haribon Foundation, DENR Secretary Angel Alcala was forced to back down. He informed the World Bank that he would opt for a contract with a consortium of NGOs which had recently formed an umbrella organization called NIPA (*NGOs for Integrated Protected Areas*), in which Haribon and PRRM alternately chair the Board (Clarke 1995:83).

#### GROWTH AND FRAGMENTATION

Not all of the new NGOs are truly cause-oriented, non-profit organizations. In Cagayan Valley, some newly established NGOs originated in response to an increase in internationally funded activities, such as contract reforestation, the evaluation of reforestation contracts, resource management planning and assistance in the implementation community forestry projects. Government officials in the academic world, local government units, and the civil service, as well as businessmen and displaced staff of former logging companies, participated in these new NGOs in order to gain access to the lucrative local market for consultancy work in the forestry sector<sup>16</sup>.

One international program which triggered the establishment of a number of new NGOs in Cagayan Valley was the USAID-funded Natural Resources Management Project. USAID contracted *Development Alternatives Incorporated* (DAI), a U.S.-based consultancy firm with an office in Makati<sup>17</sup>, to manage the project, including all local subcontracts for technical advisory services. The Regional Office of DENR was asked to prepare a shortlist of NGOs qualified to render technical assistance to the project. The contract was awarded to a newly established NGO, based in Isabela, and led by the former company forester of a conglomerate of timber concessions in the Sierra Madre. With the exception of the Director, the NGO employed only casual junior temporary staff, mostly young university graduates whose contracts were coterminous with the project. The people on its list of experts were all academics and government officials, with full-time, full-tenure government positions. Some of them had also submitted their names to other new NGOs bidding for the same contract. As soon as project implementation began, however, the academics asked the winning NGO to subcontract work to them through another NGO, set up by the university

<sup>16</sup> One example of how this development has adversely affected 'real' NGOs was visible in the changing background of the two organizations representing the NGO sector in the Regional Development Council (RDC). After the 1992 elections, a new RDC was installed, and members voted for the election of the NGO representatives. The majority of Local Government officials, line agencies and the private sector voted for two new business NGOs - one of whom represented the furniture industry - to replace cause-oriented NGOs as voting members of the council, reducing NGO access, as well as potential opposition, to the development agenda pursued by the RDC.

<sup>17</sup> Eventually, this branch registered itself as a Philippine NGO.

and with a membership that consisted exclusively of university faculty. This construction enabled faculty to legally work on external projects in their offices and in official time. Officially, faculty were only allowed to work for the NGO in their own time. Working long hours at night and on the weekends in order to meet deadlines, they were under severe stress, trying to combine teaching and NGO duties. One remedial measure employed was to ask junior staff to take over certain classes, with or without payment, a practice which eventually led to tension between senior members of faculty who were gaining professional experience and earning considerable additional income<sup>18</sup>, and the junior staff who were swamped by teaching responsibilities. The large discrepancies in payment between the internationally funded activity and university salaries made it difficult for the university to deny its faculty access to these 'sidelines'.

This brief example serves to illustrate one of the problems caused by the rapid propagation of new NGOs in Cagayan Valley: formal institutions destabilized when key staff, encouraged by new fund-raising opportunities, formed new organizations in which they performed activities without giving up the positions in which they had gained their expertise. The credibility of the non-profit, cause-oriented nature of NGOs eroded as government officials began to set up their own NGOs (Government Organized NGOs or *GONGOS*), and foreign and Manila-based NGOs (in Cagayan Valley referred to as *GRINGOS*) began to compete for government contracts with local business-oriented NGOs (*BINGOS*). The DENR coordinator of the Community Forestry Programme said that many of the NGOs involved as contractors were "*hiding behind the cloak of community development, when their main target is forest products extraction*" (Vitug 1993:159-160).

The mushrooming of NGOs in the nineties caused confusion within the ranks of government and international organizations, as well as among forest communities visited by people whom they used to know as logging company personnel, who were now representing an NGO concerned with sustainable forest management. A 1992 survey of NGOs in Mindanao, a concentration area for international aid in the Philippines, led to an estimate that only 10% of the local NGOs could be considered genuine development NGOs. In this manner, the NGO sector itself also became, in the words of Clarke "*an arena within which battles in society at large are internalized*" (Clarke 1995:71)

Anti-logging protests in Gabaldon, Nueva Ecija in 1990 are an example of a local environmental movement that was stifled by divisions within the NGO community. Since 1985, people from this town in the southern stretches of the Sierra Madre had protested against logging operations and against the use of a road passing through the town for log transports from this area. The protest gained momentum when it was endorsed by the local priest and the Diocese of Cabanatuan, to which the local parish belonged. Inspired by this support, farmers, students and parish workers barricaded the road and had to be removed by the police. Their demand to suspend these logging operations was disclaimed by another NGO, the *Aurora Forest and Parks Conservation Association Inc.* The latter had been set up by logging companies and owners of wood-processing industries. All that the protesters were awarded after their interaction with the Secretary of the DENR was a reforestation contract (PDI 30/9/1990).

Divisions in the NGO community deepened further after 1992, when Jose Maria Sison, leader in exile of the National Democratic Front (the political arm of the New People's

<sup>18</sup> The project leader for the preparation of the Resource Management Plan received a lump sum of 1 million pesos for services rendered over a period of nine months, roughly equal to five times his annual salary as a senior professor in the University. Shorter data analysis contracts offered a remuneration of 30,000 to 60,000 pesos per month in fees.

Army), called on the Philippine left to *reaffirm* its opposition to the Philippine government. His letter created a divide between those NGOs still willing to engage in cooperative projects with government agencies and those which rejected Sison's call. 'RA' (reaffirm) and 'RE' (reject) NGOs ended up in a situation of virtual mutual ex-communication.

#### CHURCH-BASED NGOS

*"in the beginning I was against priests doing police work" says the influential Bishop Francisco Claver, associate director of the Institute on Church and Social Issues in Manila. But if nobody else is doing it, then somebody has to. Priests should lead". (Vitug 1992: 37)*

Churches are closely associated with many of the oldest, truly cause-oriented NGOs in the Philippines. During the human rights violations of Martial Law, churches became a safe haven for dissidents and resistance movements. The Catholic Church was actively engaged in the environmental movement in January 1988: a pastoral letter signed by 99 bishops was distributed in all the country's parishes, warning against the "ruthless exploitation" of the Philippine natural resources, which it called "an assault on creation...sinful and contrary to the teachings of our faith" (Clad 1988, Rush 1991:80). Parishioners were asked to espouse and promote ecological causes (Vitug 1992:36-7). Coumans (1994) and Porio and Taylor (1995) describe local cases from Marinduque and Bukidnon, where Basic Christian Communities were applying liberation theology to actively support local communities in environmental conflicts with the Marcopper company and two TLA holders. In discussions in the BCCs of the Redemptorist Mission in Bukidnon, the personal role of the individual as a steward of God's creation, a notion which was "reinforced in sermons" (Porio and Taylor 1995:150). Coumans vividly describes the chronology of a BCC-supported struggle against Marcopper, which led to the temporary shutdown of the mine. Opponents of the shutdown of Marinduque's largest employer and sole producer of electricity accused the Church of being associated with "leftist and radical elements" and that it was out to "teach the people living along Calangcan Bay to arise and fight against the mining corporation" (Coumans 1995:55)

Church-related NGOs, such as *Lingkod Tao Kalikasan*, led by Sister Aida Velasquez and the Institute on Church and Social Issues at Ateneo de Manila University are among the leading institutions in community mobilization on environment issues. Pedro Walpole, an Irish-born Jesuit missionary who leads the Institute at Ateneo, carries out scientific research explicitly directed toward social change and justice. In an implicit reference to the work of Father Delbert Rice, who mobilized the Ikalahan to set up a highly successful foundation and continues to play a leading role in management, Walpole says the role of his Institute in local dynamics is not to intervene directly by organizing communities or setting up cooperatives but rather to stimulate the "inherited human condition" of observing, thinking about and managing one's environment. In the words of Walpole, "there had been a long period of socio-cultural erosion before biophysical erosion started". In 1994, his work with forest communities in Bukidnon focussed on the issue of land sales by forest occupants and on the health impacts of a transition from subsistence to market-oriented agriculture:

*"We mapped their land sales over the past few years, and when we came up with the result, they were amazed about what they had told us. That is when I asked them to leave me and make their decision. Now there is a considerable awareness about where they are" (pers comm. P. Walpole, 2/10/94)*

*The Cagayan Anti-Logging Movement* and its Isabela complement, the *Save the Sierra Madre Movement* were also initiated by local priests, who made use of the respectability

that came with their religious authority to expose abuses in the extraction of natural resources. Despite serious threats to his personal safety, the leader of CALM, Father Gary Agcaoili, took a confrontational course in 1990 when he testified before the House Commission on Natural Resources and gave evidence on the involvement of local politicians, businessmen and bureaucrats in illegal logging activities in the region. The Sierra Madre Outdoor Club, the Cagayan equivalent of Haribon's, wholeheartedly supported CALM, as well as smaller popular organizations throughout the province.

Interestingly, Cagayan's coalition of People's Organizations<sup>19</sup>, NGOs and Church-based advocacy groups found an ally in the newly appointed regional director of DENR, an engineer who used to work at the DENR in the mines and lands divisions. He started an aggressive anti-logging campaign soon after being appointed to his position in early 1990. Another newly appointed official, Brigade General Orlando Soriano, the Regional Commander of the Philippine Army in Cagayan Valley teamed up with him in the fight against illegal logging. The story goes that when Soriano met Isabela Governor Faustino Dy on their first courtesy visit, Dy told the Commander to his face that he was a *persona non grata* in his province. The political power of 'the old man' was confirmed in July 1991, when Soriano was removed from Region 2 "due to political pressure" (PDI, 9/8/1991). This development left the DENR leader dangerously exposed; Soriano's military power had been his shield in his crusade against armed and politically protected logging entrepreneurs. When the Army-DENR pact fell apart, the DENR Director began to receive death threats and was compelled to hire a personal bodyguard and take other measures, including travelling at unscheduled hours in various cars.

The growing cooperation between the DENR and local NGOs now proved its worth; while politicians and loggers worked for his transfer from the Region, the NGOs lobbied for him to stay. The anti-illegal logging drive continued less noisily but no less tenaciously. Between 1989 and 1997, the number of corporate timber concessions operating in the Cagayan Valley Region dropped sharply (see sections 5.2.2. and 7.3.3), as a result of the more strict enforcement of forestry rules and regulations. Other important factors behind this achievement were the effective use of the media (which became easier with NGO support) and international assistance, which provided DENR Region 2 with additional resources to implement its tasks, and immunity from political interference (see Chapter 6).

#### THE MULTI-SECTORAL FOREST PROTECTION COMMITTEES

After the underground years before 1986, environment NGOs entered into a "relationship of dynamic tension" with the DENR (Rush 1991:81). While it is the mission of the NGOs to advocate policy change, bureaucrats in government agencies need their support to be able to make policies work in practice. Clarke (*ibid*:82), citing studies<sup>20</sup> on NGO-state relationships in other countries, emphasizes that direct personal and informal contacts between individuals from the two sides often determine the quality of these relationships.

<sup>19</sup> People's Organizations are established and managed by local, often under-privileged people themselves, primarily strive towards the emancipation and progress of their members, and only indirectly towards larger societal goals.

<sup>20</sup> The studies cited by Clarke are:

- Farrington, John and Anthony Bebbington (Eds) (1993), *Reluctant partners: non-governmental organizations, the state and sustainable agricultural development* London, Routedge (p190)
- Klinmahorn, Somthavil and Kevin Ireland 'Making a difference: NGO-Government collaboration in Thailand' in Michael Edwards and David Hulme (Eds) (1992), *Making a Difference: NGOs and development in a changing world*. London, Earthscan.(p61)

My observations in Cagayan Valley attest to this conclusion; the presence of one new Regional Director and the fact that he was allowed to stay on long enough to build up a relationship of trust with the NGO community, the Church and the academic world forged a network which utilized existing policies could to much greater effect.

In 1993, these spontaneous and informal beginnings of collaboration between the NGO sector and the DENR were structured through the development of Multi-Sectoral Forest Protection Committees. Each municipality, province and region was encouraged to set up its own MSFPC, with financial and technical assistance from the ENR-SECAL programme, the World Bank funded Environment and Natural Resources Sectoral Adjustment Loan. Representatives of churches, press, army, police (PNP), intelligence (NBI) and the DENR sit on this committee. Once the MSFPC finds evidence of illegal logging or the transportation of illegal (*i.e.*, undocumented) forest products, apprehension can be followed by speedy prosecution under a special MOA agreed with the Judiciary.

Intersectoral cooperation has proven to be a successful strategy for DENR to make progress in policy enforcement, but its effectiveness depends on the authority and means provided to the this coalition, designed to detect violations of forestry policies, rules and regulations. The new MSFPC checkpoints along highways have no power to inspect a load, although they are entitled to stop any vehicle and ask the driver to allow inspection of his load. A drivers can simply ignore MSFPC stop signs or refuse inspection, as his cooperation is purely a matter of courtesy. It is probably even harder to catch illegal loggers in the act of cutting trees - the type of evidence which is required if a case is to lead to a court conviction, as the following experience of a senior forester and the Chairman of the Regional MSFPC for Cagayan Valley demonstrates:

In 1994, DENR granted a consortium of former logging contractors from Ilagan, Cabagan and San Mariano a special permit to haul abandoned logs from *Kahoy*, an expired timber concession area in Isabela. The Multisectoral Committee (a clone of the MSFPC in which only LGU and NGOs participate) had been consulted on the scheme, and apparently had agreed to it. The MSFPC chairman had his doubts, and took the quite unusual step of paying a personal visit to the area where the abandoned logs had been reported. There is no more illustrative way to convey the perseverance and courage required for the successful detection of illegal logging cases, even in blatant cases like this, than by literally quoting the chairman of the MSFPC, who related his experiences to me:

*"The first time we heard about the case was in the Multi-Sectoral Forest Protection Committee (MSFPC) meeting in Tuguegarao. I sent my wife and a colleague and asked them to state our position that the so-called 'hauling of abandoned logs' from Kahoy was just a front to allow illegal logging. The meeting could not decide on this, but apparently the DENR was really in a hurry to implement the scheme. It already seemed very much bloated, with 952 logs in one area and over 1000 claimed to be present in the other, I could not believe that this was really true. John ( a ranking official in the Forestry section of the DENR Regional office, GT) showed us pictures of logs, but I asked him 'how do we know that this picture was taken there and then'? The pictures were close-ups and they could well show the same pile of logs from various positions. They agreed that a delegation would go into the area and check whether there were really so many abandoned logs there.*

*I do not know why they selected only a few members from the LGUs to go and have a look, together with the RSOG, the mobile units of the DENR in charge of law enforcement. One of the MSFPC members who went in was a former councillor, who was known to have been involved in illegal (salabadjok) logging before. So we knew that these people were very interested in getting logs from this area. All of us in the MSFPC already knew that the RSOG had also become unreliable, but when they came out after two days, John was very much in a rush and gave the go-ahead for the hauling to start.*

*I requested an immediate meeting of the full Multi- Sectoral Protection Committee and*

asked for another visit to the area, to get an independent view of what was happening there. But while the meeting was going on, I began to have doubts about John, especially when he rose from his chair as Mrs. Donna Sy (wife of Bobby Sy, logging contractor and son of a municipal mayor in Isabela) entered. The contract had been partly awarded to her, with payment for the hauling to be made in kind at 5 and 5.8 peso per board foot (the current market value of prime species such as tanguile, red lauan, white lauan, and narra was approximately 18 pesos per board foot, GT). The other contractors were Mrs Gina Alfaro from Cabagan, and "Dr. Wood" Castro (a medical doctor turned logging contractor). I asked representatives from the other sectors to join me inside, but they all declined because of the risk. People from CENRO Cabagan came to my house to discourage me from going in, stating that troops of the NPA from Cagayan and Isabela were closing in on the area. They even went to the house of my brother-in-law, to ask him to stop me from going.

It seemed that the PENRO and CENRO were caught off guard when I confronted them with this hauling contract; they said they had not been involved in the bidding. But the next day, as I was preparing to go in, they tried to buy time by preventing me from going in, claiming that there were repairs on the six-by-six truck, and so on....but I told them that there would be no problem, I could just take the project's own 4WD and go in, so they really saw I was determined to go. The truck only got us up to Kahoy, so we still had a long way to hike. But in Kahoy we found the first six logs, all freshly cut, so I said: this is a violation, and we will need to apprehend the contractor.

When we reached the forest the next day, I saw no abandoned logs, only a very good secondary stand that had only been lightly logged by some concessionaire. There were many big trees measuring 140, 120, and 100 cm in diameter. However, the trees were no longer standing, they had cut all the big ones indiscriminately, their leaves still green. All the equipment had been taken out and moved to the other side of the mountain. I decided to come back after my trip to Cebu (my father-in-law was severely ill at this time) and go to the other side, too. I told the people of the DENR that they would not even be able to haul the logs out, as they would have to pass a very stony portion and would need to construct a road. But on my second trip, just one week after the first, I was surprised to see that they had constructed more than 6.5 km of road, right up to the virgin forest. They tried again to stop me from going in, saying that there was a roadblock, but I told them that I knew the obstacle was a log pond and so when they saw that I knew, they allowed me to pass. On this log pond I found 26 logs, freshly cut. But when I went in I was really shocked to see 27 trucks, 2 bulldozers and six chainsaws that they had brought in. The local chainsaws may number many more. I was thinking about the soils and the river, and I really could not believe the damage that they had done. There were thousands of logs, more than 1.5 million board feet of freshly cut logs waiting to be hauled. The local people in Simanu Norte and Sur were very happy, as they could ask the trucks to load their square logs too and drop them in the barangay. And so were the kaingineros, who already had access to the area and were starting to burn the bamboo bushes, expanding their areas.

I also interviewed the local people about the RSOG field visit. They said these people did not really go in and see the area; they butchered a few ducks and chickens, and had some drinks and then returned afterwards. We took a lot of pictures and I asked the DENR people to measure the logs, and then I went home. Reaching home at 7 pm I was surprised that Peping (the husband of Mrs Alfaro) was on the phone, asking for my report. I said I was not going to write my own report but that the group would prepare one. In any case, today I have told my full story to the Executive Steering Committee of the MSFPC, and we intend to file a case against the contractor, so that they will be forced to name names, because there may be big fish behind this. We will discuss it again this coming Sunday, when the DENR Secretary will be with us in the fraternity." (Research diary, 17/6/94)

The Kahoy case tells us a great deal about the potential, as well as the complications of the increased cooperation between governmental and non-governmental organizations involved

in forest protection. Let me begin with the last remark made by the Committee Chairman. Here he introduces an institution that could probably qualify as a separate non-governmental actor on its own, if not for its membership, which cuts across most of the actors discussed so far in this chapter: the often exclusive and inaccessible fraternities, such as the Catholic organization Knights of Columbus, the secular 'Freemasons', and professional fraternities such as 'Varon' and 'Omega'. Because of their informal, internal hierarchy, members of the same fraternity can break through the formal lines of authority that govern normal communication and patterns of loyalty within and between organizations. The committee chairman can have direct access to the DENR secretary, whom he would otherwise have to approach through the many bureaucratic levels separating them.

The other side of this coin is that people working in the same organization, or even in the same office but with differing fraternity backgrounds, may find it hard to trust one another. Fraternity loyalty comes very close to family loyalty, causing intra- and inter-fraternity violence in Universities and fuelling factionalism and favouritism in Agencies such as the DENR. In this particular case, however, the fraternity system enabled the chairman to ignore the unconcealed stop signs he received before actually going inside the forest to find his evidence. His informal, almost secret position as a prominent and industrious member of a fraternity network motivated and enabled him to talk straight to persons who were by far his superior in terms of civil rank, *i.e.*, the secretary and the new Governor of Isabela, who are brethren in the fraternity.

A second phenomenon of the first post-EDSA decade which is pointed up by this case is the crucial role played by elected officials in the Local Government Units. Politicians can make or break the basis of mutual trust which is necessary to Government-NGO cooperation. The devolution of environmental law enforcement responsibilities to the Local Government Units, as prescribed by the Local Government Code, is based on the assumption that local political leaders are more motivated - and more accountable - when it comes to protecting the resources under their jurisdiction from unsustainable use than are high-level bureaucrats and elected officials. One of the few municipalities where this assumption holds true in practice is the town of Nagtipunan, Quirino. Under the leadership of Mayor Andres Blando, a former district forester who became a politician and environmentalist, Cagayan Valley's first municipal Multisectoral Committee was established here. Using the MSFPC and his political position, Mayor Blando saw to it that forestry rules and regulations in his municipality were strictly enforced, a line which brought him in open conflict with two other politicians, the local congressman and the Governor. However, both Mayor Blando's personality and the municipality's relatively favourable land/population ratio make Nagtipunan an exceptional case. Local Government Units tend to be severely strapped for cash, and their political officials are elected to address immediate economic issues rather than long-term sustainability.

A third aspect illustrated by the *Kahoy* case is the fragility of local NGO-GO coalitions, due to the important role reserved for personal relations between trusted individuals in the establishment of these coalitions. The personal integrity and commitment of one official, even when he is the highest in charge, cannot uphold a trust relationship at the level of institutions, in this case between the DENR and cause-oriented groups in society that assist the DENR in the implementation of its policies. Intentionally or unintentionally, the DENR official who participated in the *Kahoy* case used his position as one of the RED's most trusted men to get the permit signed, which normally led almost automatically to approval by the Multi-Sectoral Protection Committee. Local

DENR officials at the CENRO and PENRO offices involved tried to prevent the discovery of the illegal activities behind the abandoned-log hauling front. Ironically, the only victim of the scandal was the regional director. Three months after the scandal was exposed, Secretary Alcala was forced to transfer him to the Central Office in Manila<sup>21</sup>.

Despite these inherent sources of instability in NGO-GO partnership, the Regional MSFPC did not disintegrate when the director, who had brought these sectors together, left Region 02. By this time, what had started as an informal coalition between him and key individuals in the army, the academic world and the local NGO community had been turned into a permanent body; the Multi Sectoral Forest Protection Committees were registered as NGOs as legal entities. MSFPC chairmen from the various Regions began to hold regular seminars and workshops in Manila, to share experiences and develop common strategies. International support - technical, financial and political - played a more than coincidental role in the initial successes of the informal MSFPCs and in their eventual establishment as independent institutions.

#### 5.3.4 International actors

The Philippines receives overseas development assistance from many countries; between 1980 and 1986 there were soft loans amounting to US\$ 5.67 billion contracted from multi- and bilateral sources. In addition, US\$ 1.19 billion was received in grants and technical assistance during the same period (TNI 1987:36-37). The Aquino presidency meant a new impulse for international donor agencies to pledge financial and technical assistance for development and environment programmes throughout the country. Between 1988 and 1992, the Asian Development Bank and Japan's Overseas Fund for Economic Cooperation and Development lent US\$ 620 million to the Philippines for activities in the forestry sector. Other major projects were undertaken in cooperation with the governments of Australia, New Zealand, the United States, Germany, Finland, as well as the European Union. An estimated one billion dollars in soft loans were granted to the Philippines for environmental projects involving NGO participation between 1986 and 1992 (Clarke 1995:80). To put these figures into proportion, they can be compared with the Philippines' gross national product, which stood at US\$ 30 billion in 1995 (NSO 1996, cited in FEBTC 1998), or with the amount of foreign exchange the Philippine wood industry spends annually in an effort to cope with local shortages as a result of domestic forest resource depletion between the 1950s and 1990s. Net imports of tropical logs and sawn wood in the Philippines was valued at approximately US\$ 200 million in 1993 (Johnson 1996:22; ITTO 1997).

In the Northern Sierra Madre, at least eight internationally funded conservation and development initiatives were going on in 1996, the largest of which was a US\$ 5.6 million grant from the Netherlands, in support of the establishment of the Sierra Madre Nature Park under the National Integrated Protected Area System (see section 5.2.4). This grant complemented earlier international assistance from the *Global Environment Facility* fund, which granted 20 million dollars to a consortium of National and Regional NGOs, for a seven-year programme of activities to realize the basic organizational structure necessary to implement the NIPAS law on ten priority sites nationwide,

<sup>21</sup> In November 1996, DENR Secretary Ramos reinstated this person as Regional Director for Cagayan Valley, where he remained in charge until his retirement, in 1998.

including the Northern Sierra Madre. International actors influence the formulation and implementation of forestry policies in Cagayan Valley via three avenues, which will be discussed below.

### 1) *Strengthening of environment-oriented POs and NGOs*

Overseas Development Assistance has been an important factor in the strengthening of the organizational capacities of Philippine NGOs (Clarke 1995:81). By selecting particular advocacy groups and other NGOs and helping them to develop new activities, international organizations indirectly influence the formulation and implementation of Philippine forest policies. The growth of the Haribon Foundation from a birdwatching club to the influential environment watchdog it is today is one example of this indirect influence. Its latest offspring, the new NIPA NGO that assists the Philippine government in the implementation of the NIPAS law, operates almost entirely on World Bank/GEF funds. Two international projects now piloting policy reform in Region 2 enabled an informal alliance of NGOs and government agencies to develop into the Multi-Sectoral Forest Protection Committees which is assisting the DENR in policy implementation. According to one estimate, 20 million dollars in international aid was handled by the Philippine NGO community (Goertzen 1991 in Clarke 1995:69). One-third of Canada's aid to the Philippines goes directly to the major development NGO networks (Broad and Cavanagh 1993:153).

### 2) *Policy review, formulation and legitimation*

Over the past ten years, international agencies have conducted a large number of internationally funded sectoral reviews and policy studies in the Philippines, in the area of forestry and the environment (ADB 1988; 1994; GTZ 1989; World Bank 1988, 1990, 1994). The most comprehensive document setting out concrete new directions for the Philippine forestry sector was the Philippine Master Plan for Forestry Development. It was co-funded by the Asian Development Bank, the government of the Philippines, and the Finnish International Development Agency, and contracted to a consortium of international and local consultants of Jaakko Poyry Oy, a Finnish consultancy firm, its Philippine counterpart MADECOR, and senior officials in the Bureau of Forestry of DENR. As a follow-up to the National Master Plan, which prescribes benchmarks to be achieved by the Philippine Forestry Sector during a 25-year period starting in 1992, Regional Master Plans were developed for all administrative Regions, including Cagayan Valley. The most important elements of the Regional Master Plan for Cagayan Valley have already been discussed (section 5.2).

### 3) *Support DENR policies and projects*

As noted earlier, DENR is among the least financed agencies of the Philippine government. Due to overseas development assistance, the DENR budget increased sharply after 1986, from 1.08 billion pesos then to 4.5 billion pesos in 1990 (Vitug 1993:58). In addition to the projects already mentioned at the beginning of this section, in 1988 the Asian Development Bank granted the Philippines a Forestry Sector Programme worth US\$ 120 million, which was complemented by another US\$ 120 million from Japan's Overseas Economic Cooperation Fund. Four years later, the World Bank granted the Philippines an *Environment and Natural Resources Sectoral Adjustment Loan* (ENR-SECAL) programme, worth US\$ 200 million and USAID grants for the development of pilot community forestry programmes around the country, rainfed upland

agriculture, and institutional support programmes, including the establishment of the Multi-Sectoral Forest Protection Committees.

Because of its own limited resources, DENR's operations in Cagayan Valley were significantly enhanced through international support, especially when projects are coursed directly through the regional and lower-level offices. Throughout the successful 1988-1995 period, DENR-Region II hosted several foreign-funded projects, such as ENR-SECAL and two subsequent Natural Resources Management Programmes. In addition to providing training opportunities, these projects included substantial investments in information and monitoring equipment, including a small helicopter, Global Positioning Systems and Geographic Information Systems that enhanced DENR's capability to monitor developments in the Sierra Madre, and obtain hard evidence of illegal activities. The presence of an international project also made it safer for DENR officials to expose these cases and pursue them in court; a certain level of immunity against harassment by politicians and businessmen is provided by participation in international cooperation projects. As long as the Philippine government continues to fund DENR as meagrely as it has in the past, international organizations and consultants are likely remain influential actors in the management of Philippine forests.

#### 5.4 Concluding analysis

In this chapter I have examined the multi-faceted picture of how government policies aim to influence forest protection and utilization in Cagayan Valley; I have described key actors and their influence on the definition and implementation of these policies. This overall image enables us to draw conclusions on the position of DENR within the government, and on the role of its policies in the deforestation problem.

The first conclusion, which has explanatory value for those that follow, is the stark contrast between the responsibility of the DENR and its low status, not only vis-a-vis the private interests at stake, but also within the ranks of government. DENR is the proverbial 'giant with feet of clay': managing half of the Philippines' total land area, the world's longest coastal area, and the quality of the environment in the country as a whole, the DENR is still the government agency with the lowest budget. This *underdog* position is even more pronounced in the poor economic conditions of Region 2, essentially an inhabited valley floor, where poor farmers produce rice and corn for the National Capital Region. Here, the agency protects the region's forest lands against a large majority of private and other policy actors, who regard the development of the 'untapped' lands, waters, and mineral, marine and forest resources of the Sierra Madre as indispensable to the economic progress which is so sorely needed.

What we discern here is an alliance of lowland actors engaged in concerted action to gain access to natural resources in the uplands of the Sierra Madre. This 'struggle' can not be reduced to one between private and public interests, because, as we have seen, national government institutions pursuing public interests other than the environment are also engaged in a similar challenge to DENR, the guardian of the upland environment. Elected officials welcome every new voter and would like to see the forest lands in their district as inhabited, peaceful contributors to the economy in their constituency; the Department of Trade and Industry sees the furniture industry as one of the few manufacturing opportunities in an otherwise un-industrialized region, and the Department of Agriculture promotes agricultural expansion in order to stimulate economic growth; and NEDA continues to articulate the need for lateral roads across the Sierra Madre. It

is in this field of development-oriented forces that the DENR's 800 foresters are striving to protect more than one million hectares of natural capital from being rapidly converted into currency and Narra sofa's for the rich and farmlands for the poor.

Against all these odds, during the period 1989-1995 DENR was able to suspend or cancel nearly all large-scale, mechanized logging operations in the Sierra Madre because of violations of pertinent forest policies. One explanation for this achievement lies in close inter-sectoral collaboration between governmental and non-governmental organizations who supported DENR's drive to put a stop to a long period of tolerated abuse in the corporate logging industry. This inter-sectoral approach to forest protection was also facilitated by projects involving international cooperation, and by more coincidental - by no less important - factors such as the appointment of an independent-minded non-forester as regional director, who quickly gained the respect and trust of the media, NGOs, and the academic world. Two critical remarks on the role of international projects and the NGO sector are now in order. First, international support prevented the inadequacy of the DENR's structural capability from surfacing. If the DENR had not received the technology, resources and manpower to supplement its minimal government resources, then its function as a powerless institution serving as only a window dressing would have become apparent much earlier. Second, the rapid formation of new NGOs, People's Organizations and so-called Forestry Specialist Organizations also created confusion about the non-profit nature of the NGO sector and weakened existing institutions, which saw their staff leaving for 'greener pastures', or spending a considerable part of their time on external projects.

Another factor that helps to explain the assertive actions of DENR during the early 1990s lies in the shift in political configuration and culture in the years immediately after the EDSA revolution of February 1986. The corporate logging industry, so closely associated with the deposed President Marcos, lost moral legitimacy and political support. In the spirit of *People Power*, exclusive corporate licences to the public domain had to be replaced by more democratic modes of access. To discern the significance of this political shift, it must be placed in the perspective of the critical condition that the Philippine forests were in by the late 1980s. As most of the commercially interesting timber stocks had been extracted from the public forest lands, with the exception of some areas in Mindanao, Palawan and Cagayan Valley, the corporate mode of commercial logging had largely outlived its economic viability by the time it became discredited. With log imports almost fully liberalized, an attractive incentive package for reforestation and wood-processing industries in place, and opportunities arising in many other sectors of the Philippine economy, the handover of the last rainforest areas to the communities living inside these forests was not a major setback to the industry. In fact, as we saw in the previous chapter, for some time before the corporate logging system went into decline, upland communities had already been contracted to carry out logging activities for timber licensees and their contractors in Cagayan Valley.

The overall direction in which Philippine forest policies have been drifting since the 1970s is a defensive one, in which the Bureau of Forestry, and later the DENR, has gradually given in to pressures that it finds itself unable to withstand. Although the vestiges of state ownership of all classified and unclassified forest lands remain, despite opposition, each new DENR policy relinquishes more authority over the lands and resources of the public domain. From a policy of totally excluding local people from tenurial and user rights to forest lands and resources, the former Bureau of Forestry first began issuing entry permits and, from 1982 onwards, Stewardship Contracts for private

leasehold of public land. The rationale of this Integrated Social Forestry programme was that forest migrants, once they enjoyed a higher degree of tenurial security, would no longer open up additional forests. Seeing that this policy failed to achieve that goal, not least because of the continuous arrival of new migrants in the public domain, DENR yielded once again, now giving forest communities the chance to play a leading role in the management of the Philippines' remaining natural forests. By opening up possibilities to return large parts of the public domain to indigenous forest communities, the recent Ancestral Domains Act even touches the very root of Philippine forest policies dating from colonial days, that classified forest lands cannot be alienated from the State.

As in its former policies, DENR continues to incorporate into its community forestry and ancestral domain concessions elements that aim to discourage forest migrants and indigenous forest communities from following the short term economic rationality of rapidly converting slow-growing, and in many cases logged-over natural forests into liquid capital and farmlands. This policy is based on the assumption that forest residents, unlike off-site logging companies, have other than short-term economic plans for the resources entrusted to them. The validity of that assumption has yet to be tested in practice. A relevant constraint in these policies lies precisely in their strong reliance on long-term commodities - trees in natural forests - to satisfy the short-term needs of those now entrusted with their management. If community-based forest management is to become a success, it will require substantial investments, not only in social and organizational aspects, as is presently the case, but also in the regeneration of degraded and denuded forest lands for agroforestry and bio-organic farming. On its own, DENR may not have the expertise or the resources to give these components the effort they require to be put in place.

The need to verify whether communities are managing forests in a sustainable way will pose new challenges to the DENR, in view of the problematic hold the agency was previously able to gain on the much smaller number of licenced forest users. From a relatively small actors field in which a few major players dominate the extraction, processing and *inter-regional* trade in forest products, the picture changes into one in which a greater number of small-scale producers supply forest products to a predominantly *intra-regional* market of smaller-scale processors and end users, some of which produce wood products for interregional trade. Self-regulation, both by the community-based producers of forest products and by the lowland-based buyers of scarce and highly prized hardwoods, will be a key factor in the contribution that community-based resource management can make to conservation.

Selective logging continues to be the guiding principle in the Comprehensive Management Plans for community-based logging operations. On the basis of the standing stock of extractable timber, the volume to be cut is followed by a period of 25 years or longer, reserved for the undisturbed regeneration required in the production of timber in natural, mixed dipterocarp forest. In principle, the protection of these residual stands is more feasible under a community-based approach than it has proven to be in corporate timber concessions. Forest migrants and indigenous people are on site to protect their forest from premature extraction by outsiders, or by individuals from their own community. Thus social cohesion and stability emerge as critical condition for ecological stability in areas managed by forest communities. The warrants required are, first, a set of broadly accepted rules on forest utilization and, secondly, a leadership structure to enforce those rules. This brings us to political dimensions of community forestry.

Internally, communities are not the homogeneous and harmonious societies they are sometimes portrayed to be. Young and often ethnically heterogeneous migrant settlements require years, probably decades, to settle in socially. But even in more established upland communities, different expectations, values and socio-political factions exist under the formal administrative structure that defines them as one community. As a rule, family interests take precedence over the common interest, at any rate in the poor living conditions of both migrants and indigenous forest residents, and this places limits on their willingness to accept rules and leadership.

Externally, this makes forest communities vulnerable to exploitation by interest groups from outside the community. In Philippine elections, candidates for the position of *barangay* captain team up with mainstream parties and politicians in the lowlands, receiving financial assistance from the party or leader that they associate themselves with. Once elections are over, the *barangay* captain becomes the point of entry for outsiders with an interest in the natural resources managed by the community. Here, the strength of the community - and the democratic content of its elections - will determine whether the captain has more to lose by cooperating with outsider interests in resource extraction (and providing his voters with a share of the immediate benefits), or by defending the long-term self-interest of the community. This brings us to the political dimensions of policy implementation, the subject of the following chapter.

Before proceeding, let me conclude with a remark on the devolution of DENR tasks and mandate to the local government units. The past division of labour and interest within the ranks of government, in which an understaffed, underfunded and unpopular national Line Agency kept watch over the use of forests in the provinces, proved to be ineffective. Elected local government officials could simply pass on responsibilities for forest protection to the appointed officials of the Bureau of Forestry, and later to the DENR. The Local Government Code provides an opportunity to redress this situation. On the other hand, questions may be raised as to whether and how elected officials in the countryside can afford to weigh the long-term common property services and values that forests produce and represent against the short-term development agenda that defines much of their political legitimacy among their constituents. What further complicates the position of local elected officials as forest managers is that the majority of their voters are lowland-based, and therefore not directly affected by the environmental impacts of unsustainable forest use. Past policy failures are better understood if they are seen in relation to the fundamental difference in orientation between elected and appointed actors in government, and the continuous state of semi-captivity imposed by the former on the latter. I will illustrate this in the following Chapter. Rather than the further dismantling of the DENR, I see the need for a more independent and assertive national environment agency, enabling forest communities to deal with future incentives from the lowland economy in a sustainable way.

## Ballots and Bureaucracy; Mechanisms of distorted policy implementation

*"No state can achieve predominance without local representatives pressing forward the state's social control, rules of the game and strategies of survival". (Migdal 1988:247)*

### 6.1 Introduction

As we saw in the previous chapter, the Philippine government has a variety of instruments at its disposal to manage the use of forests lands and resources. As the *de jure* owner of all classified and unclassified forest lands, the state holds a monopoly on decisions regarding private access to the public domain. Violations of the terms under which access is granted can result in the suspension or cancellation of the agreement between the State and the private stakeholder. Nevertheless, the rapid deforestation of the Philippines in this century suggests that these exclusive powers and instruments have not been used to achieve the official aim of the state to ensure the sustainable utilization of natural resources. This chapter will analyze this discrepancy by focussing on the DENR, the government agency which manages the protection and use of public forests, and on the implementation level of the policy process. The overview of options for illegal access underlines the key position of local-level bureaucrats and field officials in the DENR, who perform a balancing act between their formal duty to safeguard the public interest and the informal necessity to be sensitive to private interests.

At first glance one might be tempted to lump the various schemes that evolve from this ambiguous position under the general heading of 'corruption'. Solving the deforestation problem would then be a matter of achieving a greater degree of congruence between the formal content of policies and their interpretation by officials at the local level. However, an independent bureaucracy is a precondition to achieve this, and as Hutchcroft demonstrated for the banking sector, the Philippines "*presents a particularly strong contrast to Weber's ideal-type bureaucratic state.*" (Hutchcroft 1994:94). Philippine bureaucrats, especially those at the lower levels of authority, are in direct contact with the people affected by government policies. In the translation of policy documents into daily practice, they must cope with a variety of pressures, from outsiders as well as from colleagues and superiors within the agency. These pressures cannot always be ignored or denied, even if sanctions are employed by the agency to enforce stricter policy implementation. This means that policies are distorted on their way from the formulation level in Manila to the implementation levels of the Cagayan Valley Regional Office and below. Here we will examine the actions of DENR officials and other government actors in policy implementation, and attempt to define the mechanism by which this thwarting of policy takes place at the local level.

In describing how officials deal with private access to public forests, I will rely entirely on information that key informants and trusted colleagues have shared with me during the years I spent in Cagayan Valley. As in the previous Chapters, their names, as well as the names of persons they mentioned, have either been omitted or replaced by fictitious ones. The fact that this 'inside information' was provided by officials who were themselves deeply involved in these practices, as well as by others who steered as far clear of them as they could afford to, underlines the diversity of responses which individual members of a bureaucracy employ to

deal with the pressures and opportunities they encounter. Broad and Cavanagh (1993:71) are probably right when they characterize the Philippine Government as a "mixed bag": some officials strive to serve the nation and their constituents to the best of their ability, while others are more inclined to maximize the benefits that they, their family and their associates can derive from the power they have to make decisions on the use of public resources. This means that utmost care must be observed in describing the role of government actors in the deforestation actor field, as generalizations may eliminate precisely those grey areas where change is spawned, and where idealistic officials mix with more 'realistic' colleagues and superiors.

This chapter will therefore avoid general conclusions on the role of corruption in policy implementation. In the first place, corruption is a blanket term that tends to be used somewhat indiscriminately for a wide spectrum of people and policy interpretations at the interface of government and the citizenry. And second, corruption it is not a neutral term, but rather one that is associated with improper conduct due to a lack of personal integrity. It can easily stigmatize whole categories of people, notably those in elective and appointed government positions, as people trying to take advantage of their position. Local-level officials, particularly those in the environment ministry, run a considerable personal risk by making it clear that policy implementation is non-negotiable. During my stay in Cagayan Valley, several DENR officials paid with their lives for having the courage of their convictions. My third objection to the blanket use of the term 'corruption' is that it offers few avenues that might lead to a solution. The concept is too crude to unravel the mechanisms through which policies are ignored, evaded or modified on their way from formulation to implementation. Once we have succeeded in capturing these mechanisms in the form of a general model, it may be possible to discern the fundamental reasons why these mechanisms were developed in the first place (Section 6.4). It is impossible to explore the full range of individual attitudes and solutions which government officials use to define the balance they have found between intention and feasibility. However, by allowing a number of officials to give their own account of examples of policy implementation, I hope to illustrate the impact that individual mind sets may indeed have on the governance of forest resources, not only in specific cases, but for the Cagayan Valley region as a whole.

## 6.2 Options for policy circumvention

*"One time when we brought our rattan poles down from the river by jeep, we were apprehended along the way. They brought us down to the Police Station and they asked me if I had any papers for my load. And we said no, we do not, but we have the permission to haul from the Licence Holder (so if they are going to apprehend me they know it is Mr. Baldonado who is behind me, eh, that is why I mentioned that to them). They asked us what is the value of the load, I said 1.25 P per pole and so 1,200 Pesos for the load. Then the police commander said: but don't you know that this is prohibited and we are going to confiscate all of this? We said, well we do not mind if you take all of this, as long as you give us something just to pay for some rice so we can eat. We are very poor people. The police commander took pity on us and said, OK, you go now!" (research diary, June 1994)*

This case illustrates the context in which forest policies are put into practice. The furniture-maker clearly and knowingly violates the Revised Forestry Code, transporting forest products without legal papers. Nevertheless, he manages to enter into negotiations with the government official who caught him red-handed. The formal roles that the actors are expected to play are confronted with, and eventually defeated by, the personal motives which both actors pursue in the negotiation. Three elements of the story are of special note:

- First, no DENR official is involved in the event. At the time this incident took place, there were no Multi-Sectoral Forest Protection Committees yet, and the police had no right to confiscate a load of rattan poles. The correct thing for the policemen to do would have been to escort the jeep to the nearest DENR checkpoint or office and have the case investigated there. By bringing the truck to the police station, the policemen created a situation in which they could make a little extra income from the people transporting illegal rattan. In exchange for a little 'coffee money', the jeep could have proceeded. Field officials of the PNP see how similar practices are earning their DENR colleagues some added income and employ the same strategy to share in the benefits derived from illegal forest product extraction.
- A second important factor is the fact that the furniture maker is employing the 'weapons of the weak' (Scott 1985). By portraying himself as a poor person who depends on forest products for his basic rice consumption, and by asking the policeman to see to that need if he does indeed opt for a strict interpretation of the law, the furniture-maker emphasizes the difference in economic situation between himself and the policemen. In so doing, he appeals to the policemen's sense of *hiya*<sup>1</sup> (Pinches 1992) and compassion over their different fortunes in life, knowing that this will increase his chances of escaping sanctions for involvement in illegal activities.
- The trump card played by the furniture-maker, and a third element often at work in local policy interpretation, is his reference to the fact that he enjoys the patronage of an influential person in town, for whom he claims to work. The policemen are made to understand that, should he opt to abide strictly by the law and assist the DENR in confiscating all conveyances not accompanied by valid documentation, he faces the prospect of a direct confrontation with the Licensee, Mr. Baldonado, who according to the furniture-maker, ordered the load. Legally, the policemen would have had nothing to worry about in case of such a confrontation, since no valid papers accompanied the load. In practice, however, this formal dimension of the case would again have to compete with informal dimensions, such as the licensee's leverage at higher bureaucratic levels. The policemen knew they had better avoid a confrontation with Mr. Baldonado, a rich building contractor and close relative of the Vice-Governor of Isabela, and opted to forego the small financial gain to be made from these poor people.

The policemen who are "*humanizing the law*" (Huijbregts 1996) for the furniture-maker, by allowing the jeep full of illegal rattan to proceed to the warehouse of his influential boss, reveal the contours of the forces at play at the lower levels of the policy process. Patronage networks are a particular source of confusion and insecurity among implementers and field officials as to how they should implement policies handed down to them by their superiors. In the knowledge that on many levels and in many locations, negotiations take place within informal networks of government officials and - prospective - stakeholders in the lands and resources of the public domain, they must exercise both caution and flexibility with respect to activities that might be part of some informal agreement made in these networks. An uncompromising official can easily set off a land mine under his career or personal safety.

In the Philippines, corporate logging is the exclusive domain of the economic and political elite, and it is probably here that mid- and lower-level officials are most conscious of the fact

<sup>1</sup> In this article, Pinches draws attention to the fact that *hiya* (commonly equated with the English word shame, or embarrassment, particularly in social relationships between rich and poor) "*can also act as expressions of class resentment and action*" (Pinches 1992:167, see also section 6.4)

that the first victims of a hard-line approach to policy interpretation and law enforcement would be their own careers and families. But as we saw in the case of the furniture-maker, the same applies - though perhaps to a lesser extent - to other primary activities and the policies that regulate or prohibit them.

As a result, government officials and private individuals cooperate in what will be referred to in Section 6.3 as 'mutual accommodation networks', where options are developed by which both the private interests of resource users and the - apparent - implementation of public forest policies can be served. The flexible composition of these informal and versatile networks, which include members of the government bureaucracy, makes them more effective in responding to changes in the policy climate. While the repertoire of options designed to circumvent government controls on private access to public resources is constantly changing, they fall into three broad categories:

- A) *Manipulation of the information flow: document falsification*  
manipulation of information, 'document recycling', preventing DENR monitoring by withholding or altering information to and inside the bureaucracy
- B) *Manipulation of policy interpretation*  
using a legal pretext or policy as a cover-up for illegal activities (hauling of abandoned logs, timber amnesty programmes, salvage timber, 'tops and branches')
- C) *Manipulation of DENR officials: payment handed over secretly*  
package deals involving incentives in return for tolerating violations of forest laws and policies.

As in any categorization, these are not separate, watertight sets of options; often they occur together, as part of more complicated schemes. Each involves a select group of officials who mislead most of their colleagues charged with processing the documents handed to them. And the development of each scheme has its own dynamics, whereby options that no longer work are discarded (*e.g.*, when a logging moratorium is announced) and new ones are devised which are better suited to the most recent policy. The options and designs presented here were used in Cagayan Valley between 1985 and 1995.

### 6.2.1. *Manipulation of the information flow*

*"No problem, just change the figures"*

(Former PENRO officer during a DENR workshop, joking about a field report citing problems with the issuing of new timber licenses because of under-stocked residual forest, Oct '94)

Essentially, DENR policies are implemented by means of a top-down policy process: the regional and lower offices of the Agency implement policies which originate in the Central Office in Manila. In order to determine whether implementers are actually following their instructions, higher levels of management depend on feedback information flowing in the reverse direction. Documentation is only one component of this flow, but it is the most important one. In formal terms, the quality and reliability of written information are crucial to the formal monitoring and evaluation capabilities of the DENR, indeed, of any bureaucracy.

Until 1991, the Cagayan Valley Regional Office of the DENR monitored its performance by means of documents provided by two sources: private actors holding or applying for resource utilization permits, and officials at the CENRO and PENRO offices. The information provided by these two sources was validated by officials from the Regional Office and, occasionally, the Central Office. Being in closer and more regular contact with the situation on the ground, lower officials are in a position to either frustrate or facilitate the monitoring

and evaluation functions of their agency. On the other hand, local officials can only provide higher levels of management with genuine information on the situation in their areas if their superiors allow them to:

*"I once had an experience with a logging company that I will never forget. When Maceda became secretary of DENR, he made a policy of asking concessionaires to give a deposit of 1,000 Pesos per hectare. One of our companies had an area of 1150 ha, so they had to deposit more than a million Pesos. At the end of the logging season, the company forester wanted to get the deposit back. And so they reported an 80% accomplishment of their reforestation, 800 ha. I was sent to certify this report. I found only 40% had been accomplished, so only 400,000 was to be refunded. But when I returned to the office, the director told me to write that the whole area had been accomplished and so the full deposit was to be refunded. In January, just after the refund, there was a big fire and so nothing was left of the reforestation" (DENR Official, in research diary, 1994)*

The growing importance of NGOs and the media, and the establishment of the Multi-Sectoral Forest Protection Committees (see Chapter 5, Section 5.3.3), have added new and often reliable sources of information, enhancing the monitoring capability of the DENR. In 1992, state-of-the-art Geographic Information Systems (GIS) and Global Positioning Systems (GPS) technology, a helicopter and sea-patrol vessels provided the DENR with additional means to monitor activities in the region's forest lands. A year later, a Regional Special Operations Group (RSOG), composed of the Regional Office and staff from several CENROs, was established under the Regional Technical Director for Forestry. The RSOG conducts field checks and investigates cases where reports from either its own officials or from local people and organizations cast serious doubts on the validity of the documents used in DENR's regular resource management decisions. These innovations promised to benefit the monitoring capability of DENR in several ways:

- 1) More and often better-quality data is available for monitoring purposes.
- 2) Lower-level officials are better equipped to conduct intensive field verification activities.
- 3) Higher levels of the bureaucracy are able to validate the information flow supplied to them by lower levels of the bureaucracy.

While these innovations certainly enhanced the information capability of DENR, enabling it to carry out more effective monitoring activities after 1990, there were still a number of blind spots and weaknesses in the quality of internal information flows. These weaknesses were partly due to the reluctance of DENR officials to spend long hours out in the field under a hot sun, and partly to the stakes involved in accurately reporting their findings there. In the past these two factors, as well as the DENR's chronic staff and budget shortages, have constrained the performance of the DENR in policy implementation; the situation is unlikely to change significantly under the influence of these injections of modern technology. As a result, there are many loopholes in the internal information flow, whereby people with private interests are able to manipulate DENR documents with no great risk of being found out.

Below, I present a number of these loopholes. They are a small but illustrative selection from the realm of document falsification. Each stage in a corporate logging operation offers its own opportunities to impede the implementation and monitoring of policies emanating from the selective logging system, which is described in more detail in Sections 4.4 and 5.2.2.

## FARMING-OUT: ROYALTY-BASED EXTRACTION BY NON-LICENSEES

*In spite of the numerous complaints against TLA and Special Permit holders for wanton violations of forestry laws and rules, not one of them has been penalized. It is common knowledge that almost all of them are farming out licenses in consideration of the payment of "royalties" at the rate of P1.00 to P1.55 per board foot which are usually paid in advance. Based on the annual allowable cut estimate of 120 million board feet, the annual 'royalties' being paid to concessionaires range from 120 Million to 186 Million Pesos. Farming out of licenses is a gross violation of the Licensing Agreement." (Aguinaldo 1988:1-2)*

As in the agricultural sector, where landowners allow tenants to cultivate their lands on the basis of a lease or sharecropping agreement, many timber concessionaires also opt to sub-license local contractors in Cagayan Valley to extract all or part of their allowable cut, receiving royalties for each board foot extracted. Farming-out is explicitly prohibited under the terms of the Timber Licensing Agreement and one of the grounds for cancellation. To mask the presence in the concessions of other logging equipment than that owned by the concessionaire, trucks, bulldozers and documents must be in the name of the licensee. This system was facilitated by the fact that the ownership of concessions changed over the years, with some concessionaires operating - and thus using their equipment - in several different concessions. DENR officials had difficulty distinguishing illegal trucks from legal ones. Moreover, as we saw in the case cited at the beginning of this section, there were marked and unmarked trucks freely entered all concessions, often owned or protected by a political strongman, upon whose activities officials would do well to turn a blind eye. Farming-out has several advantages for the licensee:

- By spreading the operations risk; the licensee does not need to own a large number of trucks and bulldozers. Each contractor uses his own equipment and all the licensee needs to do is to occasionally supervise the operation.
- Possibility of avoiding Cagayan Valley. Due to the strong presence of the New People's Army, outsiders considered the place unsafe, especially for the often politically connected licensees.
- Local contractors are part of local networks, which increases their possibilities to conduct official business with other actor groups, including the bureaucracy.
- Low management overhead. Other than a resident manager, the licensee does not need to set up a large organization in Cagayan Valley.
- A steady income from the concession. All the licensee's resident manager has to do is to collect royalties from the contractors and perhaps devote a portion of the revenues to local sponsorships and other benevolent causes.

A less favourable result of *TLA farming* is the fact that the contractors have no responsibility for the concession; their role is limited to the time horizon set by the logging season. Feuds among contractors, often over royalty payments, have created a sense of competition between them, speeding up log extraction and turning forest concessions into first-come, first-served resources with no acknowledged central authority. When they saw the easy money that timber licensees earned from royalties, contractors replicated the system and began to subcontract carabao logging teams to produce logs for them at a pre-negotiated price per board foot (see Section 4.5). Lowlanders who could afford to hire a bulldozer and a few trucks, and who succeeded in buying a *quota* through a *log supply contract* with a licensee, entered into *salabadiok* logging, paying royalties on the basis of the agreed quota. Other forestry rules

which could, in theory, have kept the royalty system within certain bounds, such as the restrictions imposed by the Annual Allowable Cut, were bypassed in other ways, such as those described below.

#### FICTITIOUS OPERATIONS PLANS

Timber concessionaires are only allowed to start logging operations after DENR approval of their Operations Plan (OP). Based on the Annual Allowable Cut allocated to the concessionaire for a particular year, the OP specifies the physical boundaries of the area to be logged that year, the standing stock of commercial and extractable species, and the road plan needed to extract the timber from the concession. The Operations Plan is supposed to be based on an actual field visit by the company forester and his crew, to inspect the concession, mark the trees to be cut, survey the optimal road system, etc. One DENR official shared his experiences as a newly graduated forester during his first employment in a timber concession in the Sierra Madre:

*"When I had just graduated from the Forestry School I was appointed as a tree marker with WESCA. I said to the manager that I wanted to see the logging area. But he refused and said it was too dangerous because it was a critical [NPA] area. But how about my report? I asked. No, he said, you will just sign. The report will just come. I was very frustrated, I could not apply anything I learnt in my education"* (Research diary, Dec. 1994)

The Operations Plan entails the practical implementation of the Selective Logging System, laying the groundwork to ensure and monitor sustained-yield forest management in corporate timber concessions. However, a senior forester in the Forest Protection Division of the DENR said:

*"In my 15 years with the DENR, I have never seen Selective Logging practised in Region 2. Even the tree marking is done inside the Hotel, and once we have the Go signal, they just send the guys up there and it is a fiesta for all of them. With no tree marking done, no direction of fall, no road plan, they just simply go where they want and cut as they go..."* (Research diary, Oct. 1994)

Even though Operations Plans were often developed on the basis of 'table surveys', brief field surveys inside the concession did take place. Company Foresters, accompanied by surveyors and forest rangers of the concessionaires and their contractors actually went inside at the onset of the logging season to prospect areas where the operations for the coming logging season were to take place. Contacts with the communities inside the forest were also re-established during these surveys, labourers were hired, and also surveyors who could help locate accessible spots with good timber stands. NPA leaders had to be approached, often indirectly, to agree on a package of benefits in exchange for sabotage-free logging operations:

*"In the last years that WESCA was still operational, the NPA extorted 1000 Pesos per truck and 50,000 per bulldozer. In 1986, the owner of WESCA, Don Alfredo Lim, fled the country and all his concessions were taken over by the PCGG. Rojas (Alfredo Roxas, Director of Southern Plywood, a concession on the Pacific slopes of the Sierra Madre, GT) and Ramon Chang took over between 1987 and 1990. But Chang had no license to operate, that is why he paid 25 centavos per board foot to use the name WESCA. Later, he became discouraged because of the Peace and Order situation; they were asking for 1 Million Pesos for every bulldozer. He refused and the bulldozers were burned"* (Research diary, Dec. 1994)

Fear of the NPA among government officials enabled logging companies to operate for many years on the basis of fictitious operations plans without being detected, and no sanctions were imposed when the concession was inspected at the end of the logging season. Mere hearsay of their presence, and the prospect of either meeting up with them and being 'taken for an

interview', or being caught in Army-NPA crossfire were usually sufficient to keep the DENR out of the forest. Visiting foresters sent by Central Office to inspect what was known to be the heartland of the NPA were even more reluctant than their local colleagues to penetrate into the cutting areas deep inside the forest. Fears of NPA 'encounters' were occasionally reinforced by returning officials, who reported being 'interviewed' for hours or days during field visits. In the next section I will be examining other reasons why government officials were not keen to spend too much time deep inside the forest lands.

As a result of the reluctance among DENR officials to conduct on-the-ground evaluations of Operations Plans and overall concession management, they tended to accept the alternative offered by employees of the concessionaires and contractors: to answer all their questions over a beer, in the safety and relative comfort of more established barangays on the outskirts of the concession, instead of taking the risks and braving the hardships involved in inspecting the cutting area. This meant that inspection reports were drawn up with as little empirical basis as the Operations Plans. This led to a growing disparity between the conditions presented in the OPs and the actual conditions inside the logging concessions, as the occasional team that ventured inside the concessions during the early nineties discovered:

*"After the 'Save the Virgin Forest' policy came in, we had to inventory the secondary forest to see whether there was more than 67 m<sup>3</sup> per ha. And so there was this group from Manila who came to do the inventory work. They prepared the map, based on the Operations Plans and they found out that the companies claimed to be logging in areas where people had already settled as much as 20 years ago!"*

However, for reasons that I will discuss in detail in Section 6.2, the officials opted not to report their findings to the Central Office...

*...But when they went back to Manila, they reported that our forests are still adequately stocked..."*  
(DENR official, Oct. '94)

#### OVERLOADING AND MISDECLARATION

Every truckload of lumber travelling from the sawmill to Manila has to be accompanied by documents specifying the legal source of the lumber, the species in the load, the total volume and the destination of the truck. This offers multiple options for document manipulation: logs from illegal sources were channelled through the sawmills of TLA holders and accompanied by documents stating they came from a concession with an approved Operations Plan. Or first-class species could be declared as lower classes (to get around the payment of high forest charges), or trucks were loaded with more lumber than the amount declared in the Certificate of Origin (CO), as the following case illustrates:

*"The Hong Kong boys came to the office recently. They were trying to apply for the release of the remaining stock in their sawmill. According to a CENRO stock inventory, there was 44,000 bft in their yard. I was part of the RSOG assigned to go there and check it out. It was raining the whole day, but we endured it and found only 34,000 in the yard. But these Chinese tried to convince me to follow the CENRO report, they even offered me 2Pesos/bft, showing me a check for 20,000 Pesos. You see those extra 10,000 bft are important for them, it is enough for 2 CO [Certificate of Origin] documents of 5000 bft each, and they can overload, up to 8000 per CO, so for them it's almost like 50% higher volume. Eventually they had their way. I saw them transacting their business with one of my colleagues" (Key informant, Oct. 1994)*

Overloading was also practised between the cutting area and the sawmill; to avoid payment of forest charges to the DENR checkpoint inside the forest lands, logging trucks carried a *pamatong* or uncounted last log on top of the regular truckload, and the crew had to manoeuvre the narrow, often slippery logging roads from the cutting areas and logponds to the sawmill.

Forest charges had to be paid at the DENR checkpoint alongside the logging road; the charges were based on a volume of 2.5 tons or 5 round logs, the average load per truck, so that the extra log more or less travelled for free.

In addition to the excess logs to be extracted from the concession by transporting a greater volume on a fixed number of Certificates of Origin, timber licensees and officials created options to expand the life-span of these documents by 'recycling' them.

#### DOCUMENT RECYCLING: THE MANY LIVES OF THE CERTIFICATE OF ORIGIN

The Certificate of Origin is used to monitor the flow of products from one concession or sawmill to the National Capitol Region. Each load is accompanied by a CO, which is stamped at every checkpoint along the highway to Manila. Once the load arrives in Manila, the volume is subtracted from the Annual Allowable Cut of the concessionaire. A DENR employee explained how these documents are recycled:

*"I know how it is done. I've been at the checkpoint myself; I am not a hypocrite. The document has a validity of 15 days and when it is presented to the officer at the checkpoint a "USED" stamp must be placed on it. Just as you are about to place the stamp there, they put an envelope on the form, so the stamp will not appear there [the envelope contains money, GT]. At the end of our shift we give all we have collected to our CENRO and he uses that for things in the office, if he is good. Our CENRO at that time used the money to cement the road to the office, but this was also funded by the Government, so it is still corrupt"* (Research diary, Nov 1993)

The two-week validity of a CO document limits the number of times each document may be used; the travel time between Cagayan Valley and Manila is two to three days; allowing another two days per trip for loading and unloading, document recycling enables logging concessionaires to exceed their Annual Allowable Cut by 200-300%, while their loads always carry valid papers. Document 'recycling' not only enables the concessionaires to evade restrictions on harvesting, transport and processing, it also means that they pay no forest charges; the revenues gained by document recycling are shared between the officials manning the checkpoints (including, in most cases, colleagues and superiors participating in these deals) and the individual or company soliciting DENR assistance.

#### THE USE OF DUMMIES

One way to minimize the risk of legal prosecution if one of the above options were to fail is not to register logging equipment or even entire TLA licenses in the name of the person making the decisions about their use. The use of dummy names is not only useful for illegal logging activities, it also circumvents legal limits on the total area to be managed by one concession holder, and makes it possible to dissociate oneself from a former political ally whose fortunes have changed. Dummies may either be daring caretakers of a logging operation or innocent local people who have nothing to do with the activities concerned, as the following case demonstrates. It concerns one of the largest catches in the 1991 campaign against illegal logging, in this case on the eastern slopes of the Sierra Madre. The financier of the illegal operation was the son of a high-ranking politician, but when the equipment was confiscated, a different name appeared on the registration papers:

*"We had a record confiscation in Bicobian Bay in 1990: 19 million Pesos' worth of illegal logs. This was during the time of General Soriano in Region 2. Ed and the old man also had 800 pieces, approximately 1000 cubic metres. But in the records, their names were not mentioned, only the name of one Marcelino Uy. So we filed a case against him and were prepared to testify in court. Only to find out that the equipment had been registered in the name of an old man from the Pacific side. The loggers had probably offered to lease the equipment to him and he had agreed, he was*

*an innocent man and we did not want to testify against him". (Research diary, Oct. 1994)*

### 6.2.2 *Misleading policy interpretation*

The Timber Licensing Agreement system was hardly a restrictive policy; the control-mechanisms that had been built into these licenses were easily circumvented by the methods of information distortion described above. After 1985, the TLA system gradually lost political feasibility; alternative approaches to forest product extraction were developed. In the wake of public protests against exclusive corporate logging licenses and a growing awareness of the nation-wide deforestation problem, priority was given to a policy of forest protection rather than forest development. However, certain interpretations of these more restrictive policies provided forest users and government officials with new options for illegal access.

*"OLD STOCK"; "TOPS AND BRANCHES"; "ABANDONED LOGS"; "SALVAGE LOGS"*

The cancellation and suspension of close to 40 corporate timber concessions created a large area of unmanaged residual forests in the northern Sierra Madre, depriving many users of forest products - such as building contractors, lumber dealers and the furniture industry - of their largest source of raw materials. Among the souvenirs of corporate logging were stumps, rejected logs, the tops and branches of large trees, only the straight bolts of which had been taken out of the forest by the concessionaires, as well as stocks of unprocessed logs stored in the yard of a sawmill that had lost its permit to operate.

From the early 1990s onwards, the DENR received more and more requests for the extraction and processing of residual forest products. The DENR was prepared to grant such permits and in 1994 even declared a general amnesty for all illegal timber stored in the yards of sawmills and furniture and hardware shops, provided that all products leaving the premises were recorded by the nearest CENRO and subtracted from the volume of old stock submitted for a timber amnesty or other temporary permit. It is not difficult to imagine such permits being used to cover up illegal logging operations. Reopened sawmills never ran out of old stock, moving freshly cut timber into their yards by night, and furniture shops simply under-reported the volumes they had processed. By chance I discovered one of the ways this was done in October of 1994, when I bought a cabinet in a local furniture shop and needed legal papers for transport to Manila:

*"I asked Ariel to go the DENR checkpoint in Ilagan to secure a transport permit for the cabinet we bought in Naguilian last week. When he arrived there, the DENR official invited A. to accompany him to the furniture-maker where we bought the cabinet to 'settle an amount'. When they arrived at the furniture shop, the owners asked Ariel to pay an extra 300 Pesos in forest charges. He refused to pay, saying that he had already settled the price with the furniture-maker and knew that forest charges were to be paid to the DENR, not here. Embarrassed by this unexpected refusal, the official tried to explain to him on the way back to the checkpoint that furniture-makers do not want their legal stocks to dwindle with every product they sell, and that they normally pay 2 Pesos per board foot to prevent a load of finished product from being subtracted from this legal stock. He said he felt sorry for the furniture-makers and tried to help them by making customers pay this amount. Ariel paid his regular forest charges at the checkpoint and received the transport permit". (Research diary, Oct. 1994)*

DENR foresters told me of several instances where they were sent to a sawmill or furniture yard to inspect reports of old stock, found nothing there and, upon reporting this by radio, were requested by the Regional Office to report just a small stock in order to have a legal basis for the issue of a temporary permit.

"The first inventory by the CENRO people indicated a total stock of 103 m<sup>3</sup>. Then we went there with the Regional Special Operations Groups<sup>2</sup> to do a re-evaluation: my evaluation with them was only 30 m<sup>3</sup>. But after we submitted our report, we were called to the office to explain to the Technical Director..." (Research diary, Dec. 1994).

In this case, and probably in many others as well, the DENR superior is not acting on his own, but rather is trying to keep within the conditions under which he is permitted to issue a permit - conditions that he himself was coerced into accepting during a meeting with the sawmill owner or his representative.

An argument that is often used by both politicians and businessmen in requests for special permits is the plight of poor in their area. Portraying themselves as the representatives of these people, applicants appeal to the sense of compassion of DENR officials. However, not everyone agrees on the motives behind such appeals to DENR officials, as the following clipping from a local newspaper illustrates<sup>3</sup>. After the town of San Mariano had been under a logging moratorium for some time, the mayor requested permission to extract 'abandoned logs' from the forest lands in his municipality, claiming that the residents of the town were starving and had "surrounded his house, asking for rice and food". The editor of the newspaper interpreted the manoeuvre differently:

*"the claims of the Mayor about his starving town may be intended to deceive the government into granting mini-sawmill operators another logging scheme...the appeal made by Go may have an ulterior motive for mini-sawmill operators who have already paid in advance for the delivery of logs by carabao operators. ... According to RTC Judge Senen Casibang, it is the usual practice of logging capitalists to provide advance payment to carabao loggers. ... Last month some 300 pieces of logs were seized by operatives of the DENR Regional Special Operations Office in San Mariano. A week earlier, Go also used a radio station in Cauayan to portray his turf as a town that was starving, following the imposition of a logging moratorium. DENR Isabela acting chief Dominador Urmatan agreed with the Mayor's 'predicament'.* (Northern Sierra Madre Express, Feb 8-14, 1994)

In 1993, that same mayor, whose son operates one of the last large sawmills in town, had used a similar strategy to try to gain a special permit for the processing of an 'old stock' of logs still lying in the yards of sawmills closed during Oplan Jericho, the drive against illegal logging conducted by the DENR and the Army in 1993. His daughter-in-law, representing 17 groups of 'forest users, and sawmill and mini-sawmill operators...went to DENR Undersecretary Ben Malayang III, asking for Mayor Go's request to be granted, citing the need of the people of San Mariano for an 'alternative livelihood' (Northern Sierra Madre Express, Jan. 1994). He succeeded in getting the PENRO office to enter into a memorandum of agreement granting special permits to operate these sawmills. Soon after the MOA had been signed, the plot was exposed when the local media reported that none of the 17 signatories of the MOA were legitimate logging licensees or lumber dealers and that their names were not on the list of mini-sawmills demolished by Oplan Jericho. In January 1994, both the PENRO, his Regional Director and the Go family were charged by the Municipal Court with complicity in graft. One of the most audacious cases of this kind, which took place only four months later and allegedly

<sup>2</sup> This group reports directly to the Regional Technical Director of Forestry and consists of DENR personnel from various CENROs and the Regional Office. The Director writes that the task of the RSOG is "to speed up investigation on matters involving violations of forest laws, rules and regulations to lessen the burden of pressure on the PENROs and CENROs who appear to be the willing victims of powerful politicians" (Tumaliuan 1994:9).

<sup>3</sup> Politicians increasingly recognize the power of the media as a political instrument. Henceforth, local newspapers, initially established merely to comply with the legal requirement to publish decisions pending or already taken by the local judiciary and government, are mobilized in inter-clan battle. This is part of the background of the editorial comment quoted here.

involved some of the same actors is the *Kahoy* case reported in Section 5.3.3.

Cases like these, where contractors from the lowlands are involved in the extraction of residual forest products, are less common than the small-scale production of fitches by forest migrants residing in or near the former concessions. Forest communities that have not yet been awarded Community-Based Forest Management Agreements continue to deliver wood products to buyers in the lowlands, mostly under cover of darkness, or use special permits to conduct *salvage logging*, i.e. the collection of tree stumps and 'tops and branches' left by former logging operations. But, as I witnessed during a field visit in 1996, many fitches that the forest migrants bring down in the course of so-called salvage operations actually come from normal carabao and water-logging activities deep inside the Sierra Madre. One of the farmers I accompanied to his logging area explained how he and his buyer in the lowlands used the salvage logging policy to maintain the supply of forest products in San Mariano, Isabela:

*"I am only doing salvage logging, my buyer in San Mariano is Mrs. Verdana, the head of the Cooperative store there. Her husband is a policeman and her brother-in-law is a member of the Sangguniang bayan [Municipal Council, GT]. They have a DENR license to buy and sell salvaged Narra. I deliver parquet to them, little pieces of wood used for flooring; this is almost all that you can do with the small Narra stumps. My buyer sends the truck every month, I give him 10-15,000 bft of Narra. But we also put some commercial Narra under the parquet, it is very expensive now, difficult to find. As of today, I am getting 70P per board foot for sizes over 12 feet. So although the parquet is very cheap, what is underneath is very dear!"* (farmer in Cassala, March 1996)

San Mariano has been under various logging moratoria since 1989. They plunged the town into a deep recession, as the wood industry used to be the most important actor in the local economy. The two leading political families in the town, who managed their own logging concessions there before the first logging moratorium was announced, went out of their way to support what was left of the town's once thriving wood industry, using whatever legal documents or permits it had at its disposal. A local missionary, former head of the Municipal Forest Protection Committee recounted how a permit issued by the municipality of San Mariano for the purpose of transporting a dismantled house out of town on February 1 was used on March 6 to try and legally ship out freshly cut wood. The scheme failed because only the DENR is allowed to issue such a permit, which must be validated for the specific date on which the house is to be moved.

#### NEW CORPORATE LOGGING SCHEMES

Timber Production Sharing Agreements (TPSA), Industrial Forest Management Agreements (IFMA) and Private Land Timber Permits (PLTP)

The virtual elimination of corporate timber concessions in the early nineties reduced the level of direct access that the wood industry had to the Sierra Madre. As the societal acceptability of corporate forest access decreased, the DENR took a second look at forest-based communities which, together with timber imports, were becoming the new source of raw material for the wood-processing industry. But wood industries continued to look for ways of using government policies to obtain illegal access to the Public Domain:

*"Requests for PLTP cutting permits are filed for issue to fictitious private land owners. These permits authorize these fictitious private landowners to cut prescribed volumes of trees in their properties. However, these permits are being used by illegal logging syndicates to enter the forest to cut there"* (Hon. Renato Yap, Chairman of the House Committee on Natural Resources in Today, 3 Nov. 1994)

Private Land Timber Permits (PLTPs) normally involve relatively small amounts of timber, roughly the amount required for the construction or extension of a house. The fact that even

a DENR policy with such a limited scope was used to disguise corporate logging operations underscores once again the vulnerability of the DENR to abuse. The regional office continues to oversee the utilization of forest products in an area comprising nearly one million hectares of inaccessible forests, with the majority of its staff occupying administrative and management positions inside the regional, provincial and community offices. When a truckload of lumber arrives at a checkpoint and the driver can show valid documents accompanying his load, it is almost impossible for the checkpoint officials to verify the source of the logs. The few times when verification takes place, the result is usually as below, narrated by a young DENR official:

*"There was a request for a PLTP filed with the Regional Office and so I prepared my travel order to conduct the investigation. There really was a stock of old cut, but I rejected it, because it was already rotting and no longer economically worthwhile, and so I already knew where they were going to get it: from the natural stand, of course. The furniture shops in Naguilian also get their Narra through PLTPs"* (Research diary, Dec. 1994)

Although more restrictive than the TLA system, the attraction of the remaining options for timber extraction thus primarily lies in the legal documents it provides lowlanders with, enabling them to extract and transport both the amounts specified in the permit and illegal forest products extracted elsewhere.

While many new DENR policies include multiple options for small-scale private access to public forests, as illustrated above, the new opportunities for large-scale corporate logging concessions are not nearly so attractive as the Timber Licensing Agreements. Industrial Forest Management Agreements (IFMAs) and Timber Production Sharing Agreements (TPSAs), described in Section 5.2.2, are also based on the concept of large-scale corporate management of public forests, but are issued under different conditions. Firstly, they only apply to residual forests with a minimal standing stock of 67 m<sup>3</sup>, and include a mandatory benefit-sharing scheme with local communities near the concession area. Secondly, IFMA holders are required to deposit with the Government a *holding fee* equal to the value of 10% of the standing stock. This amount is forfeited if the government can produce proof that the terms and conditions of the IFMA have been violated.

On the basis of past experience, however, many local contractors were convinced that these conditions would not prove to be as disadvantageous as they appeared at the time, as long as the DENR officials did not conduct field visits or aerial surveys of the cutting area. In 1994, 14 IFMAs were issued in Cagayan Valley, all to former TLA-holders and their contractors. Initially it appeared that the old mechanisms were being reactivated: a local forester, who conducted timber stand inventories in these prospective IFMA areas, explained that the holding fee could be kept artificially low by picking relatively understocked areas as the basis for the stand-stock inventories which determined the amount of timber recorded. However, NGOs contracted by the IFMA-holders to design management plans for IFMA areas concluded that many of these areas did indeed have insufficient stocks to allow logging within the first five to ten years after the awarding of the IFMA. During this period, licensees would not only lose interest on their holding fee, but would also be required to invest additional capital in reforestation and Timber Stand Improvement measures in the more degraded parts of their concession. Many IFMA-holders volunteered to waive their concession rights and got their deposit back; the DENR temporarily stopped issuing of new IFMA licenses.

## 6.2.3 Co-opting DENR officials

## 'BUYING' ADDITIONAL ALLOWABLE CUT

Despite the volume of timber that concessionaires were allowed to extract from the natural forests of Cagayan Valley every year (some 2 million m<sup>3</sup> of prime hardwoods between 1975 and 1985, see sections 4.4 and 7.3.3) TLA-holders and their local contractors found ways to exceed these limits without sanction. Officials at various levels of the DENR (or its predecessor, the Bureau of Forest Development) were offered a share of the extra income generated by the concessionaire. Payments were directly proportional to the volume extracted in excess of the AAC. Hence the profits of illegal extraction were used to structurally complement the salaries of government officials, the former often surpassing the latter. But confiscations did take place, where the officials sent to investigate policy violations were able to withstand the lure of money:

*"Before I entered the DENR, I was a social forester. But in 1987, Director Pajaro approached me for the Forest Protection Division and so I went there. That was when I first encountered these money matters. The first suspension I encountered was the Veterans concession in Baggao. Their AAC was 30,000 m<sup>3</sup> and when we went there we found 17,000 m<sup>3</sup> in excess. I was offered one million Pesos to change my report, but I knew they were really extracting so much, 150 shiploads had been taken out already (one ship carried 4000 m<sup>3</sup>) and so we confiscated the logs and suspended the TLA. (The funny thing that happened afterwards was that there was a public bidding for 7000 m<sup>3</sup> of confiscated logs, and so we were all wondering where the other 10,000 had gone)"* (Research diary, Oct. 1994)

This case shows the almost exclusive use of financial incentives as a means of circumventing policy; the official is asked to produce an inaccurate report of his findings in the field but other than that there is no falsification, recycling or networking involved. The negotiation involves only two people, an official and a concessionaire. The official has to weigh an offer equivalent to ten years' salary against his moral and official obligation to confiscate the logs. In this case, quite surprisingly, he opts for the latter.

The irony of the case is that the lower official foregoes a fortune while his superiors partially undo the results of his moral stand: 7,000 m<sup>3</sup> was sold at auction, while the remaining 10,000 m<sup>3</sup> probably ended up in the hands of other actors participating in another package deal that allowed the DENR to achieve what was still a major confiscation, thus complying with internal performance indicators and displaying the public image of a strict policy enforcer. The deal allowed the concessionaire to recover costs incurred in the production of the excess logs. In this manner, all the parties in the network in which the deal was made received personal and professional rewards.

## BUYING PASSAGE AT THE CHECKPOINT

A cynical joke among local DENR officials is that their agency is afflicted with AIDS: *Additional Income Delivered Secretly*. The case presented above shows that the amounts of money involved are out of all proportion to the regular salaries of the officials. These benefit-sharing options have turned each board foot extracted over the allowable level into a bonus which supplements the income of those DENR officials willing to cooperate. But they must find a balance between various loyalties: the amount paid by violators in exchange for providing DENR protection and safeguarding illegal activities from discovery and sanction represents a considerable larger part of their income than that which comes from the Agency in exchange for enforcing forestry laws and policies.

While the volume of timber passing the checkpoints declined markedly after the corporate logging era, the scarcity of wood and the correspondingly high prices for semi-finished and finished products continued to warrant the payment of sizable compensation sums to the DENR officials involved. Actors from inside and outside the bureaucracy, including a former Regional Director for Cagayan Valley, confirm that after 1993 the role of TLA holders in supplementing the salaries of government officials was taken over, though only in part, by furniture manufacturers. After the ban on the export of unprocessed forest products from the region, semi-finished products were the main business opportunity for lowland entrepreneurs with interests in the wood industry.

Probably the simplest and most common form of tolerated policy circumvention is the payment of 'coffee money' at DENR checkpoints. During night shifts, when the largest quantities of wood of questionable legality are shipped out of the region, the manning of the checkpoints is not an attractive duty. They offer extremely simple facilities, often little more than a simple *bahay kubo* (temporary shelter made of bamboo and cogon grass or galvanized sheets) with a simple desk and a few chairs. In addition to the discomfort, there are the professional risks involved in stopping vehicles whose occupants are often armed, as well as the personal sacrifice of being away from one's family at night. However, the tips received at the checkpoints more than compensate for these discomforts, to the extent that some officials are even willing to pay their superiors to be assigned extra nights at the checkpoints, as one DENR official wrote to me:

*"About DAO 58, about Narra. Did you know that for inventories of declared Narra (ghost or actually in the yard), shop operators have to pay P1,000/m<sup>3</sup> (or 2 P/bft) as SOP? Another one is where finished, semifinished or knock-down furniture products passing through the monitoring checkpoints have a quota for every load. Checkpoint Team Leaders will have to share with the Top Brass at the Forestry Sector in some form (kind or cash) to be able to stay longer in the station, to continue 'milking the cow'. Those big-time furniture operators also evade payment of the rightful forest charges through document recycling or double shipments. And of course there's a nice amount for the field and checkpoint personnel. The sources of this information are the actors themselves, proudly revealing their actions and practices..."* (letter from a key informant, 1996)

In the summer of 1992, the following payments were made by a ten-wheel lumber truck on its 450-km journey from Isabela to Manila:

**Table 6.1 Checkpoint 'Standard Operating Procedure' payments by a ten-wheel lumber truck on a trip from Ilagan to Manila (Ph₱, summer 1992)**

DENR Ilagan	2,000
Checkpoint San Mariano Junction	2,000
PNP	1,200
Ilot	500
Calititan	5,000
PNP Dic-Dic	5,000
Tayako, San Jose	2,000
EIIB (Army), San Jose	200
PNP San Juan	200
DENR Malasin	200
BALOC PNP	200
DENR Talavera	200
DENR Sta Rosa	500
DENR San Rafael	300
DENR Pulilan	500
<b>Total SOP, transport only</b>	<b>20,000</b>

Source: pers. com, DENR officials, 1992

The local connotative meaning of the term SOP (Standard Operating Procedure) dates back to the corporate logging period, when every day over 200 heavy lumber trucks would leave the Region every day, and payments to law enforcement personnel became a matter of routine for the drivers passing government checkpoints along the Maharlika Highway en route to Manila. Unsophisticated as this system of bribery may appear, it does require a certain level of coordination between entrepreneurs and the bureaucracy and, in the case of the larger schemes, the blessing of a local political leader. All the checkpoints along the highway between Cagayan and Manila must be coordinated, including the superiors of each office that is passed. In the 1992 data presented in table 6.1, the total amount of SOP paid is equal to approximately 20% of the value of the 20 cubic metres of first-class lumber contained in a ten-wheeler load (in 1992, the market price in Manila for prime-quality lumber averaged around 10 pesos per board foot). These amounts pertain to transports by concessionaires holding an existing and operational timber license, but one which is accompanied by recycled, incomplete or inaccurate documents.

In the same year in which these amounts were paid by legal TLA holders, a full 16-wheel truckload of illegal first-class lumber would cost 70,000 pesos in SOP payments. This amount does not include the payments made to secure toleration on the part of higher levels of the bureaucracy, which 'buy' the scheduled presence of an informed official at the checkpoint the night the transport is to take place, and immunity for lower officials involved in facilitating the load:

*"In 1992, the Hong Kong Boys were buying lumber from illegal sources. They had a full-scale operation in San Mariano. Here in Cabagan we only produced 200,000 bft. They offered good prices, 18 P/bft; the Manila price was only 1 Peso higher. We informed the mini-sawmills, requesting them to produce the necessary applications and we issued them the papers. The Hong Kong boys were conniving with the checkpoints and we were conniving with them!"* (Research diary, Dec. 1994)

The official relating this story admits his own involvement in deals with illegal loggers. My interview with him took place several weeks after I had accidentally met him in the middle of the night in his private car, escorting a logging truck loaded with freshly cut logs to a sawmill in town. The following day, a colleague living in the town where he worked at the CENRO office told me that during the past few weeks he had heard at least 20 trucks entering town every night between 12 and 4 a.m. The logs were instantly processed into sawn lumber, and then loaded and transported to Manila that same night. The participation of DENR escorts was said to be a strategy that enabled an official who happened to meet an uninformed policeman or army official to claim that the vehicle had just been apprehended and was being directed to a location in town for confiscation. A colleague in his office, who was not involved in this particular scheme, witnessed payments being made by a local business manager of the politician whose blessing had been secured for this particular scheme:

*"Every morning, my bosses collected SOP at the Baua residence (this was during the time of our former CENRO); I saw it when I was introduced one time by my colleague Ariel, who invited me there one time to have drinks and dog meat..."* (Research diary, Dec. 1994)

An interesting aspect which is illustrated by the last few cases in this section is the fact that schemes that rely on a 'toleration' of illegal access are not run by one 'corrupt official' and 'one illegal logger'. They require a high degree of coordination, both horizontally between people on the same decision-making level (the driver of the truck and the field official at the checkpoints), and vertically (higher and lower officials, the owner of the logging equipment and his employees). The degree of informed but informal organization between private actors,

bureaucrats and elected government officials is a key characteristic of the overall *mutual accommodation networks* (see Section 6.3) in which options for policy circumvention are generated.

#### 6.2.4 Tolerated settlement and forest clearing

A form of illegal access in which DENR officials have relatively little participation is the continuous flow of forest migrants into the Public Domain. Although government policies have taken on a more constructive course *vis-a-vis* the communities of indigenous tribes and forest migrants since the 1980s, it is still illegal to migrate to the public forest lands, settle there and clear a patch of land for agriculture. A number of factors may help to explain the apparent paradox that, despite this clear policy, DENR officials do not attempt to control the flow of migrants entering the public domain;

- For many migrants, forest migration is not a single step. The Ifugao send a team ahead to prospect land, contact local people, and make the first clearings to demarcate their area. Lowland migrants initially spend only part of their time on the forest farm, maintaining temporary shelters there. The family of the migrant only follow when more labour is required to cultivate a larger area of newly opened forest land. This means that it is difficult for an official at one of the DENR checkpoints along the access roads into the forest to identify someone driving by in a passenger truck as an illegal forest migrant. Often people claim to be working for a logging company, or on someone else's land.
- DENR officials, with the exception of some community development assistants, spend too little time inside the Sierra Madre to keep track of changes in the population and settlement patterns.
- The forcible removal of a poor migrant family requires the assistance of the police or the army, and would probably give rise to protests by local governmental and non-governmental officials. In this context, DENR officials cannot do much more during their occasional field visits than to inform the migrants about the illegal nature of their activities and hope that some migrants themselves will draw their own conclusions.

The fact that DENR officials do not effectively seal off the public lands from illegal entry does not mean that new arrivals can simply walk past the last settlement on the forest frontier and settle there. There is always some kind of coordination with barangay or town officials, not only as a mark of courtesy, but also because migrants have to make sure they are not occupying lands already claimed by someone else, and that the army does not take them for members of the NPA. A clear case of politically endorsed migration into the Public Domain occurred in the summer of 1992 in Tumauni, Isabela. A group of 20 landless households from the lowland town of Cauayan proceeded to the mayor's residence, asking for his assistance in finding them a place to stay. The mayor agreed and told them to see the captain of a barangay at the foot of Sierra Madre, giving them a handwritten note instructing the captain to "*please accommodate these families and indicate to them where in your area they can settle*" (Research diary, Sep. 1992). This mayor also supported farmers who settled inside a government reforestation area, defended their right to cultivate corn on these lands, and urged them to speed up the construction of a barangay centre (De Frel 1993:47).

Often local politicians are inclined to adopt such an approach because population size plays an important role in the grading of a municipality, and is one of the criteria for the allocation of other government resources, such as schools, teachers, medical facilities and a public market. By allocating public land to poor people, a mayor boosts his chances in the elections as well as the likelihood of securing grants for the development of his town. At the barangay level, these electoral motives are less important. Barangays receive a standard 80,000 pesos

from the Internal Revenue Allotment, and upland residents have no interest in allowing newcomers to leapfrog over their fields to venture further into the forest. However, they may be less inclined to take action against new migrants because they know that *"we were once in their position; how can we deny them now?"* (Field notes, Anak, Aug. 1993).

DENR officials only emerge as actors in the implementation of land occupancy policies when the issuance of land titles and stewardship certificates is at stake. As in the case of extractive activities, the boundary between 'legal' and 'illegal' provides ample opportunity for negotiation and tolerated illegal access, either with false documents, flexible interpretations of policies, or payments designed to generate a more cooperative attitude on the part of implementing officials, although the latter approach is less common in the case of forest migration. The key policy governing forest migration is the Integrated Social Forestry Programme (Section 5.2.3). If a migrant can prove that he was landless in his place of origin, and that he already resided inside the Sierra Madre prior to 1982, he may be awarded tenure through a Stewardship Certificate. Here, too, there are considerable opportunities to falsify documents, in order to comply with legalization requirements. The migrant must refrain from clearing additional forests, and there are various other conditions attached to the certificate, such as land-use prescriptions, and the unalienable nature of the land. Non-compliance leads to cancellation at the end of the first 25-year term. Here, policies are not so much circumvented as simply ignored. Common violations of CSC terms include using them as collateral for informal loans, sale and tenancy, total clearing, and mono-cropping with annual crops. While DENR officials are in a position to demand money in return for tolerating these violations, in practice this hardly ever happens; forest migrants generally lack the means to become directly engaged in negotiated settlements with DENR field officials, other than by hosting them in the best possible way on their occasional field visits, and insisting that they take farm products home with them. In comparison with forest product extraction, therefore, tolerated violations of forest occupancy policies are less related to financial incentives, and more to political interference in the implementation of forest policies. Larger economic interests in public forest lands, and -products to be derived from these lands, set the wheels of policy circumvention in motion. In the following sections I will be searching for answers to the question of why representatives of the government participate in these practices.

### 6.3 Motives of bureaucrats and field officials to facilitate policy circumvention

*.. "On 06 June 1994.... Undersecretary Ben S. Malayang III, in his capacity as Acting Secretary, issued a memorandum to the Regional Executive Director concerned, instructing the latter to release temporarily said five trucks upon representation made by Rep. Albano of Isabela.... CLLMI had previously been sternly warned by the memorandum dated 18 March 1993 from Undersecretary Umali not to repeat the offense of hauling abandoned logs without proper authority from the DENR. By again hauling abandoned logs without authority, as reported by DENR Region II, CLLMI, in utter defiance of said warning, violated pertinent forestry laws and regulations... what further aggravated CLLMI's case was that five (5) of the twelve (12) apprehended truckloads of undocumented logs escaped while being escorted by the authorities responsible for custody and further investigation. Such contemptuous acts against the authorities only reinforced the earlier findings that CLLMI is deep into illegal logging activities, using its timber license to legitimize such activities. As the old dictum goes: flight is an indication of guilt."*

(DENR Secretary's Order of Cancellation of Timber Licensing Agreement No 105, Consolidated Logging and Lumber Mills Inc., 12 Oct. 1994)

Money was an influential factor in most of the schemes discussed in the previous section. DENR officials who tolerate illegal access share in the benefits, using their public authority for private gain. However, I believe that in many cases, a singular perspective of personal financial gain is incomplete and misdirected. This section examines the factors at play in a more comprehensive way, placing money matters within the context of intra-organizational and external pressures motivating DENR officials to adopt a flexible approach to policy implementation.

### 6.3.1 *Intrabureaucracy motives: status, security, conflict avoidance*

The primary objective of the professional life of a bureaucrat is to perform one's duties and deliver the targets laid down by the organization. In the case of DENR officials in Cagayan Valley, those duties consist mainly of writing reports and achieving pre-set implementation targets (Hoekstra 1992; Buizer 1994; Van der Werff 1994). The multi-layered hierarchy of the DENR produces a steady flow of plans, projects and programmes, together with measurable outputs that serve as a tool for top management to monitor the performance of individual staff and the organization as a whole. Bagadion and Korten (quoted in Buizer 1994:48) compare the effects of a target-oriented approach with those of a more flexible, learning-oriented approach to the way officials interpret their tasks. An overemphasis on the production of performance reports and measurable indicators of performance in terms of pre-set target outputs can make the organization somewhat inflexible in their interactions with the public and obsessed with internal management. In addition to the reports on training activities, the monitoring of department programmes and projects, the workshops and meetings devoted to these projects, and the responsibility for disseminating information on new Department Administrative Orders and Memorandum Circulars, etcetera, there are also the monthly, quarterly and annual performance reports. These monitor the overall performance of the organization in terms of volumes confiscated, budgetary overviews, activity overviews and output percentages in comparison with the budgeted figures. In order to meet deadlines, officials sometimes provide their superiors with superficial, haphazard reports, in which inaccurate or fictitious data easily remain unnoticed.

This report-writing 'mania' not only affects the quality of the information flow, it also leaves DENR officials less time to spend in the field and interact with the object of government policy: the local population. Officials themselves do not appear to be overly concerned about their limited contact with the field situation. Outdoor activities are generally considered inferior to office work, not only because the wages are lower, but also because fair skin and manicured hands are highly valued status symbols. A deep tan, on the other hand, is a sign that one earns one's salary the hard way (Buizer 1994). Other motives that keep officials away from the field during the period under study were fear of encounters with the NPA and the necessity of manoeuvring the steep and winding access trails to the forest communities, in the heat and humidity of Cagayan. As a result, many DENR officials have only brief exposures to the realities of forest users, and view that world from the perspective created by the steady flow of desk reports. As the experiences of several DENR officials cited in the previous section showed, field observations that do not correspond to this official image are either 'lost' through the intervention of a superior or the author himself, who may ultimately decide that it is not worth jeopardizing one's own career and that of a superior (Hoekstra 1992:37). This not only leaves policy circumventions undiscovered by the organization as a whole, but also facilitates the participation of certain officials in illegal activities without the knowledge of their colleagues. In this way, manipulated information and illegal activities remain largely unnoticed.

An example that illustrates how the DENR lost track of its actual performance as a result of its rigorous planning and reporting regime was the practice of using the volume of confiscated illegal timber as a performance indicator. Each year CENROs competed to see which would record the highest volume of confiscated timber. And as we have seen, considerable quantities of illegal lumber were allowed to pass by checkpoint officials. The two actions were made compatible by taking a quota of lumber from each truck carrying illegal lumber, before allowing it to pass. Truck operators anticipated this, and overloading their trucks accordingly; this enabled them to leave behind some fitches at each checkpoint. Here we see lower officials participating in policy circumvention without the knowledge of other levels of the organization. This mechanism is at work in the petty schemes involving accidental discoveries of fitches, or the rattan poles of the furniture-maker in Section 6.2.

Larger schemes often take place by the inverse mechanism whereby superiors involve their staff in the implementation of deals with high-level outsiders. In a hierarchical organization such as the DENR, lower-level officials tend to see the lack of policy implementation as the responsibility of higher levels of the administration:

*"Do you know why we lost so many forest charges before? When a convoy was leaving Region 02 we had to call up the Central Office to find out whether the forest charges had been paid, only to find out they would simply say "Go, Go!" They were already pressuring us not to delay the shipments any longer. And so we could not do anything, even though we do not know whether any money has been collected"* (Key informant, 26 Oct. 1994)

In this respect, we must not forget that during the decades of corporate logging, strings of command ran all the way from the checkpoint to the office of the President. Local officials relied on instructions from superiors in determining whether or not forest products should be allowed to leave the region. During the past ten years, however, forest management has increasingly become a matter of local actors such as contractors, sawmill operators and upland communities negotiating with implementers on access to natural resources. Field officials now manage policy matters in smaller networks of colleagues and direct superiors:

*"We cannot do anything but accept. Our boss (the CENRO) is there behind us, pressuring us. And besides, we also have our expenses - 800 Pesos per day - for food and coffee for all the office staff, the security, etc. ... If you resist, you will be transferred, so all we can do is simply dance to the music..."* (DENR official, March 1994)

The threat of being transferred to another province or region hangs over all DENR officials. Officially, a transfer could be a career move, a reward for services rendered which is bestowed on someone with influence inside or outside the bureaucracy. The less attractive way of being transferred is by order of the Central Office as a sanction for involvement in illegal activities. But officials likewise run the risk of enforced transfer if they are perceived as inflexible obstacles to schemes developed by others in the organization. Punitive transfers are announced with no consideration for personal preferences or the family's present place of residence. The system of rotating officials from one province or region to another has become so deeply ingrained in the DENR bureaucracy, that it is currently considered an effective tool to prevent ranking officials (CENRO, PENRO, RED, forestry specialists) from becoming too closely involved with local networks, and from conniving at illegal or semi-legal practices.

This regular rotation of senior officials also has an impact on the motivation of subordinates, who weigh the degree to which they can conform to the style and priorities of their present superior. Strict loyalty to someone in a position of authority can leave one in a vulnerable position when that person is transferred to another office. Compared to political leaders in Region 2, many of whom come from families who have spent several decades in

public office (see Section 5.3.2), the security of people occupying positions of administrative authority within the DENR is generally short-lived. The political dimensions of these 'career moves' will be examined later on in this chapter.

### 6.3.2 Financial incentives

Payments to government officials in exchange for tolerating illegal access to a protected public resource is a basic ingredient of what is generally referred to as corruption, or the *private use of public office* (Kummer 1992a). Section 6.2.2 demonstrated the effectiveness of turning illegal activities into a source of additional income for often poorly paid government officials in the province. However, money is not always involved, and where it does play a role, it is not necessarily the key incentive. By accepting money, an official also complies with the other dimensions of each deal for tolerated illegal access. Inversely, declining an offer is tantamount to rejecting these other dimensions, such as building up a productive relationship with a superior, colleague or influential outsider participating in a particular scheme. Junior officials who had only recently joined the service were simply ordered to participate by senior colleagues, often fellow foresters who, for that reason alone, could not easily be refused. For instance, a young forester who entered the DENR expecting to apply his courses in forest management was soon confronted with the difference between theory and practice:

*"There was no tree-marking carried out by us. The Company Forester himself marked the trees to be cut and reported to the office of the DENR. Our 'package deal' with the Timber Management Assistant of the company was that they would cut whatever they wanted and pay us under the table; for each set-up we receive a certain amount".* (DENR Official, Dec. 1994)

Many of the cases referred to by DENR officials took place during the boom period of corporate logging. This industry not only left the Philippines with a nearly depleted forest resource base, it also left the DENR with a badly tarnished public image and a disturbed internal discipline. In such a context, well intending staff have a hard time standing by their principles. Either, as Colchester observed in Surinam *"honest officials resign their posts and less scrupulous individuals prepared to overlook, or profit from, malpractice fill their positions"* (Colchester 1995:74), or superiors undo the work of honest lower officials, as in the following experience of a committed staff in the DENR:

*"After passing my Board exam, I was assigned to the Forest Protection unit. There was a report on a confiscated shipment of illegally cut Narra logs. I enjoyed my experience of counting the Narra stumps, that were all piled up in the Regional Office. Then somebody came to my house and offered me and my 5 companions 30,000 Pesos. But I rejected the offer and wrote my report, with all the supporting documents. But then our District Forester was visited by the owner. My report never reached the District Office, I learned later that it had been destroyed and my boss had settled the issue with the violator. I found out the violator paid 100,000 Pesos"* (Key informant, Dec. 1994)

Anyone who works in an organization where practices like these are tolerated would have difficulty not becoming discouraged or even adjusting his own attitude to requests for assistance from outsiders (or colleagues in the Agency). Once that happens, and the official begins to adapt his lifestyle to a combined income - his salary plus other sources - it is hard to turn back the clock and manage on a modest DENR salary. Social obligations involving extra expenditures make it doubly difficult for forestry officials to reduce expenses without risking loss of face. They are expected to do their share in sponsoring social events and of course paying the bills for regular drinking sprees. To maintain their lifestyle, therefore, some officials do not wait for outsiders to propose package deals, but adopt a pro-active position, devising their own schemes and ensuring that they are not detected:

*"After the confiscation in the Veterans concession, we also suspended the Monte Alto in Jones, which was managed by a lumber dealer in Santiago. The trouble was that the CENROs were getting 50 centavos for every board foot extracted in excess of the AAC, so that is why they were even promoting it!" (DENR Official, Oct. 1994)*

There are, however, limits to the possibilities that officials have to turn policies into business opportunities. Someone whose financial rise is too rapid can find himself the object of a civil case on the grounds of unexplained wealth. In 1993, this happened to an official whose star had risen quickly after years of service in a quiet corner of the Research Department of the Regional Office. A few months before the 1992 elections, and less than a year after he was promoted to the office of CENRO in Quirino, he was transferred to the first district of Isabela. Within two years, his lifestyle changed completely; he began to wear expensive clothes, bought a car and built his family a new two-storey concrete house. During the town fiesta of 1993, he threw a lavish party for a large number of guests. His friends and DENR colleagues told me that they found his display of new wealth shameful and out of all proportion. A few months later he was transferred again, becoming CENRO of Santiago. Here, his rise was halted by a suspension on charges of unexplained wealth; if proved, this charge would have resulted in dismissal and loss of all benefits and entitlements. When I spoke to him shortly after he had been suspended, he complained about the difficulty of staying out of policy violations in his office:

*"It is not so easy to manage these political pressures; when the Governor comes in and asks me to accommodate one of his mayors, it is 'Yes, Sir' lang, no, tell me what is my option? But then there are 7 towns under the CENRO of Cauayan, and they all follow and they ask for the same thing! I am the one facing these pressures and now my bosses are charging me. I am very disappointed. It is the duty of my boss to protect me, to stand by me. I do not respect him any more" (the suspended CENRO officer, Sep. 1993)*

Eventually, someone indeed protected him from prosecution; he was first reappointed as the officer in charge of the small PENRO office some distance from the Valley, and by the end of 1994 he was transferred to a PENRO position in the Region. However, the person who helped him was not his own superior in the DENR, but a prominent politician.

### 6.3.3 Political interference

*"Do you want me to transfer you?"*

(A Congressman from Cagayan, during a visit to the Regional Director of the DENR, after unsuccessfully demanding the release of confiscated trucks, July 1994)

Political interference in the bureaucracy is not only hard to pin down, but often paradoxical as well; some members of the House of Representatives are engaged simultaneously in lawmaking and in the protection of parts of the electorate against the implementation of those same laws. The fact that local politicians, governors, mayors, barangay captains and their respective councils may try to undermine the limitations set by national legislation is easier to understand, since they are elected to represent the economic interests of a predominantly poor electorate. What is clear is that the various actor groups who proclaim their adherence to the government are not pursuing the same agenda. This issue of is examined in more detail in Section 6.5.

The second paradox of political interference is the fact that, while it is widespread and, in my view, represents the most important source of policy failure in Cagayan Valley, it is almost impossible to prove. There is a wealth of detailed oral accounts on political interference in the

implementation of forest policies, but the people involved are careful not to leave behind any trace of written evidence which could link them to a particular case. Official documents are almost never used in attempting to influence bureaucrats, and no minutes are taken of informal interactions between bureaucrats and politicians. Moreover, an elected official is usually represented by someone who cannot be legally connected to him, but who is widely known to be his business managers. It is only when covert and indirect avenues prove unproductive that a politician may opt to approach a reluctant bureaucrat face to face, as in the above case. Often such a meeting does not take place in the offices of the DENR official, but rather in the casual atmosphere of a social gathering. There are regular opportunities for casual encounters: the sumptuous birthday parties hosted by politicians, important weddings and baptisms, barangay and town fiestas, and the many conferences and other official occasions 'graced' by the presence of local politicians all offer the possibility of a confidential chat. During these events honourable guests always spend some time together in a private air-conditioned room, having mingled with the other guests for a suitable length of time. Politicians use these informal meetings to discuss a wide range of policy issues, often at the invitation of others; these include civil service appointments and cases that have been 'brought to their attention'. The officials whose cooperation is required may automatically be part of such refined gatherings (*e.g.*, high-ranking appointed officials) or, in the case of lower-ranking officials, they may be invited to participate for a short while. In between the jokes and small talk, and the occasional game of *mahjong*, agreement is quickly reached on the issue at stake.

Once a politician opts to personally visit an appointed official in his office, as in the above case, or at home, this is unerringly perceived as the ultimate move and an indication that earlier, more indirect measures were unsuccessful. By going in person, the politician is acknowledging the importance which the case has for him, risking his *face*, *i.e.*, his honour and credibility. Any official who disregards such a clear and open plea knows there is bound to be retaliation.

Not all politicians are equally circumspect in their personal interferences with DENR policy. Former Isabela Governor Faustino N. Dy was feared by some and revered by others for his direct personal intervention in the affairs of the DENR:

*"We had so many experiences with the old man. On one occasion, he attended a multi-sectoral meeting in Bantug. Our boss, the assistant district forester, said that there was already a Social Forestry Programme here in Bantug and he asked the people if it was not true that they had been awarded several CSCs. But he also mentioned that there was a problem with illegal Narra extraction by some individuals from outside. At that point, Governor Dy rose and said 'I do not give a damn about your stories, Sir! I am the Minister of Natural Resources here in Isabela, and I can bury you alive!' He was holding a 22-calibre rifle and had to be escorted out of the meeting by the Congressmen's bodyguards [...]"* (Research diary, Dec. 1994)

As in the example cited at the beginning of this section, this sample of the legendary heavy-handedness of the 'Old Man' in his dealings with DENR officials contains an element of threat used to force implementers and field officials to shift allegiance and follow him instead of abiding by Agency orders. Even where only implicit reference is made to its possible use, violence is the final anchor of political interference in the bureaucracy and in Cagayan Valley society in general. DENR officials with responsibility for forest protection and law enforcement must take into account the possibility of violence in deciding whether to take a strict or lenient approach to the conduct of their work. This not only holds true for DENR officials, but also for other members of the civil service who carry out law enforcement tasks. However, unlike most other law enforcement officials, such as the Philippine police and the army, DENR officials carry no arms with which to defend themselves. During nightly

patrolling of the checkpoints along the national highway, this can lead to frightening situations: "We confiscated a truck loaded with Narra flitches during the night, and parked it near the office. There were only two of us that night. After a while we went to sleep, but then the shipper's goons arrived, carrying Armalites [machine guns]. They were looking for us in the office but we were already hiding in the toilet. They managed to take the truck without the keys, using direct ignition. Another time, when we had also confiscated wood, they pointed an Armalite at my neck and started asking for Mr. Corpus, our forest protection officer. He was not there but I know they wanted to kill him" (DENR official, April 1994)

DENR officials not only have their own personal safety to worry about, but that of their relatives and families as well. Threats of violence include kidnapping and other ways of harming the families of officials. Any official who comes into conflict with a politician or a third party disadvantaged by his decision in a particular case may have to send his family to live with relatives outside the region, in order to protect them from possible harm. During the height of the DENR crackdown against the TLAs in 1992-1993, the Regional Director of the DENR was given round-the-clock protection, including a private guard carrying an automatic weapon, and took to travelling at unscheduled hours in different cars. One of his associates in the office says that there were days when he received as many as four death warnings on paper. On the day he suspended a concession in Jones, Isabela, a small coffin was delivered to his house (Research diary, October 1994).

It is with experiences like these in mind that implementers carefully weigh the options of either adopting a flexible attitude towards requests by outsiders - and probably enjoying a share in the benefits of this accommodating stance - or distancing oneself from such practices and maintaining a hard line on policy implementation, irrespective of the name, status or reputation of the person behind an illegal activity. In late August of 1993, forester Leonardo Tindoc (of CENRO Santiago, Isabela) confiscated ten 10-wheeler trucks with first-class sawn lumber, allegedly owned by a local congressman. Tindoc had been repeatedly pressured to release the trucks and drop the case. An alleged henchman of the Congressman's family visited Mr. Tindoc in his house on a Saturday night, again proposing a settlement of the matter. But Tindoc refused, saying that 'no amount of politics can convince me'. In the early morning of the following Sunday, two shots were fired at him as he stood in front of his house. A gunman followed him as he ran inside the house for cover and he was shot dead in front of his wife and children.

While courage of the kind displayed by the late Leonardo Tindoc and others in the DENR is highly admirable, its impact in terms of bringing violators to court and getting a conviction is by no means certain. Out of 115 illegal logging cases brought to the Cagayan Valley Regional Trial Courts in 1992 and 1993, only one had resulted in a conviction in 1994 (PDI 10/03/94) Aside from the difficulty of producing evidence that will stand up in court, such as pictures showing the date, location and individuals involved in a particular incidence of policy violation, bribes can make evidence disappear before it reaches a court of justice:

"Last year, the DENR Regional Director was able to stop an illegal logging activity in Cagayan. He ordered the injection pump of the bulldozer to be removed and brought to his office, so that the machines were grounded and evidence could be produced in court. However, when he went to Manila to coordinate the case with the Central Office, somebody succeeded in removing the injection pump from his desk. When the Director returned to Tuguegarao, all the equipment had been moved out of the forest". (CFEM faculty, Dec. 1994)

Should a case indeed be supported by sufficient evidence, it may still be difficult to implicate key decision makers. The only ones who can be charged are 'dummy names' and the 'small fry' who carry out the dirty work. The mere suggestion that a 'big fish' is behind a scheme

may compel DENR officials to seek legal assistance to counter charges of libel or abuse of official authority. Contracts containing dummy names and even entirely false counter-evidence are used in such a case, as the regional director found out in 1991:

"We had a large confiscation of 4,500 m<sup>3</sup> of logs in Bicobian, on the Pacific side. The equipment was owned by the business-caretaker of Congressman [ ] and by Carlito Yu, a relative of the old man. But at the time of the confiscation, the equipment was leased by a certain Mr. Raymundo Formacion, an elderly farmer from that place. Instead of their being charged, they charged me in court for confiscating their equipment. They were able to present a manufactured tax declaration for a piece of land. They claimed the farmer had leased the equipment to open up this land for the development of a fish-processing and ice plant. I only escaped prosecution because I was able to establish that the document number used for this manufactured tax declaration had previously been used by the same notary public for another contract". (Research diary, Dec. 1994)

DENR field officials and civil servants know just how dim the prospects are of a case of illegal extraction actually resulting in a conviction in a court of law. Add to that the risk of being subjected to legal and other forms of harassment, and it is understandable that they often fail to take a firm stand on the implementation of forest policy. A more accommodating attitude makes life easier in many ways, increasing one's income and enhancing career prospects. Political patronage continues to be an influential factor in appointments and promotions in the bureaucracy. One high-ranking DENR official may have been exaggerating when he exclaimed, during the birthday celebrations of a congressman: "I just wait there in the office to receive instructions from the Congressman on whom to appoint, and then we implement [those instructions]!" (Research diary, March 1996). But civil servants can ignore political recommendations only so long.

By positioning their *bata-bata* (protégés) in strategic positions in the DENR, political leaders facilitate their leverage in the organization. Officials whose careers have benefited from the sponsorship of a politician go through life with the *utang na loob* (or inner sense of obligation) to repay their political godfather. At the same time, DENR officials with strong political backers have less occasion to worry about the risks of condoning illegal extraction, because their protected status makes them 'untouchable'. As we have seen, in terms of job security it may be safer to bank on loyalty to a powerful politician than to one's temporary superior in the bureaucracy.

The strategic places where *bata-bata* are positioned are not necessarily the highest in the organization; having a flexible scaler or forestry specialist in a CENRO office, or a particular crew on a checkpoint, may be sufficient to ensure the success of a scheme. Although a politically sensitive leadership at the Regional Office facilitates access to DENR appointments and promotions, such sponsored appointments cannot be effectuated without going through the DENR's own internal evaluation procedure. Moreover, politicians compete with each other for certain positions. The financial gains to be made from having a peon in a strategic position may warrant a little investment. In this manner, an official who is in a position to make decisions on appointments and promotions is in effect a kind of auctioneer on the job market.

This practice of selling jobs to the highest bidder is called the *suk-suk* system. One bureaucrat told me that a Forester IV position, which pays around 4,000 PhP/month, sells at 50,000 pesos. During the heyday of corporate logging, lower jobs like scalers and forest guards fetched even higher prices, but, according to my informant "you can earn it back very quickly" [by falsifying documents, GT]. Money alone is not enough, however:

"Mr. Lito Formosa will never be promoted, because in this place you need three conditions: the right education, the right connections, and the right amount" (Key informant, 7 Nov. 1993)

These three factors each carry a specific amount of weight. With an influential person backing

one's application, less money is required; although there is a certain amount that is normally paid as a gesture of courtesy and gratitude for assistance in obtaining an appointment, a request for assistance does not have to be accompanied by money to merit consideration. Bureaucrats hoping to enter into financial deals pertaining to promotions and employment for political protégés place themselves in a vulnerable position, in the sense that a bureaucrat may himself become dependent on political protection against disciplinary action, as the following case illustrates.

In 1994, a ranking forestry official at the Regional Office who had been actively engaged in informal job-auctioning had to seek protection from disciplinary action after falling out of the good graces of the wife of a congressman by asking an excessive fee for the appointment of one of her relatives. She complained:

*"You know that this Mr. Limatican was already selling positions! We paid him 5000 pesos for this boy we have here to be employed (and he even deserved it), only to find out he just sold it to the highest bidder! I told him I would let [DENR Secretary] Alcala know about this, even without telling my husband. And I know he is also involved in that illegal logging in San Pablo! It is really very blatant, they pretended it was an old cut and then this Limatican sent in his own team and they really bloated it eh, they went in and cut so many trees and they buried it all in a creek in the mud so it would appear to be old cut. We do not mind the cutting by the little people, to build a house, because where will we get the wood if we do not allow this, but not this kind of very blatant activity; we are not all saints but they should do it discreetly, that is what I always tell them".* (Research diary, July 1994)

Colleagues of the disgraced bureaucrat admitted that the Congressman had been trying for some time to have him removed from the region because of this incident. One of the colleagues who knew him personally told me:

*"Jun came back from Manila last week. I talked to him in the office this morning and I sensed the tension from his voice; his hands were perspiring. He asked me if I could talk to Ed [a well connected logger, GT] so that he could go to the house [the residence of the politician] and ask if his transfer from Tuguegarao could be avoided."*

When I asked this colleague why Ed's mediation was needed, he said:

*"Ed is now the eyes and the ears of the Congressman. But unfortunately for Mr. Limatican, it is the wife who is after his head. The Congressman is very considerate, but not so the wife. They now say that Jun is a crocodile, meaning he is demanding his share of all sorts of things. Unlike the Regional Director, who was able to handle his power without changing as a person, Mr. Limatican started to like it too much; he used his position".* (Key informant, July'94)

In this case, the mediation apparently worked. It is not clear whether the transfer of the Regional Director was part of the same deal, but after a meeting between the new regional director, Jun Limatican and the Congressman in the latter's residence, their differences were patched up. As in the case of the official charged with unexplained wealth, the normative terms 'discreetly' and 'liking it too much' in these quotes indicate that relationships between outsiders, politicians and DENR officials are subject to *delicadeza*: the subtle art of a measured use of one's position, *i.e.*, responding to requests but avoiding the active and brazen use of one's official position for personal gain. Once an official moves beyond what is perceived by outsiders as a reasonable level of paid assistance for the granting of a request, the odds may turn against him.

Before going on to draw some general conclusions concerning the motives and mechanisms underlying the failure of forest policy in Cagayan Valley, I would like to stress that the cases presented here do not pretend to be characteristic of the DENR organization as a whole; nor are they intended to brand certain categories of people as effective or counter-effective in the

implementation of policy. What I have tried to do is to show that the mechanisms described in the previous section are not just money-making schemes of purely economic rationality, but many-faceted mixtures of reasons and forces in which officials may become trapped. Nevertheless, an enhanced protection for the Sierra Madre requires a better protection for the DENR against being mobilized for the implementation of personal agendas.

#### 6.4 Mutual Accommodation Networks: the actors field in government-assisted illegal access to public forest

*"The citizenry expects the government to respond to these illegal activities.  
But they do not know the mechanisms within the government."*

(Former CENRO officer, Oct. 1994)

In this section, I aim to arrive at a general interpretation of the mechanisms described in the previous sections, by means of which policies are distorted, circumvented or stalled on their way from formulation, in Metro Manila, to the lower levels of the bureaucracy. The degree of autonomy that government officials have in interpreting policies and creating their own balance between professional and personal motives is what is defined as their *discretionary space* (Lipsky 1980, cited in Buizer 1994). If this space is too large, policy goals and the credibility of the agencies of the state are at risk; if it is too small, interactive processes between the state and the citizenry are stifled. In the previous sections it has become clear that the DENR is unable to keep an adequate rein on this individual freedom to interpret policy, as a result of what Downs refers to as the "leakage of authority" from the central level down to the level at which implementation directly affects the lives of the citizenry (Downs 1967:134, quoted in Migdal 1980:241). Riggs (1964, cited in Hoekstra 1992:19) explained the un-Weberian character of Philippine bureaucracy as the consequence of a *prismatic society*, in other words, a society in transition between Western and local culture. In such a context, the bureaucracy is still less than efficiently organized and is under strong pressure from 'recalcitrant clienteles' out to secure exemptions from policies which, in their view, have been imposed upon them. Bureaucracies in prismatic societies invariably develop cultural and political factions within their own ranks, resulting in considerable discrepancies between the formal and actual authority of each official.

A more actor-based analysis is put forward by Grindle (1980) and Migdal (1988), who attribute the leakage of authority to the existence of a system of negotiation between local officials and pressure groups, in which deals are struck to accommodate mutual interests. Such deals include a financial compensation for the officials involved which is commensurate with the type of accommodation required. Both Grindle and Migdal call attention to a category of officials who are particularly influential in determining to what extent policies are effective tools of state control. These *implementors* derive their influence mainly from their strategic position between the population and those at the head of their agency. Grindle defines implementors as

*"A corps of middle-level officials who have responsibility for implementing programmes in a specific, relatively constricted area - a state, a district, a province or an urban zone - and who are held responsible for programme results by their superiors. This corps of individuals - the first and second ranks of the field administration - maintains frequent contact with national and regional superiors, but also has occasion to interact with the clients of government agencies and with opponents of the programme at local levels. These middle-level officials may have considerable discretion in pursuing their tasks and, even when this is not defined as part of their normal duties, they may have a decided impact on individual allocation decisions. (Grindle 1980: 197, cited in Migdal 1988:238)*

In Migdal's view, implementers are part of a *triangle of accommodation* (*ibid*:248), which connects two levels of bargaining; one level pertains to the relationship with their superiors (both bureaucratic and political), while the other level is where local *strongmen* are accommodated. As we have seen in the preceding two sections, it is just such a "*system of accommodation and payoff*" (Grindle 1977 cited in *ibid*:248) which is at work in Philippine forest policy. In my view, Migdal's theory is highly illustrative of the day-to-day conditions under which the outlines of forest policy are transformed within Cagayan Valley practice. However, to adapt this model to the sociopolitical and public administrative context of Cagayan Valley, a number of adjustments to its conceptual elements are required:

- First, we need to subdivide the category of middle- and lower-level officials which Migdal includes under the term *Implementers*. Lipsky (1980) prefers the term *street-level bureaucrat* for the lowest-level official in the bureaucracy, who is in contact with the citizen whose actions are the target of government policy. Following Buizer (1994), I propose to replace this term by *field official*, which does not have the urban connotation of Lipsky's term, and also emphasizes "*their dual position of working 'in the field' and thus interacting with the local people and at the same time being connected to a government agency, which gives them their 'official' position*" (Buizer 1994:13). In between these field officials and the *policy makers* at the Central Office in Manila, there is the category of the *bureaucrats*. These are the office executives at the regional, provincial and community levels of the line agencies, the people who have the authority to sign official documents and take decisions on resource access, on the basis of information provided by their subordinates. It is necessary to make this distinction between bureaucrats and field officials because, as we have seen, the control which the former have over the latter is just as problematic as the control which Migdal's central government over its local implementers.
- The second refinement is to separate the political and administrative segments of the state. Field officials and bureaucrats negotiate mutually agreeable policy interpretations with elected officials who are either acting independently or represent certain private interests. Depending on the kind of accommodation required and the level of access to the bureaucracy, a politician may either work his way downward from the level of the policy makers in Manila, through the bureaucrats in the region, to the field officials, or alternatively, approach one or two of these levels directly. Negotiations between elected and administrative government officials over private access to public natural resources are an important cause of the leaching of DENR authority.
- A third adaptation is concerned with the category which Migdal calls *strongmen*. In his study, strongmen are traditional bosses, clan leaders, rich peasants, and others who represent the peasantry. In the Sierra Madre context, I will use the term *leading local persons* for this category, since here we are not talking about local elected officials, but rather influential private individuals, who are often rich and have close political affiliations. Thus the category 'leading local persons' includes both traditional and modern non-political leaders, such as industrialists, representatives of NGOs, and informal leaders (people with informal authority over others) such as landlords and moneylenders. They occur among all levels, and in all three categories of actors cooperating, and assume a lead-role in the establishment of negotiated deals, claiming to represent the interests of one, or several others (the Secretary, the Congressman, the Regional office, a cooperative).
- And finally, intra-bureaucratic conflicts of interest also play a role. As noted in Section 5.3, the feasibility of DENR policies may also be hampered by the policies of other agencies. A governor who wants to gain access to the fishing grounds on the Pacific side can work through the Regional Development Council, where the DENR has only one vote,



from the conversion of natural capital into financial capital is invested in the maintenance of the accommodation network. All participants must see tangible net benefits in participation or tangible net costs in non-participation; the network fixes the definition and allocation of these benefits, as well as the means of protecting one another from possible legal action by non-participants.

- 4) Patronage (*patr.*), or the personalized patron-client relationship in which the patron provides the client with access to resources which he owns himself, occurs only once, in the node between forest migrant and local elected official. A barangay captain or mayor who protects the migrant from the law through brokerage with the field official or bureaucrat concerned is rewarded at election time. At all higher levels, the term *brokerage* (*brok.*) is used. The essential difference between them is that the latter term pertains to mediated access to resources that the patron has no direct control over (Boissevain 1969:379-386, see also Section 7.2). Elected officials negotiate with DENR officials over access to natural resources in the public domain; accommodating field officials are rewarded with the politician's willingness to negotiate with bureaucrats over promotions, or protection against administrative sanction.

Not all forms of accommodated access require the coordinated activation of the entire network shown in fig. 6.1. Small accommodation networks exist both at the local level, between rattan manufacturers and the local CENRO, and at the national level, between policy makers and lawmakers. In the past, when corporate logging concessions were handled by the Central Office and the President, negotiations in all nodes of the network had to lead to a coordinated result. Such cases have become less common and more complicated in the current era of community-based forest management, where more actors are involved and the central level is less directly engaged in decisions on forest product extraction. Mutual accommodation networks are not active at all times, nor are they always of the same size or composition. A network dissolves or becomes inactive when the accommodation has been agreed upon and its benefits enjoyed, only to be formed again once a new initiative is taken.

The transient, flexible and informal composition and functioning of Mutual accommodation networks explain why local actors from the bureaucracy, politics and business are continuously refining their ability to respond to new policies by creating new modes of accommodated access. As corporate logging declined and lumber supply dwindled, the new policies for small-scale extraction and processing brought new opportunities to serve an increasingly tight market for forest products. The willingness of appointed officials to accommodate illegal access by either misreporting, turning a blind eye, or moulding formal policy content into feasible policy interpretations can be traced to the motives discussed in the previous section:

- *Financial incentives*

Financial rewards may represent a substantially larger component of the overall income of an official than his normal salary. In order to safeguard this significant portion of his overall income, the official may be more inclined to protect a particular scheme from discovery than to abide by official policies, as duty dictates. Once he has become used to the additional income, it becomes a matter of saving face not to fall back into one's old lifestyle and expenditure patterns. It is only in small networks, where petty accommodation deals are made, that money may be used in isolation from the other factors enumerated below.

- *Compliance with top-down orders and performance indicators*

The large number of official reports that field officials and bureaucrats are required to produce throughout the year affect the quality of both information and monitoring,

making it easier for accommodated access schemes to remain undiscovered.

- *Preference for office-based activities*

Field officials and bureaucrats who stay away from the field lose touch with reality and cannot make accurate reports on policy implementation. Hot and arduous conditions in the field, status perceptions, law-and-order risks, and DENR budget limitations are obstacles to more intensive field visits.

- *DENR hierarchy*

Subordinates are expected to follow the orders of their superiors, and not to cause them embarrassment. Junior officials who are sent out to the field report favourably on their observations there, so as not to endanger the careers of their chiefs in the office.

- *Political interference and conflict avoidance*

Political connections are an asset for any appointed official. Politicians tend to have a longer-term access to government power and influence than leading bureaucrats, who are often reassigned to other provinces and regions. In the words of Migdal, this has a "devastating effect on policy implementation....no career-minded bureaucrat wants to be identified as a zealot for a state policy, despite its popularity or unpopularity, if there is a strong chance that he or she will be left out on a limb of that policy long after its creators and the agency chiefs have turned to other endeavours" (Migdal 1988:240).

- *Uncertain legal backing, fear of retaliation, violence*

Because of the use of information manipulation and dummy tactics, appointed officials may find themselves unable to produce sufficient evidence with which decision makers can be convincingly linked to, and convicted for, violations of forest policies or laws. Unaccommodating officials, and their families, are liable to face legal or physical harassment.

Although Migdal recognizes the "the maze of pressures and cross-pressures" (*ibid*: 239-240) which must be negotiated by the 'implementers', his triangle of accommodation conceptualizes the role of 'implementers' as too pro-active, as if bureaucrats and field officials were actively exploiting their strategic position midway between agency leadership and the citizenry, for personal financial and career gains. These benefits may indeed entice some officials to take the initiative and mobilize outsiders to participate in a mutual accommodation network. In my view, however, requests for special resource extraction permits, political pressure to lift the suspension of a TLA or to release a truckload of confiscated lumber, and sponsored appointments and promotions originate largely from outside the DENR. The rewards that accompany a flexible response to these initiatives are a compensation for the risk which the official runs, and are commensurate with the economic value of the accommodation requested. Bureaucratic assistance in obtaining private access to restricted forest products is determined as much by the rewards which cooperation brings as by the potential consequences of non-cooperation.

To illustrate the diversity of responses to the pressures exerted on DENR officials from both inside and outside the bureaucracy, I will quote from a letter by one 'reformist' official who, after ten years of trying to maintain a basic attitude of strict compliance with DENR policies, expressed his determination to resist temptation and encourage others in the organization to do the same:

*"The present administration is in favour of social reform but it is frustrating, as a member of the organization, to observe the malpractices still existing. To the extent that I am influenced myself, at times when I have no self control. Nevertheless, I still hope that total reform can be achieved someday. Change starts with myself and I am determined to be an agent of change in our organization"* (Key informant, Sep. 1996)

### 6.5 Local Bosses and National Government: Political origins of state weakness and accommodated access

*"An examination of the complex processes through which inequality, indebtedness, landlessness and poverty are created has highlighted the way so-called patrons have used predatory and coercive forms of primitive accumulation and monopoly rent-capitalism to expropriate the natural and human resources of the archipelago from the broad mass of the population, thereby generating and sustaining the scarcity, insecurity and dependency which underpins their role as bosses" (Sidel 1995, in Rocamora 1995:xxii)*

As we saw in the previous sections, DENR policies are not fully implemented, because they are transformed, reinterpreted or actually obstructed on their way down from the central level where policies are made, to the field level where they are supposed to be implemented. These constraints upon the policy process are due partly to the inadequacy of the policies themselves and partly to outside interferences, in combination with the large discretionary space of local officials to facilitate illegal access without sanctions.

The questions which then present themselves centre on the deeper implications of these fairly down-to-earth mechanisms. For instance, why has the DENR and its predecessor, the Bureau of Forest Development, been unable, or unwilling to use the extensive set of legal measures at its disposal to protect the natural resource base from private abuse? And why have the majority of those accommodating illegal private access to public resources been able to do so as systematically, and sometimes brazenly as we saw above? One way to explain the poor effectiveness of the DENR would be to compare its characteristics with those of the rational ideal-type bureaucracy defined by Weber (1984). An effective bureaucracy, in this view, is a highly independent and disciplined organization, which recruits and promotes its members on the basis of professional seniority and through open competition, and in which there is a clear distribution of tasks and strict, systematic discipline. To be able to function, such a bureaucracy requires a reliable flow of written documents. In the government bureaucracy of the DENR, clearly other principles apply, as I illustrated above.

In my view, the ineffectiveness of the DENR can only be understood in relation to the weak capability of the Philippine state as a whole to **"penetrate society, regulate social relationships, extract resources and appropriate or use resources in determined ways"** (Migdal 1988:4). DENR shows this weakness more clearly than other state agencies, such as the NEDA, the DPWH or the DOH, because its mission is precisely to guard the interest of the state, and regulate the citizenry's access to the natural resources within the national territory. Widespread illegal logging and migration into the public domain indicate the limited capability of the DENR to perform this task. In fact, its actions have the appearance of a continuous response of legalizing uncontrolled developments in the public domain, scaling down the state's assertiveness with respect to the implications of public ownership for private access. Intermediary forms of private tenure for these lands were devised through the integrated social forestry programme. More recently the state relinquished its exclusive hold over the public domain, opening up the possibility of issuing long term management leases to forest migrants and even real ownership titles to indigenous forest tribes. Gibbs *et al.* (1990:255) see increasing demand for food by a growing population, and the threat that, unless the Bureau of Forestry made public lands available for that purpose, other agencies might be given jurisdiction over the public lands as important factors driving the coming about of the Integrated Social Forestry Programme. Forest administrators, they argue, also saw that the depletion of forest resources undermined a legitimacy-base that had, until then, been purely

based on the management of forests, not on forest lands. I would argue that these compromises have not prevented the DENR from losing a great deal of its traditional authority as the custodian of the public domain. In that perspective contemporary policies of democratized access constitute the unavoidable legalization of private access to common properties through activities which have increasingly proven to be beyond the control of that agency.

One need not spend much time in Philippine traffic, the Bureau of Immigration and Deportation, the Customs Office or the Bureau of Internal Revenue to realize that problems of state control also present themselves in sectors other than forestry. Tax collections, for example, are among the lowest in Southeast Asia. Only 35% of potential and corporate taxpayers filed returns in 1989 (Far Eastern Economic Review, 26 March 1992). Moreover, the fact that many of these statements may not have been entirely accurate is reflected in the overall level of tax collection as a proportion of GDP: between 1985 and 1990 the total taxes collected amounted to 10.5% of GDP, compared to 15.5% in Indonesia and Thailand and 18% in Malaysia. In the same period, the Philippine government realized gross savings of 17.1% of GDP; compared to 33.1% in Indonesia, 34.4% in Malaysia, 32% in Thailand (Eder 1994:4-5). Low tax revenues and savings are financial indicators of a weak government with few opportunities to facilitate and steer developments throughout the country.

Another characteristic to size up the strength of the Philippine state, again in the Weberian view, is its ability to monopolize the legitimate use of violence. Because of its reputation as a stronghold of the New People's Army, Cagayan Valley has long been considered an area with unstable Peace-and-Order conditions. People who are concerned about their security tend to take measures to defend themselves, rather than relying on protection by state agencies, such as the police, against robbery, attempted murder, and other forms of violence. Despite a national debate on more stricter controls on firearms, a wide range of assault weapons ranging from revolvers to M16 automatic rifles are freely available to interested parties in Manila and most regional capitols. A nationwide operation to disarm private armies was initiated after reports in July 1993 that many politicians (including 13 congressmen, 15 governors and 66 mayors) and businessmen maintained private armies throughout the countryside. Four months later, 455 private armed groups had been disbanded and over 16,000 firearms recovered by the tripartite task force of the PNP, the NBI and the armed forces. With the exception of 12 individuals, mainly from Mindanao, all the politicians were cleared of charges after a meeting with the Secretary of the Interior and Local Government (PDI 12 Nov. 1993). The question remains whether this conclusion was based on factual evidence or was an example of the "traditional ways of political accommodation" (Thompson 1994:14) in another Line Agency.

The Armed Forces and the National Police have problems of their own with respect to central control and organizational discipline. Siliman (1994) calls attention to the weakness of the post-Marcos civil administrations to control the army, and argues that this weakness has been one of the causes of the continuing human rights violations, despite the new 1987 Constitution, which he calls "a model legal document for the protection of human rights" (Siliman 1994:112, cited in Thompson 1994). Nevertheless, over 1000 political killings and disappearances occurred between 1986 and 1991, and in 1994 there were over 600 political prisoners in the country (*ibid*:114). The histories of the political families discussed earlier in this chapter confirm the views of Mc Coy (1993), Kerkvliet (1992), Rocamora (1995:xiii) that unauthorized violence plays an important role in local Philippine politics, particularly in frontier areas, such as the Cagayan Valley during the corporate logging decades.

Although private armed groups continue to be part of the entourage of any self-respecting mayor, governor or congressman, in the present-day Cagayan Valley their customary role is small compared to the presence and scale of operations of the army and the police. In addition,

the role of the private armed groups in Cagayan Valley is almost complementary to that of the army, namely to maintain the social and political *status quo* by responding swiftly to individuals or groups who challenge the existing order in the territory of their 'Boss' (Rocamora 1995)<sup>4</sup>. In terms of the legitimate use of violence, therefore, the Philippine state does not qualify as 'weak'. The joint forces of the Philippine National Police and the Armed Forces of the Philippines equip the government with a considerably machinery for law enforcement.

In cases where these agencies cooperate with the DENR in the implementation of forestry policies, the potential power of the Philippine state to impose the law clearly shows, for better or for worse. In 1992, for instance, Marag Valley, Kalinga Apayao, became the arena of armed conflict between troops of the AFP and forest-based groups which the government branded as communist insurgents. According to NGOs in Cagayan, the operations were necessary to allow logging operations in Marag Valley to get underway. A two year cooperation between the DENR Regional Office and the 5<sup>th</sup> Infantry Battalion in 1991 and 1992 significantly enhanced the enforcement capability of the DENR, whose unarmed officials often face armed men accompanying loads of illegal forest products.

#### WEAK GOVERNMENT LEGITIMACY

In my view, one structural factor that results in widespread violations of forest policy and constrains the capability of the DENR to curtail those violations is the degree of legitimacy that the citizenry attributes to the government in general, the "*acceptance, even approbation, of the state's rules of the game, its social control, as true and right...[and] the acceptance of the state's symbolic configuration within which the rewards and sanctions are packaged*" (Migdal 1988:33). National politics and government have long been equated with the unequal distribution of wealth, services and power between the National Capitol Region and the other regions of the country. During the Marcos presidency, the citizenry witnessed how the government agency that was supposed to protect the public domain was actually facilitating the over-extraction of natural resources by Manila-based companies, and sharing in the spoils.

Unlike many of its Southeast Asian neighbours, the Philippine state can neither build legitimacy upon a deep tradition of national myths, such as a Pre-western monarchy, national pride in legendary ancestors, in epics on the origins of the state, or other "*general statements about the world and its parts, and in particular about nations and other human in-groups that are believed to be true and then acted on whenever circumstances suggest or require common response....in the absence of believable myths, coherent public action becomes very difficult to improvise or sustain*" (McNeill 1982:1, quoted in Migdal 1988:26). The political history of the Philippines shows repeated efforts to construct state myths in order to mobilize the people behind the government. After 1946, the creation of the new independent Republic was an opportunity to define such a myth. As powerful as the public myth of Philippine history and newfound independence was, it was rendered ineffectual by a government that Wurfel characterizes as "*corrupt and unpopular*" (Wurfel 1988:14). He argues that in the next decade the legitimacy of political institutions revived, up until the 1965 elections, when Ferdinand Marcos gained access to the presidency "*with money and nationalist slogans*" (*ibid*:16). Marcos also saw the importance of a public myth to legitimize his rule: the social transformation

<sup>4</sup> In itself, a state monopoly on the legitimate use of violence may not be beneficial to the citizenry, especially if state leaders lack democratic legitimacy in the eyes of a majority of the population. The heavy reliance of the Martial Law regime on the army for the maintenance of 'Peace and Order', exacerbated by a weak central command and weak discipline within the organization, can be regarded as an example of undemocratic and illegitimate violence against the citizenry by the State.

towards a New Society answered a widely felt need for a structural overhaul of the entire political system, but soon proved to have quite the opposite effect. The whole idea quickly became the equivalent of a government associated with corruption, a politicized bureaucracy and an undisciplined, abusive and ineffective military which eventually brought the mass of the citizenry to the point where it revolted against the government in February 1986. If Gleeck's analysis is correct that corruption has been "a continuing theme from administration to administration" and that "its extent seems to have been proportionate to the administration's time in power" (Gleek 1993:397), the Marcos administration was in power long enough to leave its successors not only with an impoverished economy (Boyce 1993), but with a bankrupt legitimacy of government as well.

Corazon Aquino exemplified the promise of a new quality of government seeking to re-establish key democratic institutions and honesty in the administration of the country. The Aquino administration not only wrote a new Constitution, it also tried to do justice to those who had suffered damages due to the previous administration by establishing bodies such as the Commission on Human Rights and the Commission on Good Government. The latter sought - with limited success - to recover the 'hidden wealth' of the Marcos family and its associates. The office of the Ombudsman, which led the drive against corruption in the ranks of government, reported in 1997 that since 1990 the cost of corruption had decreased to 1.4 billion pesos annually, down from 55 billion annually in the twenty years before 1990 (PNA, 23 Jan. 1997). Thompson (1994) argues that the Cory government chose to dedicate its entire administration to the consolidation of the newfound democracy and, to achieve this goal, was even prepared to compromise in the field of socioeconomic reform, in order to avoid the formation of alliances between the old order of landlords, industrialists, and "disappointed job seekers in politics", which could trigger a takeover by the Reform Armed Forces Movement (RAM): "The bloody August 1987 and December 1989 RAM-led coup attempts caused not only political chaos but severe economic harm as well. A sturdy post-Marcos economic recovery was slowed by the first and stopped by the second major RAM rebellion" (Thompson 1994:8). The political instability associated with the non-confrontational avenues pursued by the Aquino administration had its own impact on the Philippine economy. Seven military coups, two major natural disasters, uncertainty about the future of the United States' bases in the Philippines and the possible impact of non-agreement on the political stability of the country kept foreign exchange and investors out of the country. The malperformance of the Philippine economy, certainly in comparison with other countries in the region, quickly undermined popular support for the Aquino administration. Thompson cites Social Weather Survey figures showing that Aquino's net approval ratings dropped from 71% in October 1986 to 35% in October 1987 and to 7% in April 1992. By the end of its term, the national government lacked what Thompson calls "performance legitimacy...based largely on the state of the economy and the honesty of government" (*ibid*:16).

In 1992, the newly elected president Fidel Ramos realized the importance of economic progress. Alongside his political wit and the respect he enjoyed among the military, one important method he employed to rally the country behind him was the invention of a new state myth. His *Philippines 2000* was an effort to provide Filipinos with a fresh nation-building ambition to become the next Asian Tiger economy by the turn of the century. The president's own charisma and working hours served as symbols for this myth and how it could be achieved. Although the recent improvements in the Philippine economy cannot be attributed entirely to this new myth, it has undoubtedly contributed to the restoration of the political legitimacy of the administration, as reflected in the popularity of President Ramos. It is much more attractive for citizens to identify personally with a country that can hold its own in Asia

in terms of economic growth than with 'the Sick Man of Asia', as the Philippines was perceived in the late 1980s and early 1990s.

Despite a gradually improving image of government integrity and efficiency since the EDSA revolution, surveys by the Social Weather Stations show that the general public continues to perceive corruption in the ranks of government, including the judiciary, as one of the major problems in Philippine society (Dayag and Laylo 1994:94-3:8, quoted in Aquino 1996:32-33). The moral credibility of politicians, government officials and Philippine society as a whole is negatively influenced by continuous revelations of illegal activities on the part of politicians, such as arms smuggle (De Guzman 1990), rape (Ilokos Governor Farinas 1993, son of Governor Dy 1994, congressman from Mindanao, 1997), embezzlement of Government Funds (Secretary of DOH 1996), murder and gambling (mayors in Cagayan Valley, 1992, Mayor Sanchez of Calamba 1994), the awarding of government projects to relatives (DOH secretary 1996, Sen. Maceda 1997), and perceived mis-allocations of public money, such as the 49 million pesos spent on snacks by the members of the House of Representatives in 1993. The latter case prompted particularly scathing columns by opinion leaders in the major newspapers:

*"No wonder Congressmen suffer from diarrhea. You eat P49 million worth of turon, or banana wrapped in flour and you will, too. Turon is the poor man's snack dripping in syrup peddled by itinerant vendors....at best it sells at P5. = That means, every day for the last year, each congressman ate 132 turons!...Last November, the House [also] bought 89 memorial plans and 42 pension plans costing nearly P6.5 million...An ostentatious display of death? Not at all, if you have lived a spartan life eating a hundred turons or so every day just so you can serve the public, you deserve to go in style....What corruption? This is Rep. Marino Yulo talking. He is the chairman of the House Committee on ethics. And he wants to know what he is supposed to investigate when reporters ask him if he will do so...Yulo can investigate how congressmen consumed P49 Million worth of turon and are about to consume several more millions for coffins and flowers. We want him to hunt down bribers and grafters. There is more than probable cause they can be found in plentiful numbers in the House."* (Editorial comment, PDI Jan 31, 1994)

#### POLITICAL CLANS AND FAMILIES

As noted by McCoy (1992) and others (IPD 1992; Kerkvliet 1991; Wolters 1984; Wurfel 1988), family clans formed through real and ritual kinship, are the primary political organizations for the establishment and maintenance of political power in the Philippines. These clans are headed by a strong senior leader, usually a male (*matanda* in Tagalog, *lakay* in Ilokano) and his following, or *"led kindred, that is, all the persons who will support a leader on the basis of being related to him, even though some may be more closely related to the leader of an opposed kindred."* (Fegan 1993:46). The Catholic religion, one Spanish legacy that continues to exert a strong influence in contemporary Philippine society, combined with the Filipinos' recognition of family ties right up to the fifth degree, has provided additional means of establishing kinship. New ritual kin relationships are formed on major family occasions such as a wedding or a baptism. Multiple patrons are invited to sponsor these celebrations and in this way become relatives of the family. Not everyone can invite a mayor or a congressman to sponsor his wedding.

Ritual kinship enables people from different social strata to address each other on equal terms, using the affective term 'pare'. Nevertheless, this affectionate term needs to be used with a sense of *delicadeza* (subtleness, sensitivity) between people of very different social positions (wealth, political influence and age). The functional nature of *kumpadrazgo* is openly acknowledged, but needs to be carefully managed as well. To avoid loss of face, both rich and poor are expected to have the sensitivity to determine the level on which *kumpare* relations will

work for them (see also the discussion below on the cultural value of *hiya*). Since politicians have an extensive network of trusted fellow clan members among the landowning class, in the business sector, and at lower elective positions, anyone can become a member of the 'led kindred' (Fegan 1993) of a politician at his own level in the social hierarchy. The economic, social and political functions of ritual kinship are openly referred to and are not considered at odds with the affectionate connotation of becoming each other's 'kumpare' or 'kumare'. A congressman delivering a speech for the newlyweds at their wedding party openly asserted his role as their patron, saying:

"if there is any means by which I can assist you, either in a personal way or in my official capacity, please do not hesitate to call on me." (Research diary, June 1993)

This functional nature of godfather relations holds true both for members of the economic and political elite, to maintain and strengthen their position, and for the 'common *tao*' (people), for whom *kumpradazgo* often has the function of an insurance policy that may be invoked if the need arises. Although, in theory, these relationships can be activated or inactivated by either party, this is seldom done openly. Rather, they may lie dormant for decades, until a need or occasion arises where one of the parties considers the time ripe to remind the other person of its existence.

#### LEGITIMACY THROUGH PATRONAGE AND BROKERAGE

The Institute for Popular Democracy (1992) and others (see *e.g.*, Gutierrez 1994, McCoy 1993, Rutten 1994 and Thompson 1994) focus on the internal mechanisms at work in the political system and, to a lesser extent, on its interactions with the bureaucracy. This perspective is useful in explaining the political interference with the implementation of DENR policies described in the previous sections. Wurfel calls patronage politics a remedy for the weak political and moral legitimacy of the State among the electorate through the establishment of an "indirect moral bond; local leadership is the crucial link between the mass and the national elite" (Wurfel 1988:38). Rooted in, and modelled after, the historical relations between local land-owning families and their clients, and reinforced by the political institutions created during the building of the Philippine nation-state in the American colonial period (see Section 7.2), the "provincial elite compete among themselves for elective posts from national to municipal levels, and depend mainly on the poor population for the votes...Candidates can credibly present themselves to the electorate as indispensable conduits to state patronage, thereby seeking 'Legitimacy through patronage' (Wurfel 1988:38)...Linked to this type of politics is the cultural frame of patronage and personalized reciprocity, and the image of the good patron..." (Rutten 1994:3).

The constituency to whom politicians must prove their worth to is not confined to the poor masses of the population, but includes elite interest groups upon whom politicians themselves depend for their re-election. The maintenance of good relations with traders, other businessmen and landlords is necessary to obtain initial campaign funds, because these entrepreneurs are the local bridgeheads and vote-brokers of politicians, and are more in touch with the local situation than Manila-oriented politicians. Through economic ties (employment, informal credit, ownership of tenanted land or residential lots) or through real and artificial kinship, these local non-political elite families can bring a politician voting blocks that are often as large as an entire barangay. In return, the delivery of infrastructure projects and personalized assistance in times of need are part of Rutten's *image of the good patron* on the basis of which the rural electorate, and their leaders measure politicians. The protection of local interest groups against restrictions imposed by a national line agency like the DENR, which is charged with the

protection of public resources against local overexploitation, is another such service rendered by politicians. Local politicians representing their constituency in a larger body, be it the Regional Development Council or the House of Representatives, are measured by the effectiveness with which they defend the local, not the larger interest.

Boissevain (1969:379-386) distinguishes *patronage* from *brokerage* through the patron's degree of direct control over the resources involved; patronage is concerned with protection or helping a client to obtain *first-order resources*, i.e., those controlled by the patron himself. Brokerage concerns assisted access to, or protection against, *second-order resources*, which are controlled by persons other than the patron. In the performance of brokerage services, the patron-politician undertakes to negotiate, on behalf of his client, access to or protection against these resources by managing relationships with the persons or institutions who have direct control over these resources.

The personalized *kumpadre* relationship is central to *patronage*, in which a politician offers direct financial assistance to a member of the clan, but is not required for a *brokerage* role, where political power alliances of a less structural nature may replace the patron-client relationship as the basis for the respective roles of broker and client. Boissevain's definitions (which basically originated in research on the Sicilian mafia) still need a Filipino cultural dimension to replace the static, and top-down nature of relationships between patron and client. In the Philippines both patron and client, rich and poor, must be mindful of the feelings and behaviour associated with *hiya*. Often translated as 'shame', this important aspect of Philippine social relations is also associated with shyness, timidity, embarrassment or sensitivity (Bulatao, 1992:212). Neither of the parties in a relationship should publicly accentuate the disparity between his power and that of the other, or the differences between their roles. 'Hiya' motivates the poor to avoid contacts with the rich by which they are confronted with their own "labels of poverty" through differences in "color of skin, condition of one's teeth, posture and gait, location of one's home, workplace and school" (Pinches 1991:178). On the other hand, the observations Pinches made in a squatter settlement in Manila demonstrate that *hiya* is also used by the poor as a counter-hegemonic instrument (*ibid*: 167). Rich people who ridicule them or display patronizing forms of sympathy are referred to by the poor as *no pansin* (a person who fails to recognize another person) or as *matapobre*, meaning that he has a poor eye. The ultimate damning qualification is to be referred to as *walang hiya*, a qualification which Bulatao describes as "recklessness with regard to the social expectations of society and inconsideration for the feelings of others, an absence of sensitivity to the censures of authority or society" (Bulatao 1992:215).

Ruby Paredes eloquently argues that reciprocity and *utang na loob* (the inner sense of being indebted to another person) are important values not only in equal social relationships but also in the unequal dependency relation between patron and client. Anyone who is perceived as aloof and arrogant challenges the other person's sense of *amor proprio*, or dignity, which is essential to make relationships work. "With reciprocity thus generating for each party a continuous shift from giver to receiver, a bargaining dynamic becomes implicit in a successful clientelist relationship" (Paredes 1989:50) As powerful as former Isabela governor Faustino Dy was, he fully realized the reciprocal element of his relationship with the electorate:

"I do not have any power. My power lies in the confidence the people have in me. Our system is more paternal, it is the one we have adopted. We provide personalized services and in exchange people are willing to support us". (Hon. Faustino N. Dy in PCIJ 1991:31)

## MODERN POLITICS, OLD PRINCIPLES

Ferdinand E. Marcos rose on the waves of political mobilization, identifying himself with a newly emerging US-trained, technocratic, urban elite who regarded the old, landed families from the rural areas who controlled the national legislature as backward and an obstacle to national progress. Initially identifying himself with the forces pushing for social and agrarian reform, however, he gradually reinforced his position as the national *Apo*, the almost divine boss of bosses. Fegan shows how rural clans and their leaders in the countryside "suffered a protracted eclipse" as a result of martial law, when the private armies of the *magaling na lalaki*<sup>5</sup> were disbanded by a powerful national army, and their networks proved of no use, as one man pulled all the strings himself (Fegan 1993:88). Hence, Marcos did not end patronage politics but rather used it at the national level to build his own trusted oligarchy.

Today's leading political families in Cagayan Valley (see section 5.3.2) used to be among the closest members of Marcos' political entourage, rising with him in political and economic prowess. The Cagayan Valley region, with its large Ilokano population, could be counted upon as the Solid North, solid in support of fellow Ilokano President Marcos. How well-entrenched these leaders were in their rural base became evident in the first elections after the 1986 EDSA Revolution: in both 1987 and 1992, the large majority of representatives elected to congress belonged to families previously associated with the Marcos regime (Gutierrez 1994)<sup>6</sup>.

Using indicators such as the number of people who know their representative in Congress, literacy rates, mass media exposure, and the lively interest among the population for national and local politics, some would argue that the contemporary Philippine electorate is not as parochial as in the past (Wurfel 1988). In my view, however, these indicators offer no evidence to counter the continued role of clientelism in elections. Describing the relationship between urban squatters and political leaders in Metro Manila, Pinches examines democratic participation in the Philippines by analyzing the legitimacy base of its politicians. The poor squatters of Tatalon legitimated national politicians primarily on the basis of the recognition that, in order to win an election, a candidate has to spend a lot of money, and that they themselves simply do not have that kind of money (Pinches 1991:179). Other recognized indicators of social status and leadership legitimacy in this poor community were credentials gained through formal education and differences in consumption pattern. His findings underscore the fact that even though only a minority of the Philippine electorate could still be classified as parochial in orientation, this holds little information on the quality of democratic participation in the Philippines.

Drawing a parallel between elections and one of the most popular gambling sports in the countryside, Rocamora (1995) and others point to the "cockfighting ethos" shared by voters and candidates in elections, "...with the presidential race as the slasher derby rousing most excitement." (*ibid*:vii). Local leaders expected to command a great many votes are courted by the presidential 'bets' (Aguilar 1994), the personality symbols of temporary political alliances. These alliances are not formed on the basis of shared visions about how the country should be run, but on a combination of interpersonal chemistry and the prospects of obtaining a share in the spoils in the event of victory. Since support for the winner is the most crucial of the benefits that candidates for local government offices can expect from the national government,

<sup>5</sup> Literally: "very fine, true men". Males who get their way in contests with other men (Fegan, 1993:39)

<sup>6</sup> Benedict Anderson, quoting Mojares in "The Dream Goes On", shows that even in the first elections after 20 years of martial law and the 1986 "People Power Revolution", 130 out of the 200 representatives elected to Congress belonged to traditional political families. (The survey was carried out by the Institute of Popular Democracy survey and appeared in the Philippine Daily Inquirer on 24 January 1988).

the formation of final alliances between national and local campaigns remains uncertain until the *wola* (likely underdog) and *meron* (likely winner) become more visible. As in the cockfights, businessmen also invest in the campaign of the likely winner, hoping to see a return on their investment once the fight is over. Only local leaders who can mobilize enough local financial support can afford a prolonged wait-and-see period before picking their national ticket. A national party might endorse a different local candidate, supporting him with funds from the national campaign. Thus Philippine elections are not issue-based campaigns to win voter support, but rather an expensive gambling game, in which temporary alliances of political clans bet large amounts of money<sup>7</sup>, and the ultimate prize is control over state power and resources (Aguilar 1994).

Modern, mass-based politics is a new twist on traditional patronage politics, but is not incompatible with it. Media exposure has become a more and more important ingredient of a successful election campaign, increasing voter insight into the distant world in which his political representative operates. In my view, however, the fact that the Presidency, as well as many seats in the Senate and the House of Representatives are occupied by comedians, movie stars, sports heroes and other media personalities whose "only qualification is media exposure" (Rocamora 1996:xxvi)<sup>8</sup> is hardly indicative of a turnaround in traditional politics, but rather underscores its endurance and viability in urban conditions. In the countryside, there is also an important personality dimension to patronage politics; the voter knows the name of his representative because of the popularity or tradition of the clan he represents. In addition to the tangible benefits delivered - especially as the elections come closer - the mystique of the candidate's personality and charisma, built up by carefully staged, brief exposures, are also a factor in rural elections.

Violence, or the credible threat of its use against those who venture to challenge the authority of the *lakay*, continues to be an indispensable element of effective political power in the Cagayan Valley region, both in brokerage aimed at the bureaucracy and in relations with the client-electorate. If the benevolent patronage of opinion leaders in the electorate define the popularity of a local politician, his credibility depends on muscle. Each local 'boss' finds his own balance between the two, but neither one can entirely replace the other in effective local leadership. According to McCoy, such 'warlordism' occurs especially in areas "where instability was fostered by the land frontier, protracted ethnic rivalry, or...[where]...local elites formed private armies to defend their extraction of natural resources....-the basis for wealth in many localities. After securing wealth and power in a locality through armed force, provincial politicians can begin to barter votes to win both immunity from prosecution and benefices in the form of rents, cheap credit, or licenses" (McCoy 1993:15). This sequence quite accurately describes the path to power of some of Cagayan Valley's most influential political clans, as illustrated in Section 5.3.2. Many contemporary political leaders spring from humble immigrant families, and rose to wealth and political prominence as recently as the 1970s. The founders of such 'dynasties' were brave men with powerful personalities who used local politics as a springboard to higher public office, which could be used to establish an

<sup>7</sup> "In the May 1992 polls, for instance, to get an entire slate of party candidates elected was estimated to cost more than \$ 100 million - nearly four times what it cost U.S. President Bush to get elected in 1988 - with estimates of the aggregate sum spent in that campaign reaching \$635 million" (Asiaweek 1992, cited in Aguilar 1994:177) ]

<sup>8</sup> Former comedian Vicente Sotto garnered the highest number of voters in the 1992 Senatorial elections. Newly elected Philippine President Joseph Estrada and Senator Ramon Revilla used to be action movie stars, Senator Freddie Webb was a basketball star before joining politics. In the 1998 elections another basketball hero, Robert Jaworski, and Ms. Loren Legarda, until then a popular television journalist, were also elected in the Senate.

independent economic base, some through the tobacco trade, others in the logging industry. The descendants of these pioneer leaders are well educated and among the richest men in the region, giving them the possibility to compete with contemporary forms of clientelism on the political playing field.

#### SEIZING STATE RESOURCES: LOCAL VERSUS NATIONAL INTERESTS

The insights gained in this chapter point up the inadequacy of a bi-polar 'State-versus-local-people' perspective, because of the different, often contradictory interest groups operating within state institutions. Congressmen represent the state as much as policy makers, bureaucrats and field officials, and the governors and mayors whom civil servants encounter in the implementation of policies. These broad actor groups are themselves divided by conflicts of value and interest, too.

Members of the House of Representatives are elected through a winner-takes-all system of representation according to district. Thus national interest is guarded by politicians elected on the basis of local, not national interest. In itself, however, this system does not create a weak state led by a legislature which competes for national resources which are distributed over the districts of the respective members, as demonstrated by the examples of the United States and the United Kingdom, which also have a system of representation by district. Rocamora (1995) attributes the weakness of the Philippine state to the continued influence of the United States and other international actors on the nation-state after Philippine independence. In this view, local leaders who were elected to the national level could not gain control of the nation state due to these international interferences. Another factor frustrating the Representatives' hold on the nation, in the perspective of Rocamora, was the American decision to create a presidential form of government with a powerful chief executive.

In my view, the primary cause of the weakness of the State is precisely the opposite, namely the fact that local strongmen have gained too much control of the state, using its agencies to mobilize national resources for personal and local purposes. This principle holds at all levels, as former President Marcos showed by granting TLAs to build and uphold his political alliances at the national level. Likewise, the short-term success of local politicians is also determined by the degree to which they can use their influence to help entrepreneurs, forest migrants and indigenous forest communities to gain access to the natural resources in their area. Rather than the pursuit of a politically divisive socioeconomic reform agenda, the option to grant both the 'underprivileged' and private enterprise access to public resources is an attractive avenue by which to deliver political results in return for electoral support. In so doing, politicians repay a debt incurred during the last election campaign and lay the basis for re-election (or for the election of a relative) the next time around. After elections, representatives compete for national government resources that they need to reinforce their local legitimacy. By competing effectively for infrastructure funds and other budgetary allocations (*e.g.*, education and health), granting contracts and licenses to those who supported them during the last elections, and protecting local people from negative impacts of national policies, local leaders prove their effectiveness as patrons of their constituency.

For members of the House of Representatives, this continuous process of building, maintaining and shifting alliances is like playing chess on several boards at the same time. Their power base comprises both national and local interest groups; at the national level, there are the old boys' networks of lawmakers in Congress, with whom a congressman may need to support certain legal initiatives unfavourable to his own constituency in order to secure for them, in return, the appropriations he needs to deliver infrastructure and other projects. If unfavourable laws are passed, national politicians can return to their local chessboard, seeking

the appointment of *bata-bata* (see Section 6.3.3) in key positions in the bureaucracy, exemptions, and reinterpretations of these laws. Thus, many parts of the national territory and electorate are 'owned' by local political leaders who succeed in "*seizing the state*" (Clark Soriano, cited in Hedman 1994:19) This is the source of the fundamentally contrary roles of locally elected politicians and nationally guided bureaucrats.

This notion of local versus national interests provides a new perspective on the concerted efforts of the House of Representatives to develop a Local Government Code, in order to 'democratize access to the public domain' and to devolve DENR responsibilities and power. Based on the Local Government Code, the Palawan Council for Sustainable Development (PCSD) has successfully challenged the authority of the DENR as the principal guardian of the natural resources on the island, and redefined its role as a provider of technical assistance to the PCSD in this task (pers. com, PCSD Chairman, 10/08/95) The successful efforts to curtail the authority of the central government to issue Timber Licensing Agreements also parallels this struggle for control over the use of natural resources between central and local government units. Using the political bankruptcy of Marcos' policy to undo the power of local strongmen and impose on the nation his own oligarchy, traditional political clans regained the initiative in the House of Representatives. They succeeded in bringing about legislation to devolve more resources and political and administrative power to the provinces.

The Local Government Code is aimed at correcting the longstanding imbalance in political and economic power between "Imperial Manila" (Abesamis and Angelo 1995, quoted in Rood 1997:2) and the provinces. For centuries, Metro Manila syphoned resources and people away from the provinces for purposes of a kind of 'national development' that widened the economic gap between these urbanized centres and the rural periphery. It is questionable whether devolution is the way to redress the resulting social and economic imbalances. In environmental terms, devolution carries the risk of replicating the past national development pattern in the provinces. The need for economic development, a priority for all elected officials in the poorer countryside, is bound to increase pressures to mobilize the 'untapped resources' of the logged-over forest lands and the Pacific fishing grounds for short-term economic progress. The chances of such a development pattern occurring are particularly realistic in the case of Cagayan Valley. Due to its insignificant industrial sector, economic growth is concentrated in growth centres, and the tax revenues of the Local Government Units rely strongly on agriculture and associated processing and service agribusinesses. It remains to be seen whether these new 'resource development' pressures will be balanced by a weakened DENR under the new community-based resource management approach.

Before presenting some indications of how, in the aftermath of the corporate logging boom, migrant labour and residual forest lands in the Sierra Madre are once again being mobilized (Chapter 9), I will first examine more closely the historical roots of corporate logging and forest migration, the two primary causes of deforestation in the Sierra Madre until 1990.

## The historical context of corporate logging

### 7.1 Introduction

This chapter examines the historical roots of the corporate logging concept and the political patronage and brokerage mechanisms which, as we saw in the previous Chapter, prevent government officials in the DENR from dealing effectively with abuses committed by the industry. Then, I move to the history of logging, especially focussing on the concept of large scale, mechanized logging concessions, and the scientific thrust of arguments which for so many years were used to uphold the legitimacy of this forest management mode, in spite of increasing signs of resource degradation and depletion. Finally, the role of the ethnic Chinese in Cagayan Valley, perceived by many as the principal decision makers in the logging industry, is discussed briefly and placed within the historical context of the position of this ethnic minority within Philippine society.

With the exception of the monographs by Malumbres on the history of Cagayan, Isabela and Nueva Viscaya and the more recent works by Keesing (1962) and De Jesus (1980), little research work has thus far been conducted on the local history of Cagayan Valley. Insights established in other regions, in particular central Luzon, have only limited relevance when it comes to explaining developments in the Cagayan Valley, long isolated from the rest of Luzon by the mountain ranges surrounding it. Due to a higher population density, the proximity of Metro Manila, and faster urbanization and industrialization, Central Luzon has always been a more dynamic region, both socially and economically, than the vast and quiet plains of the Cagayan River, where 80% of all households farm for a living.

Therefore, wherever possible my analysis is based on secondary sources, supplemented with findings from my own limited archival research, as well as interviews with local people with an interest in, and a knowledge of, the history<sup>1</sup> of Region 02. More comprehensive historical research will be required to complete and possibly correct my preliminary answers to the questions raised in this Chapter. Nevertheless, I was struck by the similarities between descriptions of Cagayan Valley society during colonial rule and the situation I observed during my own stay in the region, half a century after Philippine independence.

The search for the historical causes of contemporary events is not without risk. It is all too easy to 'reconstruct' a relationship between decisions and processes which, when seen in the light of the facts and events of the times in which they took place, may not necessarily have influenced each other. And even if these links did prove to be entirely valid, this would in no way alter the responsibility of contemporary foresters, government officials, businessmen and local people for the way forest resources are managed today. In fact, tropical deforestation is a fairly recent problem in the Philippines, and even more so in the Cagayan Valley, where the large-scale utilization of the Sierra Madre forests only began in the late 1960s. Nevertheless, this chapter argues that the social and political processes behind the unsustainable utilization of the forests today can be better understood and dealt with in the context of their structural origins in local history.

---

<sup>1</sup> I am grateful to Rev. Winfried Vermeulen, a Scheut missionary in the municipality of Solano, Nueva Viscaya, who is himself preparing a scholarly work on the history of Nueva Viscaya, for his useful insights into the settlement history of Cagayan Valley.

## 7.2 Historical dimensions of political patronage and brokerage

### 7.2.1 Colonial rulers and the indigenous *principalía*

With the exception of forest tribes organized around family nuclei, such as the Agta (Griffin 1985; Headland 1986), Philippine pre-colonial society was already made up of social classes who enjoyed different privileges with respect to mutual services. In 1583, Fr. Juan de Plasencia, who studied the social structure of the country with the explicit goal of establishing whether the findings could be used by Spain in the administration of its colony (W.H. Scott 1982), distinguished four so-called social 'estates':

*Principales*; a birthright aristocracy, with claims to services from the lower estates. The *datu*, or indigenous barangay leader<sup>2</sup>, always came from this group.

*Hidalgos*; 'free men', those who have acquired knighthood through payment or merit. The *hidalgos* would pledge alliance to certain *datus*, but this was no guarantee of lifelong loyalty; the *datus* had to prove their worth in the areas from which authority could be derived, such as their sense of justice and their bravery in war.

*Pecheros*: the tribute-payers, sharecropping to pay back debts<sup>3</sup>. People from this estate would have a birthright claim to cultivate a piece of land and pay 50% of their harvest to the *principales* or the free men who collected the tributes for them.

*Esclavos*: the slaves, those without cultivation rights, owned by their masters.

The right to trial was reserved for those in the first and second estate, while the common tribute-payers and slaves were totally dependent on their masters' interpretation of justice. Chances of upward mobility were small, especially for those from the lowest estate, as illustrated by the Filipino term *timawa* for someone who had been able to shrug off the burden of slavery and become a free man. This term means as much as 'one who escapes death by chance, like someone who survives a hanging-sentence because the rope breaks' (W.H. Scott 1982:103)<sup>4</sup>

The earliest surviving Ibanag dictionary, compiled by Fr. Jose Bugarin (quoted in W.H. Scott, 1994), indicates that lowland villages in Cagayan appear to have recognized only two social strata: the *kammaranan* or chief and the *buwit*, or tribute. Unlike the *principalía* in other parts of the Philippines, the *kammaranan* could not distinguish himself by nobility, but only through bravery in raids against other villages and the *Kalinga* tribes in the uplands - in Ybanag the word 'Kalinga' was equivalent to 'enemy' and later acquired the connotation 'non-

<sup>2</sup> Originally the term *datu* meant captain, just as the term *barangay* originally meant boat. Fr. Plasencia relates the seafaring notion of these terms to the possible arrival of the Philippines' Malay population by boat. W.H. Scott, on the other hand, assumes that the term boat actually stands for the one family from which *barangays* generally came, and where the *datu* reigned with the uncontested authority of a ship's captain (W.H. Scott 1982:110).

<sup>3</sup> W.H. Scott writes that, "although the *pecheros* could not be legally sold, their debts could be transferred from one creditor to another, for profit and to their detriment" (W.H. Scott 1982:107). A similar system appears to be at work in the contemporary Cagayan Valley. In the late 1980s, for example, a hacienda in Isabela was sold by the heirs of the deceased landlord. The 'right to conduct business' with tenants was part of the deal. The credit accounts of the tenants were handed over to the new owners, together with the land; the new landowner acquired the exclusive right to engage in crop collaterals with the tenants, even though the land had already been titles in their name under agrarian reform (see also Chapters 8 and 9). Platteau (1995) calls this system of debt transfer characteristic for areas where patron-client relations or other permanent labour-tying arrangements are at work.

<sup>4</sup> It is unclear whether this term applies as much to sixteenth-century lowland *barangays* in Cagayan as it did, according to W.H. Scott (1982 and 1994) to Pangasinan and the Islamic southern regions of the Philippines.

Christian' - and by his wealth and ability to feed others in times of need. (W.H. Scott 1994: 267).

Despite stiff resistance, Spain managed to establish and maintain a garrison at the lower Cagayan town of Lallo (then called Nueva Segovia) in 1595, 24 years after its authority had been established in Manila. But the task of bringing this distant province of the colonial empire under control by military means alone was not feasible: not only had Spain's armies become thinly spread over the archipelago, few Spanish residents were looking forward to being stationed in an area that was known to be *"Very hilly and its air very unhealthy because of its vast virgin forests, as well as its still uncultivated terrains; to this effect must be attributed the intermittent fevers prevailing endemically there, which infallibly affect newcomers, while the savages hardly feel their effects"* (Mallat 1846:146). Moreover, Cagayan was a long sea voyage away from Manila, and its indigenous lowland and forest tribes had a reputation for being a *"very strong and warlike people"* (Keesing 1962:176), who lived in dispersed, inaccessible communities with various cultural backgrounds and languages. They were constantly engaged in inter-village feuds and did not recognize a single local leader, let alone a foreign leader, above them (De Jesus 1980:115; W.H. Scott 1994:268). The only known exception to this rule was the Ybanag Lord Guiab, who lived in Calamaniugan, some five kilometres away from Lallo, and was described as respected among the other braves as a lord who *"ruled his men like a great captain, rewarding them with great largesse at others' expense from the much he had looted, and punished any liberty or disrespect they showed him with great rigor or for not obeying the orders he gave them"* (Fr. Aduarte 1640, cited in W.H. Scott 1994:270). Thinking they might gain in popularity by relieving the *indios* of this oppressive leader, the local Spanish military decided against establishing friendly relations with him. After Guiab had demonstrated his respect and friendly intentions by sending them rice, meat and other products of the land, he was invited to the Lallo garrison, captured and hanged. This early case of *"misunderstandings at the acculturation frontier"* (Keesing 1962:210) deepened social divisions among the local population, leading some communities to side with the Spanish in order to take revenge on others, complicating the already volatile atmosphere.

Thus to gain control of Cagayan Valley, the cooperation of the leaders of each separate tribe and faction had to be secured. Notwithstanding the noble intentions behind the decree of King Philip II in 1594 to accept the indigenous leaders, treat them well and seek cooperation with them, it was also unmistakably practical. Spain needed to collect taxes from the various cultural communities in the archipelago. The earnings in the Galleon trade were neither secure nor high enough to finance the colonial administration in the islands; tributes might well provide a more stable revenue basis. The cooperation of recognized *principalia* selected from among the indigenous elite, who were already used to receiving services and tributes from the ordinary people, was indispensable for the collection of these tributes. The scheme was organized through so-called *encomienda* grants. *"Originally a grant of lands in a conquered country, it was soon extended to include the natives dwelling thereon, who were compelled to till the land for the conqueror's benefit"* (B&R in Benitez 1969:205). People who had been instrumental in the Spanish conquest of the Philippines were given the right to collect tributes from the population in their domain. The *encomienda* system was given legitimacy by offering Christian education and a judiciary in return, just as Spain's overall *"exercise of imperial authority was deemed secondary to the project of evangelization"* (Rafael 1988:155-156) By involving the religious orders in the pacification of the countryside, taxpayers could be registered and proselytization served in the process. In addition to a judiciary and protection, the *indios* were also given religious instruction in exchange for their tributes.

The first Dominican friars arrived in 1595, the same year that the military garrison in Lallo

was established. A 19<sup>th</sup> century description of the conditions in which these young Spanish farmer's sons were trying to bring the Cagayanos into the fold of the Catholic Church shows the hardships they must have endured in these early years: "It is well known that Dominican fathers fell gravely ill when they reach the missions, until they erected stone houses for them. The cool wind at night, loaded with dew and other exhalations of the mountains, easily penetrates the slits of the wooden boards or bamboo walls of the usual run of houses. This irregular climate saps the energy and causes the usual ailment suffered by the missionaries, the so-called spasm or a violent and involuntary contraction of the muscles. It is a kind of burning fever which sometimes causes death or puts the patient at the brink of death" (Zuñiga 1973, or.1893:410 )

The Dominicans also made note of the "tyranny" which the indigenous leaders exercised over their people (De Jesus 1980:111); landownership was uneven, and the chiefs were basically entitled to require the services of their subordinate fellow villagers at any time. But these qualifications may not have been entirely objective, in view of the way they were used by the Spanish administration to justify colonial rule, and the manner in which Filipino workers themselves were treated. Both Filipino and Spanish writers of the colonial era describe the maltreatment, slavery and exploitation of the *indio* workforce. As far back as the early seventeenth century, concerns were raised in Spain about the "evils done to them" (De los Rios Coronel 1620 in Benitez 1969:211) and the danger of the "complete destruction of the Indians" (Hurtado de Corcuera, 1636 in *ibid*:210). Working conditions were harsh, especially on the galleons and in the industries required to build them. Shipbuilding islands became depopulated as workers died on the job, fled into the mountains, or even became illegal overseas workers. Of the 75 Filipino sailors on board the galleon 'Espiritu Santo' arriving in Acapulco in 1618, only seven showed up for the return voyage to Manila. The tendency among Filipino sailors to stay behind in Nueva España not only created manpower problems for the shipbuilding industry in the Philippines, it also caused difficulties of an entirely different kind for Spanish export industries: "In Nueva España there are so many of those Indians who come from the Filipinas Islands, and who are engaged in making palm wine...that it will in time become a part reason for the natives of Nueva España, who now use the wine that comes from Castilla, to drink none except what the Filipinos make..." (de Pineda 1619, translated by B&R, in Benitez 1969)

The Spanish administration of Cagayan Valley destabilized an already tense relationship between lowland communities and the uplands. There had always been occasional skirmishes, as upland tribes came down to hunt in the grazing areas where herdsmen of the Gaddang tribe pastured their cattle. In revenge for cattle rustling, brave men from the lowlands would engage in upland raids, settling their own internal power struggles in the process. But such conflicts were interspersed with peaceful periods, during which the inhabitants of the forest lands bartered honey, beeswax and game meat for tobacco and rice produced in the lowlands. Lowlanders would turn to forest-based traditional healers and *aniteros*, the shamans whom the Ybanag believed to be in contact with the *anitos*. This was the term used by the Friars to refer to all objects of indigenous worship. Animist devotion encompassed both benevolent *anitos* for fertility, health, weather and warfare, as well as others who were feared because of their power to cause illness, crop failure, death, or defeat at the hands of the enemy (W.H. Scott 1994:270)

This ambivalent relationship between individual lowland and upland communities turned into a regional and more structured conflict as the forest lands became the refuge of untaxed Filipinos, pagan believers and 'free' tobacco (see the next section). The Friars spearheaded the *reduccion*, Spain's policy of concentrating Cagayan's scattered communities into a small number of lowland towns, under the bells of the Catholic Church. The establishment of these new settlements, typically built around a central plaza with the Church on one side, and the worldly powers in the form of the town hall and the court of justice on the other, was a monument to Spain's efforts at pacification. To force those inside the forest lands to come

down and submit to Spanish rule and religion, contacts between forest inhabitants and lowland communities were discouraged, and trade with the upland villages was declared illegal (De Jesus 1980:116-117). Government troops organized raids (*entradas*) into the mountains to capture *infielos* or destroy their villages. The willingness of the Dominicans to accept their share of the task of eliminating the mountain refuges of pagan culture is reflected in the seventeenth-century account of the Dominican Bishop Diego Aduarte:

"In the province of Nueva Segovia, the religious laboured hard in the search through the mountains and valleys, and other secret places, for the huts where the devil had been adored....The natives dared not take anything from those places, or cut a reed or a tree from the natural growth of the earth in them for fear of death...In the villages on the coast many such little huts were found, with many little figures and idols in them. The religious burnt and broke the boxes with the offerings; took the gold and the stones, and all the other offerings; and burnt and ground to dust everything, and cast it into the sea<sup>5</sup>". (Translated by Blair and Robertson, in Keesing 1962:188)

The official justification for these raids into the forest lands was the need to bring Christianity to the pagans living there, as well as the security threat they represented to 'pacified' communities already living in the new settlements. Economic motives were of increasing significance as the upland-lowland conflict escalated. At the end of the eighteenth century, when Cagayan Valley became a source of export-quality tobacco leaves, qualified labour was scarce. Since the existing farmlands were surrounded by extensive areas with agricultural potential, the leaking of labour into the forest lands was economically counterproductive. To maintain their income in tributes and ensure that their lands were cultivated, the religious and administrative elite needed to discourage the *buwit*, or ordinary people, from running away, not only by treating those who stayed well, but also by demonstrating their determination and ability to punish those who fled, and were branded 'rebels'.

Through the *entradas* and the proclamation that all economic contacts between lowland communities and uplanders were illegal, the *principalia* not only used state resources and instruments to serve private labour interests, but also achieved a monopoly on the trade in pagan products. The upland raids deterred others from leaving the lowlands and served the desire of local leaders' to prove their bravery and gain social status; at the same time, they were a vehicle by which to bring illegal forest products back to the lowlands. The ban on trade with the uplands made these items scarce, and hence more expensive, while the Spanish authorities were willing to turn a blind eye on contraband trade by the *principalia* in exchange for maintaining stability and good relations with them (de Jesus 1980:118).

In the view of Wurfel (1988:4), following Constantino (1978), the pre-Hispanic elite lost its self-confidence together with its Malay cultural roots, as a result of its partial assimilation into the colonial government. The psychological and cultural impact of *datu* participation in Spain's exploitation of their communities must have been felt even more strongly after the first Philippine war of independence. During the Spanish period, however, their collaboration reinforced their leadership and brought them considerable economic gains. In addition to the traditional patronage basis under their leadership, the colonial administration gave *principalia*

<sup>5</sup> Ironically, a similar fate would befall the religious orders themselves during the Philippine Revolution. Worcester's accounts should be assessed with care, in view of his obvious lack of sympathy for the way Spain administered the Philippines. Nevertheless, I consider his book a valuable reference on the issue, because of the quotations it contains of eyewitness accounts of the conquest of Cagayan Valley by the Katipunan, led by Simeon Villa, in which the pillaging of the convents, and the torture and humiliations suffered by the friars are described in detail (Worcester 1914:170-205). In central and southern Luzon, resentment against the Friars, particularly among educated, nationalist Filipinos, was an important source of social unrest underlying the Revolution (Conolly, 1992).

the means of brokerage between the local level and higher authorities to sustain and legitimize their position<sup>6</sup>.

The first contours of the added brokerage role for the indigenous elite are visible in their position as intermediaries between the colonial administration and the people, as we saw in this section. By the end of the eighteenth century a ban, and later a Government monopoly, on the cultivation of tobacco, one of the region's principal agricultural products, created new opportunities for recognized members of the indigenous elite to perform brokerage services and consolidate their hold on the scarce agricultural labour force.

### 7.2.2 *The Tobacco Monopoly*

During the two-year period when Britain occupied the Philippines, Spain came to see how vulnerable its hold on the colony was, due to the dependence of the colony's public budget on the capital shipped from New Spain by the galleons. This umbilical cord between Manila and Acapulco had been severed, exposing the colony's dependence on this source of income. Thus after regaining control of the Philippines in 1764, Spain was conscious of the need to develop alternative sources of income from the colony. This was not easy; the Spanish residents in the Philippines were not particularly interested in developing agriculture or other natural resources there. Twelve years after Spain had re-established its rule over the Philippines<sup>7</sup>, a French visitor to 'the Manillas' referred disapprovingly to the state of the economy:

*"They never cultivate or reap but for their annual feast, and most dreadful want is sometimes attended by a dangerous security situation. The inhabitants, without emulation or motive, and yet labouring under the desire, which all men have, of enriching themselves, turn all their views and hopes towards the galleon, which sails every year for Acapulco...When it departs, for the dangers to which it is exposed, though they do not attempt to remedy them; there are public prayers for its safe arrival; if it returns, the news occasions joy throughout the whole island; but if it is delayed, fear and consternation invade all minds, and the report of its loss is a public calamity, which spreads dejection and despair"* (Msgr. Sonnerat, *Voyage à la Nouvelle Guinée*, 1776. In: Pinkerton 1807:538)

In 1781, encouraged by reports of the successful operation of a tobacco monopoly in Mexico, Governor General Basco announced exclusive government control of the manufacture and trade in tobacco products in the Philippines<sup>8</sup>. The purpose of the monopoly was to raise tax income from the production and consumption of tobacco. According to Spain's crown attorney in Manila there was considerable fiscal promise in this idea, as Filipinos were said to *"learn to smoke before they learn to drink"*<sup>9</sup> (De Jesus 1980:29 & plates after page 98). The hardship

<sup>6</sup> The terms patronage and brokerage have been defined in the previous Chapter

<sup>7</sup> Britain surrendered the city of Manila on March 17, 1764, after signing a peace treaty ending the Seven Years' War between Spain and England.

<sup>8</sup> The long delay between Spain's return to power in the Philippines and the eventual establishment of the Monopoly was caused by the cash-strapped state of the island government in the first few years after British occupation. There were insufficient funds to purchase tobacco leaves and to pay Monopoly officials (De Jesus 1980:30).

<sup>9</sup> An observation that was confirmed by an American visitor after a visit to Cagayan Valley around 1920: *"Everywhere in the country I was impressed with the fact that tobacco is a necessity rather than a luxury to the Filipino. When the baby cries, the busy mother doesn't look about for a rubber nipple. She sticks a big cigar into the baby's mouth and goes on with her weaving. Children of five puff away at cigars as big as candles and strong enough to knock a man down"* (Boyce nd:119)

caused by the monopoly hit Cagayan hard: the cultivation of tobacco was banned here, to prevent the smuggling of 'free' tobacco into the Monopoly's principal production area of Bulacan and Gapan (Nueva Ecija). When Cagayan's provincial governor heard of the plans to ban the cultivation of tobacco in his province, he realized how difficult this was going to be:

"Although all over the islands tobacco generally serves as their bread and wine, in this province of Cagayan, because of its climate and very humid condition, tobacco is the most effective medicine for all their deficiencies" (Don Mariano Jose Mariano Cubells, Alcalde of Cagayan, 1785. In: De Jesus 1980:128)

For almost twenty years, Cagayanos were not allowed to cultivate tobacco, even for their own subsistence use. Not only did this decision deprive farmers of their traditional source of cash income, they were also obliged to buy this product from government tobacco stores. Widespread hardship among the population was the result, exacerbated by a number of natural disasters and epidemics. Despite its vast areas with good soil and the fertile sediments deposited there by the annual flood of the Cagayan River, people began to leave the province for Manila, in search of employment as servants, soldiers and other casual employment (see 8.3.1).

The ban on tobacco cultivation increased tensions between the 'controlled' lowlands and the free uplands, where tobacco cultivation was expanding, stimulated by a profitable contraband trade with the lowlands. *Indios* in the lowlands were scrambling to find alternative cash crops with which they could pay for their purchases at the *estanquillos*, or government tobacco shops. Rice and white corn, the staple subsistence crops which people traditionally grew, were replaced by cash crops and eventually became cash crops themselves, as areas like Bulacan gradually developed shortages of food crops as a result of tobacco cultivation for the Monopoly. The Monopoly also reinforced social inequalities in lowland society, whereby the native elite were again the ultimate winners. A tobacco police force (the *resguardo*) was appointed from among the *principalía* to enforce the Monopoly in the province.

In 1797 the San Francisco hacienda in Ilagan became the first Friar estate to be given permission to cultivate tobacco for the Monopoly. The decision could not fail to meet with success, as the region had the ideal growing conditions for the plant. In fact, the Tobacco Monopoly only became a profitable government enterprise after Cagayan Valley had been designated a tobacco-growing area, and its products were in great demand in Europe. From the early nineteenth century until the end of the monopoly in 1880, Cagayan Valley's tobacco output increased steadily, stabilizing at around 500,000 fardos<sup>10</sup> per year (De Jesus 1980). This means that prior to the American take-over of the Philippines, some 50,000 ha of lowland farms were producing tobacco for the Monopoly (see Chapter 8).

The subservience of ordinary people towards their leaders which, as we have seen, existed before the arrival of Spanish rule, was reinforced by the sudden rise in the demand for tobacco from the Cagayan Valley. Since labour was so much scarcer than land and the demand for agricultural products was rising quickly, as it had done during the early nineteenth century, landowners were inclined to devise ways of binding labourers to them. In his framework for the analysis of changes in patron-client relationships, Platteau (1995) proposes three other variables - in addition to the scarcity of unskilled labour - which determine the resilience of these relationships or their transformation into other labour tying arrangements: other economic opportunities for the rural elite, the skills required to grow the crop, and the level of social control exercised by the elite over the workers. Where economic opportunities were

<sup>10</sup> One fardo (or a quintal) of tobacco equals 100 'sticks' of 50 leaves each, and weighs approximately 46 kg.

concerned, tobacco was the best way of earning a cash income following the prolonged period of hardship in Cagayan Valley. From a skills point of view it also made sense to try and establish more structural ties between labourers and landowners: tobacco growing is labour-intensive and skill undeniably translates into leaf quality. The social hold of the elite on the workers was also strong enough to allow them to rely on the labour of the ordinary people, as we saw earlier. I believe that from the moment that Cagayan started to produce tobacco for the Monopoly, traditional forms of patronage, whereby commoners occasionally provided their leaders with labour, evolved into more structural labour-binding arrangements, such as the personalized relationship of patronage between landowners and sharecrop tenants. The State provided landowners with various kinds of institutional support to reinforce these asymmetrical labour-tying arrangement. By giving a small group of outstanding farmers privileged positions with the monopoly as leaf-graders, the landowners seeded their peons within the social circles of the cultivators. When tobacco growers brought their leaves to the warehouses of the Monopoly, they were at the mercy of the graders, who could undergrade the leaves and keep the monopoly prices for particular classes of leaf quality outside the reach of the farmers. The traders were backed up by the tobacco police, who were not only despised because they protected corrupt graders, but also "because they brought along friends and relatives on their inspection tours and requisitioned provisions for the entire retinue, paying for the cows, carabaos and chickens they appropriated less than a fourth of their market value" (De Jesus 1980:145)

In addition to the *resguardo*, government officials were also becoming involved in the tobacco trade, either directly or through agents. They extended credit to tobacco farmers during the cropping season, in exchange for payment in tobacco leaves; they then sold them to the Monopoly at guaranteed prices, making a handsome profit<sup>11</sup>. The tobacco monopoly thus rewarded cooperating members of the indigenous elite with new means of reinforcing their wealth and influence, and transforming their pre-colonial right to demand occasional services from their subjects into structural labour bonds for the production of specified cash crops.

The demise of the Monopoly, by the end of the nineteenth century, and the subsequent emergence of a new elite of pioneer immigrant farmers and merchants, did not structurally alter this system. Without challenging the basic social configuration of a small elite lordling over a large majority of poor agriculturalists, new leaders gradually took over the positions vacated by the traditional landowning elite in the lowlands. The political implications of the expanding brokerage role of local leaders remained limited as long as the only position open to a Filipino<sup>12</sup> was that of *gobernadorcillo* or town mayor, and the only persons entitled to cast their vote for this position were their fellow *principalia*, landed people who could afford the poll tax (Wurfel 1988). This changed during the American occupation of the Philippines, when the United States began to build up a Philippine nation-state, using the blueprint of its own system of democratic representation.

<sup>11</sup> Similar practices occurred in the sixties and seventies when the Philippine Tobacco Authority and the National Food Authority offered guaranteed prices for tobacco and grain respectively.

<sup>12</sup> I am using the term 'Filipino' here as a generic term for all groups indigenous to the Philippines, what the Spanish referred to as *indios*. During Spanish rule, only people of Spanish descent but born in the Philippines were called Filipinos. Their position in the social hierarchy of those days was just below the 'Peninsulares', the Iberian Spanish who comprised the ruling class (Constantino 1992)

### 7.2.3 The introduction of mass politics and district representation

*"The nature of the nonpolitical patron-client relationship which typically exists between landowners and tenants in the rural Philippines is highly relevant to any analysis of the political system, not only because landownership is so often combined with political leadership but also because this reciprocal-aid relationship between super-ordinate and sub-ordinate, a social pattern that long antedates the introduction of national elections in the Philippines, has been taken over almost intact into the political system" (Landé 1964:12)*

From its early years of governance of the 'Philippine Islands' on, the United States attached great importance to the establishment of Philippine government institutions. Aside from the noble, albeit paternalistic motive to "prepare the Philippines for a greater measure of popular self-government" (Malcolm 1936 in Bootsma 1986:13), more strategic motives also played an important role in the early efforts of the United States government to pursue with vigour local institutional development. In the United States itself, there was only fragile popular and political support for the American presence in the Philippines, which was perceived by many as a violation of the United States Constitution. Successive U.S. governments were forever balancing its economic and security interests in the Asia Pacific Region on the one hand, and domestic political vulnerability in the Senate and House of Representatives on the other hand, where the Democratic Party opposed government policies involving a prolonged American occupation of the Philippines.

After the Japanese victory over Russia in 1905, Republicans also started to consider the option of Philippine independence, to avoid being drawn into a war with Japan over these strategically located islands. Within ten years, the groundwork for a new Philippine legislature had been laid. But when the Democrats first lost their majority in Congress in 1918 and then the presidency in 1921, the Republican President Harding, a professed opponent of Philippine independence, stalled the process. In 1935, when Japan was again flexing its military muscles and decided to attack Shanghai, American lawmakers passed the Tydings-McDuffey Act, setting a definite timetable for Philippine independence. Manuel Quezon was elected President of the predecessor of the Republic, the Commonwealth of the Philippine Islands. Just before the outbreak of the Second World War, Quezon made a final effort to keep the Philippines out of the imminent war between the United States and Japan by proposing to advance the date for Philippine independence (Bootsma 1986:102). The Japanese occupation of the Philippines in 1942 led to another four years of delay in the 'redemption' of the Philippine Republic declared by General Emilio Aguinaldo on June 12, 1898.

Until the end of Spanish rule, democracy was limited to the election of the *gobernorcillo* (town mayor) by a selected group of *principalía*, consisting of barangay captains and distinguished former holders of elective office (May 1989). Their power was naturally restricted to the municipal level, as access to provincial and national levels of government was the prerogative of Spanish citizens. The power of a mayor was based on his credibility with his peers, who all lived in the *poblacion*, the administrative, religious and economic centre of the municipality. The United States government envisioned the gradual enlargement of the electorate and the number of elective government positions. Higher leadership positions that became elective were the provincial governorship in 1903, membership of the National Assembly in 1907, and the Philippine Senate in 1916. Property qualifications were eliminated and general voting rights granted to males over 18 years of age in 1935; women were not included until four years later. By abolishing the poll tax and prioritizing mass education, ordinary citizens were also encouraged to vote (Wurfel 1988).

In the 1930s, a 'nouveau riche' category of merchants and entrepreneurs joined the race

for provincial and national political office. Cagayan's immigrant merchants, many of them mestizo Chinese, had built up their economic base after the collapse of the Tobacco Monopoly in 1880. Most towns in Cagayan Valley had Chinese *sari-sari* stores, where the retailing of general merchandise was combined with informal moneylending services (De Jesus 1980:191). The increasing economic and political influence of these 'political adventurers' presented a challenge to the long-standing monopoly which the indigenous aristocracy had on local government offices, which rested on their indispensable role as intermediaries between the Spanish authorities and their own local clients:

*"The period of papeletas (credit papers issued by the cash-strapped Monopoly, GT) in the 1860s and the monopoly's abolition in 1880 exposed the Cagayan principales to these new forces. In the economic field, enterprising Chinese traders challenged them for control of provincial commerce. In politics, aggressive parvenus, exploiting the opportunities opened by free trade in tobacco, used their wealth to capture local political power"* (De Jesus 1980: 201)

The old elite voluntarily retired from the competition for public positions it no longer deemed respectable, because of the many political neophytes who were gaining access to elective offices (De Jesus 1980:192). Because they owned most of the agricultural lands, they nevertheless maintained indirect political influence through the extended followings of their tenants. Later in the twentieth century, as landownership declined in economic and political significance, this informal influence of Cagayan's indigenous, landed lowland tribes would decline still further, as they were increasingly outnumbered - and economically outperformed - by immigrant farmers and merchants seizing the opportunities offered by an expanding, more capital-intensive agricultural sector (see Ch 8).

The democratic impact of American efforts to expand popular participation in Philippine government was confounded by the decision to opt for a winner-takes-all representation by district, styled after the United States system of government. Anderson (1988, following a line of argument presented earlier by Kerkvliet and Larkin) notes that this system gave local leaders, wealthy landowners and entrepreneurs the opportunity to use their clientele as a springboard to gain access to the State. As the electorate for higher office was too large to manage through the personalized patron-client relationships alone (Landé 1964), and the costs of election campaigns were growing accordingly, economic wealth and the brokerage functions increased in importance: access to the public budget and resources was another means to patronize a growing electorate. However, it was still up to the voter to supply the patron and his clan with a recognizable form of help. The American policy of extending the number of elective offices not only upward, but also downward provided an avenue for doing so. Under the elective position of municipal mayor, the barangay captains and their councilmen also became dependent on popular vote. In order to be assured of the popular support of a larger electorate, trusted members of the clan were sponsored in order to get them into these lower-level positions. In return for the open endorsement and financial support of the leader of a clan, these local politicians mobilized popular support for the election of the clan leader at a higher level of public office. Election campaigns for these more prestigious and powerful offices were much costlier than those at the local level. This meant that only leaders with a sizable 'led kindred'<sup>13</sup> (Fegan 1993) had a chance of getting access to provincial or national power and

<sup>13</sup> See section 6.4 for brief discussions of the Fegan's use of the term 'led kindred'

resources: "Political families under their matanda<sup>14</sup> - together with factions composed of alliances of such families under an effective leader- became the main political units in the countryside" (Landé 1964:50)

As a result of the creation of a national legislature composed of district representatives, a new phenomenon appeared in Manila: a Filipino ruling class (Anderson 1988:11). Unlike the distant Manila elite of Spanish times, these families were firmly rooted in the countryside. To a large extent, the success of local leaders in higher elective offices was defined by the effectiveness with which they were able to appropriate provincial or national resources for local purposes. As a result, the national legislative debate revolved mainly around district competition for national resources, both financial and natural. Consecutive presidents have had to respond to these local claims by forging brittle alliances with these local leaders in the legislature. The use of national means and resources for local patronage politics became a common element in contemporary Philippine politics. This was what Governor Taft saw coming when he warned the members of the first National Assembly not to adopt "*the most marked evil of American politics: the spoils system*" (Taft 1901 in Bootsma 1986:14).

The mobilization of public resources for local electoral purposes, already found in 19<sup>th</sup> century accounts of local elections in Batangas, for example (Paredes 1989: 29-34) appears to have expanded after the declaration of the Philippine Commonwealth in 1935. In the five years after its establishment, government expenditure increased by 250 percent, with the share of public works, outlays and investments increasing from 10% to 40% of total government disbursements. Only 10% of the funds were earmarked for the provinces, chiefly for the construction of 'barrio roads'. Secretary of Finance Antonio de las Alas told James Weldon Jones, the insular auditor and acting High Commissioner that these provincial projects were "*pork...they were not projects that would last past a few rains or a typhoon; that is was for election purposes*". Commonwealth President Manuel Quezon said of these projects that "*it gave the humble ones a little money*" (Nakano 1996:12). In 1991, one year before the synchronized elections were scheduled to be held, the House of Representatives approved the establishment of a Countryside Development Fund (CDF). The fund, quickly dubbed the *Pork Barrel*, enables senators and members of the House to finance development activities in their constituencies directly.

By 1993, 2.95 billion pesos (\$105 million) was allocated to the Countryside Development Fund, or 12.5 million pesos for each member of the House of Representatives, 18 million for each Senator and 20 million for the Vice-President (Clarke 1995:78). Clarke notes that the use of the Countryside Development Fund for the maintenance of patronage-based politics "*enables politicians to reward NGOs and POs that provide electoral and other forms of support*". In section 5.3.2 we saw how a political family was able to use its CDF funds directly to maintain its hold on a seat in the House of Representatives. Public money may be channelled into a private election campaign through CDF-funded projects or by setting up new NGOs to build goodwill for the candidate by means of development assistance and dole-outs. Through a combination of overpricing and rigged bidding procedures, other CDF-funded infrastructure projects may be granted to a contractor closely associated with the family. In exchange for his favoured status, the contractor pledges to deposit excess funds directly into the campaign fund.

How well the historical legacies of political patronage and brokerage have been woven into the fabric of modern mass-based elections was illustrated by the visit of President Corazon

<sup>14</sup> In Tagalog, matanda literally means 'old man', but its political connotation is that of an adult, married male who has grown children, is head of his own household, and can speak for it in public affairs because his father is dead or politically retired (Fegan 1993).

Aquino to Cagayan Valley in the run-up to the 1992 elections. For nearly two decades, the Governor of Isabela, Faustino N. Dy, had been one of Cagayan Valley's most influential politicians, commanding the *Solid North* vote in favour of the Marcos administration; his support would mean certainty over a considerable share of Cagayan Valley's approximately one million votes. The outgoing governor was courted by all the candidates running for the presidency. They all pledged financial support<sup>15</sup> for the election campaign of the Governor's own candidates for lower elective offices, including three of his sons who were running: one to succeed him, one for congressman and one for mayor of Cauayan, the clan's political home base.

In the year before the elections, President Cory Aquino helped the old governor Dy to realize what he called "*the obsession of the people of Isabela*", a new provincial capitol costing over 12 million dollars. Within a year, she made two visits to Isabela, and pledged another 40 million dollars for the rehabilitation of the Maharlika highway connecting the National Capitol Region and the North. These gestures were all the more remarkable because Dy used to be a close friend of Benigno Aquino, but had given up his resistance to the Marcos family in the early seventies, becoming one of its staunchest supporters, even after the murder of his erstwhile friend in 1983.

On the day Mrs. Aquino came to Ilagan to formally inaugurate the building, an improvised plywood marker with the words 'Ninoy Aquino Lake' had been placed in the pond that had naturally formed between the National Highway and the elevated new Provincial Capitol. The fact that public funds - from the Presidential Special Fund - were in fact mobilized for political purposes, namely to secure support from the *Solid North* for the campaign of her anointed successor Fidel Ramos was openly referred to when

*"the President reminded the Isabeliños that P2 billion worth of infrastructure had been built in the province during her term. Dy said his province mates knew how to repay a debt of gratitude... This is the true reconciliation of the Aquinos and the people of Isabela, the President said... The Isabela leaders welcomed the President at the capitol building, one of the most opulent nationwide, which reportedly used over 220,000 boardfeet of narra and other hardwood."* (Philippine Star, 28 March 1992)

In the presence of President Aquino, the leader of the other leading clan in Isabela, Rep. Rodolfo Albano Jr. and an already ailing Dy raised their hands in unity and pledged the support of the people of Isabela for the Ramos-Osmeña campaign. Fidel Ramos indeed became the next President of the Philippines, but this was decidedly not due to the Isabela vote: a few days after Aquino's visit to Isabela, the governor shifted his support to another presidential candidate. His three sons won the elective positions they were running for, and Faustino Dy Sr. died one year after his sons had assumed office. The Ninoy Aquino marker quickly disappeared and a few months later the lake was filled in.

The episode shows both political patronage and brokerage at work in an election campaign. Dy played his role as the spokesman of the people of Isabela, negotiating with the national authorities for a building which he says is the highest priority of the people. His success in securing these funds adds to the political prestige of his clan, both in the province and for purposes of national coalitions, and he urges their leaders to travel to his residence so as to secure the votes of this following. Dy used this strategic position to secure the safe handover of political power from his generation to the next, and to expand its presence to the House of

<sup>15</sup> A well-informed Chinese tobacco trader alleged that tobacco tycoon Lucio Tan personally flew to Isabela to see the governor, offering 20 million pesos in cash to gain his support for the campaign of one of other the presidential candidates.

Representatives. His relationship with Cory Aquino illustrated the classic exchange of labour and favours between client and patron; here the client promised to deliver votes in exchange for financial help. In this case, however, the 'asymmetry in the power to initiate the terminating move', normally skewed towards the patron (Platteau 1995:767), lay entirely with the client, as Cory had no local means to secure her benefits from the deal. The Dy clan felt the backlash from their broken promise when President Fidel Ramos assumed office, but their local influence was strong enough to prevent a split-up of the province, masterminded by a rival clan and supported by the President, and to retain the governorship in the 1995 elections.

In my view, the democratic reforms introduced by the United States administration hastened the decline of the waning political influence of Cagayan Valley's indigenous elite of landowning lowland tribes. At the time the American electoral reforms were implemented, the local elite had just suffered serious setbacks due to the collapse of Spanish rule and the Tobacco Monopoly, which had long served to cushion their position of leadership. Their hold on scarce labour, and some of the best tobacco lands, had always provided these leaders with a structural basis for their good relations with the Spanish authorities. On their own, in a rapidly changing economic context, they were unable - or unwilling - to recognize new realities, such as the growing importance of merchant capital in agriculture and the arrival of Ilokano land-seekers in the region after 1925 (see Chapter 8). Agricultural areas expanded beyond the old haciendas in the floodplains of the Cagayan River, and new settlements were established, turning the indigenous lowland tribes into a cultural minority in their ancestral land.

As we saw in section 5.3.2, many of today's leading families in Cagayan Valley are of immigrant descent. Their founders were ordinary peasants and petty traders in their place of origin, who could not gain from the advantageous position of recognized members of the pre-colonial, landowning elite in Cagayan Valley<sup>16</sup>. These self-made leaders resemble Fegan's *magaling na lalaki*, or "men who get their way in contests with other men" (Fegan 1993:39), rising to power through the ranks of local politics. They use each office to build up the personal wealth required to expand their resources and following, enabling them to reach the next office.

A historical legacy which these families made use of in their ascent to political power was the Spanish strategy of recognizing hand-picked local leaders. By supporting and protecting the leader of their choice, a supra-village network of local leaders was established to serve supra-village policy objectives, such as the *reduccion* and the Tobacco Monopoly. Modern political clans work along the same principles, except for the fact that after American electoral reform, local leaders not only had to have the endorsement of fellow *principalia*, but the vote of their clientele as well. Legacies of the political and administrative reforms carried out during the American colonial period are clearly visible here. Leadership at the local level became a condition for gaining access to newly created higher elective offices. Conversely, brokered access to national means, either directly or through other members of the clan, became an important source of political legitimacy, as well as the means to sustain patronage services for an growing electorate at the local level. Local leaders who managed to use their rural power base to gain access to the nation-state were eventually the recipients of another highly profitable source of income: it was soon after the start of the United States administration that the first large-scale, mechanized logging operations got underway in the Philippines.

<sup>16</sup> In other parts of the Philippines, political clans of Chinese ancestry profited from the U.S. government's bargain sales of haciendas formerly owned by the Spanish Friar orders (Anderson 1988). Chapter 8 contains a brief discussion on the Friar lands in Cagayan Valley.

### 7.3 Corporate logging: made in the USA

*"The history of the utilization of Philippine forests is unique among Southeast Asian countries and probably unique in the entire tropics, in that exploitation developed more rapidly and with a higher degree of technical efficiency than in other similar areas. For this situation, the American occupation is probably responsible. American entrepreneurs entered the Philippine forests, bringing with them mechanized logging techniques largely from the Pacific Northwest of the United States. Philippine enterprises developed on the American model, so that today Philippine exploitation techniques are the most technically advanced in the Asiatic and Pacific tropics"* (Bedard 1957:7)

This upbeat account by an American forester, assessing the Philippine forestry sector at the beginning of what were to be the boom decades of commercial logging operations, quite rightly claims American credit for the strong recovery of the sector after the Second World War. A country that in the late eighties would be the first in Southeast Asia to face the near-depletion of its forest resources had been a pioneer in the introduction of steam-engine pulleys, railways and mechanical sawmills in logging operations, in the early 20<sup>th</sup> century. This section investigates the background of the American colonial policy of introducing large-scale, mechanized logging operations to the Philippines, and assesses how the industry developed, until it came to a near standstill almost one hundred years later. Special attention is given to two actors of particular importance to the logging industry: foresters and the paradigm guiding their industry, and the ethnic Chinese community, to whom the misfortunes of the corporate logging industry are often attributed.

#### 7.3.1 Overcoming labour constraints in forest utilization

Throughout the Spanish colonial period, logging in the Philippines was not directed towards commercial timber as a commodity in itself, but served mainly the local furniture and shipbuilding industries. The isle of Mindoro and the Southern Sierra Madre province of Tayabas (nowadays known as the Quezon and Laguna provinces) and Nueva Ecija in Luzon were the principal sources of lumber for the wharves of Cavite. The fame of galleons built of Philippine mahogany was established during sea wars between England and Spain in the 18<sup>th</sup> century; the English wrote that "...of the two thousand [balls] that were fired at it, not one passed through it...". (B&R 38:41)

The few surviving written accounts of the timber industry during the Spanish period show that shortage of labour was the critical constraint limiting log production. Although the volumes extracted during these years were small compared to the logging rates of the twentieth century, the timber requirements for the construction of warships and trading galleons required a massive workforce, as the following account from the early seventeenth century shows:

*"When one is lost, it is necessary to build another, and that means the cutting of wood. Six or eight thousand Indians are assembled for that task, and go to the mountains. On them falls the vast labor of cutting and dragging the timber in."*

The same observer warned the King of Spain that

*"the islands are at the end of their resources, as far as the Indians in them are concerned for it is they who bring the timber from the forest for the said shipbuilding..."* (Hurtado de Corcuera to King Felipe IV, July 1636, in Blair and Robertson 1903, Vol 26:289. Quoted in Benitez 1969:210)

Thus the most pressing concern during this period was not the depletion of the forest but rather the depletion of the workforce in the areas where shipyards were located (Mindoro, Masbate, Marinduque, Cavite, Laguna). Shortage of labour explains why the industry continued to

confine itself to areas close to coasts and waterways, even after the second half of the 19<sup>th</sup> century, when the Spanish colonial administration began to see the opportunities of cutting timber for other than local construction purposes, and entered into the business of selling timber in Spain and on other foreign markets.

During the late Spanish period, concerns about timber depletion prompted the establishment in 1863 of the first forestry bureau in the Philippines, the *Inspeccion de Montes*. The bureau consisted of 66 expert foresters, 64 rangers and 40 additional staff, such as clerks, draftsmen, etc. (Phil. Com. 1904:70). Filipinos were not allowed to occupy the more important positions, which were filled by members of the Spanish Corps of Engineers. Sebastian Vidal y Soler, the first head of the Spanish Forestry Bureau in the Philippines wrote that:

*"the precious woods that are produced in the extensive forests of the Philippines are worthy of being recognized in Europe, I even dare to say that they have no likely rival for the construction of ships, and as far as I know there is already a great demand for these in armories and shipyards, where there is a great consumption of the best wood of the British Indies, with which the forests of the Philippines can very worthily compete"*. (translated from Vidal y Soler 1874: 6)

The first Philippine timber licenses were made possible by a Spanish Royal Decree of October 30, 1867. The Chief Forest Inspector quickly encountered problems with this new instrument, for once a license had been issued, the *Inspeccion de Montes* lost control over its use by the licensee:

*"granting individuals the right to extract fabulous amounts of wood, with the hidden motive, undoubtedly, of acquiring a document which protects them in case they are caught in the act of illegal speculation. The warning came from that industrious chief of the political-military district, where I was made to see the dire impacts of these licenses for the public forests of Cebu and Bohol, already pitifully abused, and wherein one could assure oneself that, in short, not a single timber tree can still be found..."* (translated from Jordana y Morera 1876:15)

To deal with these early manifestations of failing government control of private timber cutting licenses, 12 new Forest Protection Offices ('Plazas de Monteros') were established on February 9, 1873, to combat widespread illegal logging. The limited speed with which timber cutting, legal and illegal, took place confined deforestation during the Spanish period to a few locations, notably areas lying close to the sea or inland waterways.

Shortly after the United States had assumed the administration of the Philippine Islands, on April 14, 1900, a new Bureau of Forestry was established in Manila and Major George P. Ahern appointed as its first director. His orders did not specify his duties, but allowed him to employ 4 foresters, 2 rangers, a stenographer and a translator (Roth 1983). In his first report to the Bureau of Insular Affairs in Washington, D.C. he described the forestry legacy left by Spain as follows:

*"In many of the islands the good timber has been cut away to within about three miles from the coast. But as we leave the centers of civilization, we soon run into virgin forests...After three centuries of civilization in the islands, we find but 6,000,000 acres improved out of a total area of 63,000,000 acres..."*(Bureau of Forestry of the Philippine Islands (July 1, 1901- September 1, 1902) Bureau of Insular Affairs, War Department p. 472)

The American administrators sent to the Philippine Islands took a great interest in developing the potential of its natural resources, including the extensive and still largely virgin forests. The Philippine Commission pressured the War Department in Washington to speed up the passage of laws to stimulate the development of the country's natural resources. Initially, however, both Governor Taft and the Commission received explicit orders from Washington not to make any changes to the Spanish laws governing forestry and even to cancel all existing licenses, with

the exception of firewood and gratuitous licenses, "*especial care being taken in each case not to issue more than actual necessity demands*" (Cable of the US Secretary of War to Governor General Taft, September 21, 1901). This cautious policy of the Bureau of Insular Affairs was relaxed after the visit of Secretary of War Elihu Root to the Philippines in 1902. Upon his return to the U.S., Root wrote to the President of the United States that "*more than a thousand mining prospectors, mainly American, are already scattered throughout the Islands, waiting for the enactment of some law under which they may acquire rights to mining claims covering their discoveries of minerals. The public lands have never been surveyed and no facilities have been afforded for the Filipinos to acquire title; from two to four hundred thousand natives are now living as squatters on these lands waiting for some homestead or settler's law under which they may become owners of the land they till, or still other lands.*" (Root in Philcom 1902:26)

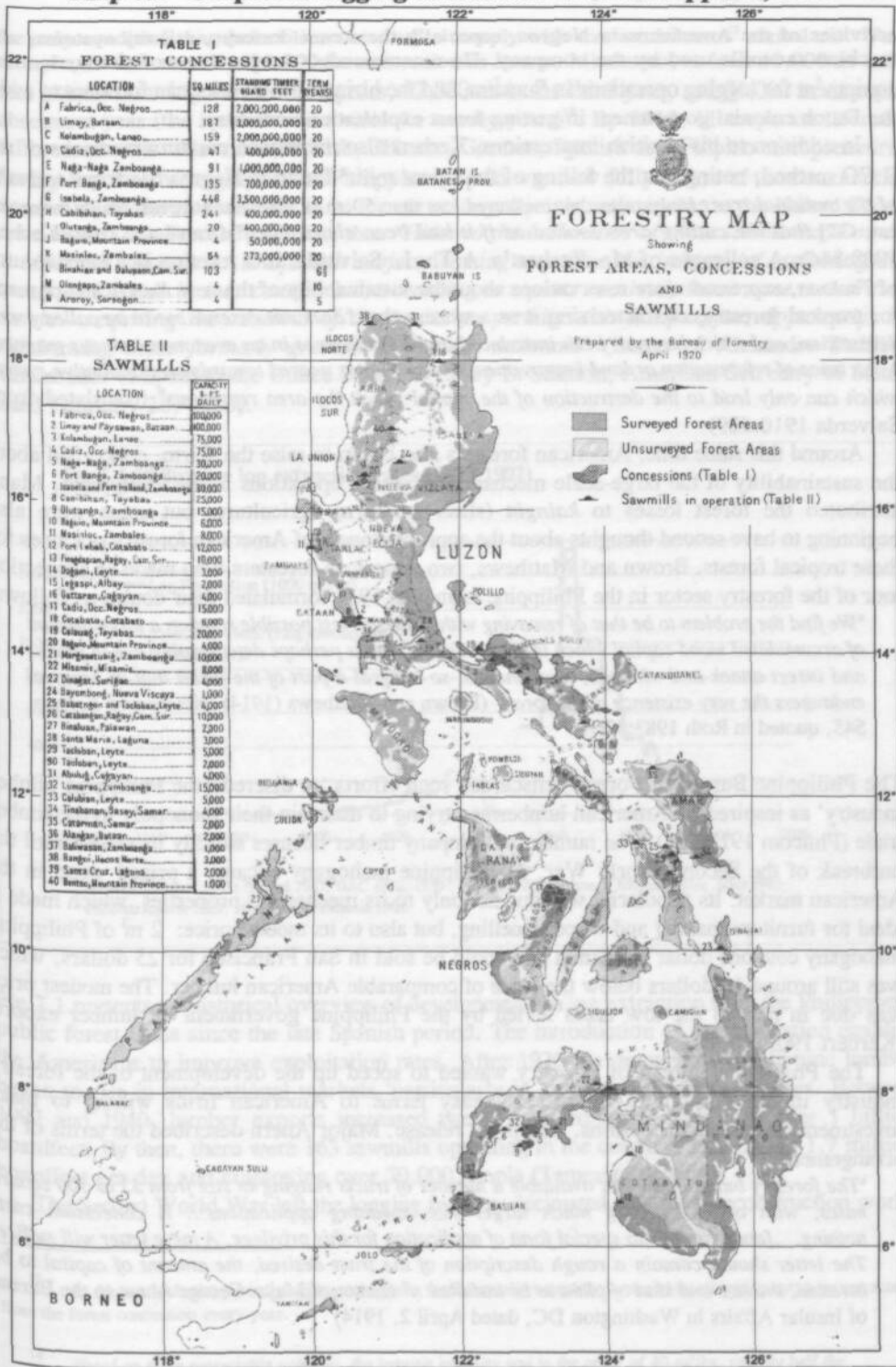
In Manila, the Philippine Commission saw government charges on timber extraction as a welcome source of revenue by which to fund, among other things, the organization of a bureaucracy. Maintaining the Spanish policy of issuing timber licenses for the nominal sum of one dollar per concession, and levying forest charges on the basis of the volume extracted, the Bureau of Forestry estimated that "*the value to the Philippine Government of the above timber is more than 100 \$ gold per acre....*" (Bureau of Forestry 1902: 471). Another factor which led the Commission to allow private entry into the forest lands was the 'timber famine' prevailing during these years: the demand for wood was high due to reconstruction efforts after the Philippine Revolution. Lumber was generally imported from the United States and prices remained high.

For many years, American foresters continued to assume that "*stripped of their showy forms, the tropical forests of the Philippines are more nearly like temperate forests than they are different from them.*" (American Forester H.N. Whitford (1909), quoted in Roth 1983: 45). The main constraint was the fact that their exploitation still relied entirely on manual labour and the pulling power of the carabao; the large trunks in the virgin forests were almost impossible to fell and, once felled, could only be pulled from the forest with great difficulty. To put these large trunks to economic use, mechanization was required, in the form of "*tramways or cable systems...which will take comparatively large capital*" (Philcom 1903:343). Easing the labour constraint through mechanization, Ahern argued, would require a shift from one-year licenses to longer-term agreements between the Government and private enterprise "*to justify companies in installing plants large enough to carry on lumbering operations over considerable tracts under the supervision of the forestry bureau*" (ibid)

Ahern's call to introduce large-scale mechanized logging in the Philippines did not go unheeded. In 1904, just three years after the arrival of Howard Taft, the first U.S. governor of the Philippines, the American Insular Lumber Company (ILCO) was granted the exclusive rights to extract timber from a 300 km<sup>2</sup> virgin forest stand in Northern Negros. Six years later, in 1910, a new College of Forestry was opened at the University of the Philippines. By 1920, 14 timber concessions and 40 sawmills were operational countrywide (see Map 7.1). By 1948, 600 rangers and 182 foresters had been trained, 23 of whom had studied forestry at Yale University (Tucker 1992: 108)

The introduction of mechanized logging was not only a novelty in the Philippines but in the whole of Southeast Asia. Dutch botanist Dr. Treub was quoted by an American forester named Barrington Moore as saying that "*the Americans had made more progress in forestry in the ten years in which they have been in the islands than any other nation in all the time in which they have been in the tropics*" (Moore 1910:154). The enthusiasm of the Dutch government prompted the decision to send its chief forester in Dutch East India, Mr. Kerbert, on a mission to the Philippines to see whether the mechanized logging operations of ILCO could be replicated in Sumatra, where the Dutch had not yet set up a forest service. Forester Kerbert was much impressed with the

**Map 7.1 Corporate logging concessions in the Philippines, 1920**



activities of the Americans in Negros, especially the steam donkeys, railway systems, and machine sawmills used by the company. He recommended the purchase of similar hauling equipment for logging operations in Sumatra, and the hiring of five American foresters to assist the Dutch colonial government in getting forest exploitation underway.

In addition to his positive impressions, Kerbert also mentioned certain drawbacks of the ILCO method, noting that the felling of the "giant trees" found in Negros "destroys so many of the residual trees [only trees that measured less than 50cm in diameter at breast height were not cut, GT] that the cutting area looked as if it had been clear-felled" (translated from Kerbert 1908:544). A colleague of Mr. Kerbert's, A.Th. L. Salverda, in a reaction in a later volume of *Tectona*, expressed more reservations about the sustainability of the new American approach for tropical forestry, characterizing it as a system that "does not deserve but to be called forest devastation, and which has now been introduced in the Philippines in an even more ruinous manner! Not a trace of reforestation or land improvement! Everything is geared towards an exploitative system which can only lead to the destruction of the capital which the area represents" (translated from Salverda 1910:529)

Around this same time, American foresters also began to raise the alarm, concerned about the sustainability of the large-scale mechanized logging operations in the Philippines. Many attributed the forest losses to *kaingin* (slash-and-burn) agriculture, but some were also beginning to have second thoughts about the appropriateness of American forestry practices for these tropical forests. Brown and Matthews, two American foresters who made an inspection tour of the forestry sector in the Philippine Islands in 1914 formulated their doubts as follows:

*"We find the problem to be that of removing within the shortest possible rotation a large amount of accumulated wood capital which is not producing, but is perhaps deteriorating due to fungus and insect attack and which is, nevertheless, so integral a part of the forest that its removal endangers the very existence of the forest"* (Brown and Matthews (1914) *Dipterocarp Forests*: 545, quoted in Roth 1983:47)

The Philippine Bureau of Forestry discarded such efforts 'to discredit the Philippine lumber industry' as inspired by American lumbermen trying to maintain their monopoly in the timber trade (Philcom 1912:107). The number of company timber licenses steadily increased until the outbreak of the Second World War, as Philippine mahogany became a prized wood in the American market. Its popularity was due not only to its mechanical properties, which made it ideal for furniture making and wood panelling, but also to its modest price: 2 m<sup>3</sup> of Philippine mahogany cost one dollar in Manila and could be sold in San Francisco for 25 dollars, which was still around 10 dollars below the price of comparable American lumber. The modest price was due in part to the low taxes levied by the Philippine government on lumber exports (Kerbert 1909).

The Philippine Bureau of Forestry wanted to speed up the development of the forestry industry in the Philippines by offering easy terms to American firms willing to make investments in forest concessions. In a press release, Major Ahern described the terms of the arrangement:

*"The forestry bureau now has available a number of tracts ranging in size from 35 to 300 square miles, with one or two of much larger size, awaiting applications... A concession costs nothing....[and] there is no special form of application for this privilege. A mere letter will suffice. The letter should contain a rough description of the tract desired, the amount of capital to be invested, the size and kind of plant to be installed..."* (Letter of Major George Ahern to the Bureau of Insular Affairs in Washington DC, dated April 2, 1914)

The only condition that timber licensees had to comply with was a minimum<sup>17</sup> annual cut. For example, in the case of a 38,000-ha concession in Lanao, Mindanao, at least 60,000 m<sup>3</sup> had to be extracted during the first two years, 42,000 m<sup>3</sup> in the third year, and 84,000 m<sup>3</sup> in each subsequent year (the licenses were valid for twenty years)<sup>18</sup>. By 1914, 11 corporate licenses had been issued to American, British, Chinese, German, Spanish and Filipino entrepreneurs. Having lost its sovereignty in the Philippines, Spain was now fully aware of the commercial potential of the forest resources in its former colony. Spain's ambassador to the United States wrote to the U.S. Secretary of State that: "Hitherto the authorities of those Islands have made no objection whatsoever to Spanish subjects coming to pursue the industry of exploiting the forests and woods in that country but, according to reports received, those same authorities are now requiring the renewal of the operation permits with the purpose, apparently, of withdrawing those formerly granted to Spanish nationals" (Letter of Alexandro Padilla, Ambassador of Spain to the United States, to Henry L. Stimson, American Secretary of State, dated February 28, 1933).

Fig 7.1 Philippine log extraction rates (1875-1992)

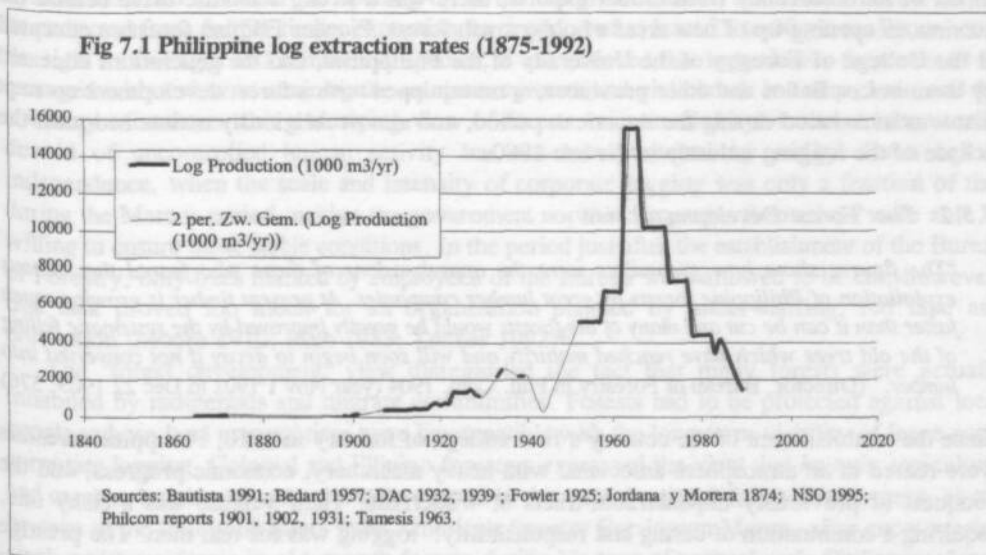


Fig.7.1 presents an historical overview of developments in log extraction from the Philippines' public forest lands since the late Spanish period. The introduction of mechanization enabled the Americans to improve exploitation rates. After 1920 the demand for Philippine lumber began to rise in international markets, particularly in Japan and the United States. Between 1902 and 1940, lumber exports increased twenty-fold, from 46 million to over 1 billion boardfeet. By then, there were 163 sawmills operating in the country, turning out 1.7 million boardfeet per day and employing over 70,000 people (Tamesis 1963:86).

The Second World War left the logging industry decimated, but local reconstruction works

<sup>17</sup> In the post-colonial period, logging companies were formally bound by a *maximum* allowable cut to be extracted from the forest concession every year.

<sup>18</sup> Based on these extractable volumes, the logging intensity was in the order of 40 m<sup>3</sup>/ha, roughly half the intensity prescribed under the Philippine Selective Logging System during the 1970s.

and a strong Japanese demand for Philippine hardwoods stimulated a quick recovery (ibid:87). By 1962, total log extraction had reached 3 billion boardfeet (or 7 million m<sup>3</sup>), the start of a decade during which extraction rates by the corporate logging industry peaked. The equivalent of the aggregate volume of logs extracted between 1902 and 1932<sup>19</sup> was taken out annually in the late sixties and throughout the seventies. According to official records, logging operations produced between 10 and 15 million m<sup>3</sup> of commercial timber every year, and these data probably underestimate actual extraction rates by 50-100%. Factors contributing to these inaccuracies include widespread violations of forestry regulations in timber concessions and the poor reliability of forestry statistics (Kummer 1992c, 1995).

Throughout the history of corporate logging in the Philippines, there were visible signs of a contracting forest resource. While some observers, particularly those in the forestry profession, pointed to forest occupants and their slash-and-burn system of agriculture as the main cause of deforestation, environmental and opposition groups questioned the sustainability of large-scale mechanized logging operations. In addition to political pressure to keep up the influx of hard currency from timber exports, there was a strong scientific drive behind the continuous opening-up of new areas of old-growth forest. Pioneer Filipino foresters educated at the College of Forestry of the University of the Philippines, and the generations educated by them in Los Baños and other provinces, were equipped with a forest development concept that was introduced during the American period, and almost religiously maintained until the eclipse of the logging industry in the late 1980s.

### 7.3.2 The 'Forest Development' view

*"The figures show how groundless were the apprehensions of those who feared the ruinous exploitation of Philippine forests by great lumber companies. At present timber is growing much faster than it can be cut and many of the forests would be greatly improved by the systematic felling of the old trees which have reached maturity and will soon begin to decay if not converted into lumber."* (Director, Bureau of Forestry in Phil. Com. 1904 (year Nov 1 1902 to Dec 22 1903: 576)

Since the establishment of the country's first college of forestry in 1910, Philippine foresters were reared in an atmosphere associated with heavy machinery, economic progress, and the conquest of previously impenetrable tracts of wilderness. Their venture was a risky one, requiring a combination of daring and responsibility: logging was for real men. The prestige associated with forestry reflected on the profession as a whole; foresters were the chief decision makers in the conduct of logging operations on the ground, they occupied senior positions in the Bureau of Forestry, which oversaw the operations of TLA holders and had a scientific monopoly on the study of Philippine forestry.

Perceiving old-growth forests as an idle resource that needed to be 'developed' in order to become more productive, foresters formulated and supported the government policy of leasing out large tracts of old-growth forest to private companies. Logging was seen as a silvicultural treatment which was part of an improved management regime that natural forests required to achieve higher sustained yields of commercial timber. The Philippine Selective Logging System was developed by Filipino foresters after independence and has remained one of the cornerstones of Philippine forestry ever since. It is aimed at a higher growth and yield of commercially interesting timber-tree species, whereby all 'overmature' and a percentage of 'mature' trees are removed from the canopy. By reducing competition for light and nutrients

<sup>19</sup> The aggregated volume of commercial timber extracted from the Philippine forests between 1902 and 1932 was 16.3 million m<sup>3</sup> (DAC 1932:165)

between commercially interesting and lesser species, and by suppressing the growth of the latter, higher yields of commercial timber are attained (see also sections 4.4 and 5.2.2).

The Philippines inherited its forestry tradition from the United States which, in turn, was strongly influenced by the way European forests were managed. In Europe, the idea that the economic productivity of forests should be upgraded and controlled developed between 1765 and 1800, in response to the need which countries felt to achieve more predictable and stable flows of fiscal revenue from the logging industry (J.C. Scott 1998). Forest inventories, timber-stand classification, and tree-marking activities were carried out in forest plots which had been carefully defined to ensure that they were representative, enabling the early European foresters to calculate the revenue that a certain forest might yield: "*For the forest scientist (Forstwissenschaftler) the goal was always to 'deliver the greatest possible constant volume of wood'*" (Lowood 1991, cited in J.C. Scott 1998:14)

To achieve a constant output from a given forest area, stable, laboratory-like conditions were required. Sustainable development as defined under the Philippine Selective Logging System assumed that after the opening-up of the old-growth stand, the residual forest had to be protected from further timber extraction for a period of at least 25 to 30 years. By creating the right mix of ages and commercial species, it was believed that logged-over forest could be managed with a view to attaining the maximum growth and yield level. In many cases, and for a variety of reasons, this underlying view of forests as controlled silvicultural laboratories devoid of uncontrolled human activity has not been matched by reality. Even before independence, when the scale and intensity of corporate logging was only a fraction of that during the Marcos period, neither the government nor the companies themselves were able or willing to ensure those stable conditions. In the period just after the establishment of the Bureau of Forestry, only trees marked by employees of the Bureau were allowed to be cut; however, this task proved too much for an organization plagued by under-staffing, red tape and corruption (Moore 1910; Roth 1983; Tucker 1992)<sup>20</sup>.

The 'forest development' view disregarded the fact that many forests were actually inhabited by indigenous and migrant communities. Forests had to be protected against local people, whose land use practices were incompatible with the long-term viability of large-scale corporate logging. Colonial and Filipino foresters expressed the view that *kaingin* agriculture and carabao logging by upland dwellers stood in the way of rational forest management, as can be seen in the following quote from American forester Barrington Moore, after encountering slash-and-burn farms in old-growth forests during his tour of several early Philippine forest concessions:

*"Caingins are a system of shifting cultivation in forest lands, which is destructive in the extreme.*

*To make a Caingin, the Filipino moves into a body of fine virgin timber and begins by cutting all the undergrowth....he makes no pretense of plowing or even scratching the ground, but merely pokes a hole with a stick and puts in the seeds. Neither does he keep out the weeds. The result is that within a couple of years, the area is so overgrown that it has to be abandoned. He then moves on and destroys another valuable piece of forest"* (Moore 1910:78)

<sup>20</sup>

In 1931, when Dutch *adat* scholar F.D.Holleman paid a visit to Arthur F. Fisher, the director of the Bureau of Forestry, to look for material on indigenous land rights, the latter lamented: "*This is the tragedy here: you and others have a goal to aim for, not us. We simply do what our hands happen to find and try to do that as honestly and well as we can. Whether we do the right thing, I do not know really. I am aware that our politicians, and I myself too, perceive the circumstances in which these people live too much as if they are the same as ours - and nothing is less true - and that we have overtly imposed our will upon these people, rather than to help them progress based upon their own conceptions and principles, but I maintain nevertheless that our policy is good and educating because it is honest and selfless and creates law and order in that muddle, where corruption is thriving and all kinds of injustices abound daily.*" (In: Holleman 1931:19, translated by GT)

Ignorance of the technical, social and cultural dimensions of indigenous and immigrant systems of fire-and-fallow farming long prevented foresters from taking a more balanced view of both the interaction between large-scale, mechanized timber extraction, and modes of forest utilization practised by the people residing there. Aside from the abovementioned aspect of forestry training, their social background also stood in the way of getting into a more constructive dialogue with forest-based people, especially in the early years of forestry education in the Philippines, when *"coming from elite families, they uniformly assumed the inferiority of illiterate peasants and mountain tribes and dismissed the traditional ecological knowledge systems of hill peoples as unimportant"* (Tucker 1992:108)

Only by 1988, the inaccuracy of Philippine government statistics on forest decline began to surface, revealing that only a very small percentage of the original old-growth stands remained and that large areas of residual forest were not ready for re-logging by the end of the first cutting cycle, or had been converted into marginal brushland, upland farms and grassland areas. However, the dominant view on the causes for the problems in what used to be the most progressive timber industry in Southeast Asia continued to point towards the occupants of those forests. In a letter accompanying a request for a forestry sectoral adjustment loan from the Asian Development Bank, the secretaries of the DENR and the Department of Finance wrote:

*"...five major causes lie at the root of our deforestation problem; first and foremost among these is what we call the kaingin problem....Typically, the kaingineros resorted to slash-and-burn, shifting cultivation and, over the years, this process resulted in the complete destruction of forest cover in about five million ha of land."* (ADB 1988, Appendix 19).

Views of people as problematic actors in forest management were not only resilient among Filipino foresters; Dove (1992, 1995), Peluso (1995) and Wiersum (1997) also draw attention to the role of professional bias in the forestry profession, which long prevented foresters from taking a serious interest in local perceptions about what forests are, what purposes they serve, and how they are best managed. Dove deplores the paucity of studies on this institutional aspect of the implementation of forest policies and programmes. For many years the social background of government foresters, their training and implicit differences in value systems between them and the people living in forests kept both groups locked into an unproductive stalemate of mutual distrust.

Nevertheless, the encroachment upon residual forest areas by land speculators displaced logging company employees, and farming families without access to lands in other agricultural areas contributed to the problem of deforestation and forest degradation. In 1985, an estimated 8 million people were estimated to reside in the Philippine forest lands (Cruz *et al.* 1992:19). By the late 1980s, the relationship between forest residents and the logging industry gradually thawed, as the logging industry transformed itself from a corporate to a community-based activity. Both forest migrants and indigenous residents of the Sierra Madre profited from employment opportunities and transport for goods traded with the lowland economy. Forest occupants were hired by timber licensees and their contractors, and labourers who had been brought along as company employees became migrants themselves, or were eventually replaced by permanent forest residents who did the cutting, yarding and loading work for contractors in the lowlands. As we saw in the preceding chapters, contractors first began to finance the activities of carabao loggers illegally, sending trucks to bring out the product and negotiating with civil and military authorities for package deals involving accommodated access. By the early 1990s, community-based resource management was widely accepted to be the most promising approach to forest development.

The cooperation between logging contractors and forest occupants is probably one of the

major reasons behind deforestation in the Philippines. Forest stands failed to recover from the first cut, but were instead gradually stripped of all marketable products and then converted into marginal farmland. The combined activities of migrants, indigenous forest peoples and logging contractors were a threat to the sustainability of each activity on its own, including the traditional resource uses of indigenous forest tribes. More intensive hunting techniques had to be used in disturbed, contracting areas of natural forest, and soils less suitable for agriculture were planted with cash crops and tenure markers to secure income and informal ownership (see Chapters 8 and 9).

In spite of the limited number of logging concessions where selective logging did indeed induce a higher sustained yield, the 'forest development' view proved resilient. Kummer (1995) makes a convincing analysis of the political use of postwar forestry statistics, including inconsistencies which appear to have been deliberately manipulated, or withheld, during the 1970 and 80s, so as to prevent the deteriorating state of the Philippine forests from being made public. Reactions in the *Philippine Lumberman*, the professional journal of the forestry sector, to the closure of the Insular Lumber Company, the country's first large-scale, mechanized logging concession, illustrate the unwavering belief in the industry which still prevailed. In 1934, forest depletion had already compelled the company to abandon its first concession area, writing off a considerable capital investment in railroads, sawmills and harbour facilities. But the company continued to see the Philippine forests as "a virtually inexhaustible supply of desirable hardwoods" (ILCO 1960); in 1968 it moved its processing facilities once again, finally closing down completely in 1984, when operations on the last site had ceased to be viable. A young forester, writing about the closure of the company, said that:

*"the dying of ILCO is only one of many similar cases in the history of Philippine Forestry.*

*Many other timber concessions had similar deaths and all the others will follow if current malpractices are not corrected."* (Serrano 1985:21)

His reaction highlights the 'malpractices' associated with corporate logging, including corruption and the violation of rules and regulations guiding the industry. The concept of developing old-growth forests through selective logging, whether by companies or by communities, is not questioned. Others in the discipline continued to express their unqualified support for the continuation of corporate logging in old-growth forests. In one of a series of articles designed to influence the national debate on a total ban on corporate logging, the words of a former company forester of ILCO, one of the most respected foresters in the Philippines, continued to echo the views of his early American predecessors:

*"Since the dipterocarp forest is a self-replenishing and therefore perpetuable resource, even though logged, logging is not the problem. The protection of the forested logged over or residual forest from kaingineros is the Number One problem."* Reyes (1989:13)

This emphasis on the renewable nature of dipterocarp forests provided consecutive governments with a scientific rationale to justify the continuation of a system of timber-extraction from public forests that it could clearly not control, with serious adverse environmental and social impacts. After decades in which logged-over forests had received no protection from illegal logging and conversion, Philippine foresters continued to advocate the 'development' of old-growth forests, brushing off past failures as a question of seeing that the Government - and later communities - were better organized.

As we saw in Section 5.2.2, forestry policies underwent a significant shift in orientation after 1986. Forest occupants, once considered the principal culprits in the deforestation crisis are now perceived by the bureaucracy as "the ultimate solution to environmental degradation" (Joey E. Austria, head of the DENR Indigenous Communities Affairs Commission in

the Manila Chronicle, 28/10/1996). These changes represent an opportunity for progress, both in socioeconomic and environmental terms. However, prospects for realizing more effective protection for the last tropical moist forests in the Philippines may be dimmed by the continued influence of the 'forest development' view in external professional assistance to the communities concerned, and in the development of management plans for the community forestry areas. While licenses may be cancelled or suspended by law, ideas may take a long time to be erased from the minds of foresters, politicians and local people. The expectations they have of community-based forest management will continue to be influenced for some time by a long tradition in which forest development was directly associated with log ponds, and truckloads of timber being shipped to lowland markets

### 7.3.3 *The logging history of Cagayan Valley*

The natural boundaries of the Cordillera, Caraballo and Sierra Madre mountains protected the rainforests of Cagayan Valley corporate logging operations almost right up until independence. Throughout the Spanish colonial period, there was no timber-cutting for commercial purposes in Cagayan Valley, aside from incidental firewood gathering to serve the local curing plants of the tobacco industry. The Inspeccion de Montes was well aware of the extensive forests in the region:

*"Although its mountains are rich with timber, the people are not actually benefiting from it, other than for the natural necessities of building their houses and small boats for river travel"* (Ramon Jordana y Morera 1874: 15)

Scarcity of labour, the same constraint encountered by the Spanish authorities in the Southern Sierra Madre and other forests located in the proximity of the shipbuilding yards also presented itself in the scarcely inhabited Cagayan Valley. The absence of a North-South road network of any significance, the necessity of crossing the many tributaries of the Cagayan River, and the limited transportation possibilities offered by its shallow waters precluded the development of a viable forestry industry here:

*"The often total impossibility of extracting the woods, the difficulty and expense of the transports overland, and the no less costly transport by river, together with the immense distance that the lumber ships had to cover in order to bring these woods to Manila, the only important market, will ensure that this situation will continue for some time..."* (Semper, 1861 in Jordana y Morena 1874)

It appears that this forester, the first chief of the Spanish forestry bureau, was quite concerned about the negative environmental impacts which the issuance of timber licenses in the forested catchments of the Cagayan River might have on lowland agriculture:

*"As we go about issuing concessions in these areas to individuals, we should take into account the influence of these forest masses on the distribution of the waters, and make sure that reducing these forests will result in the enrichment, and not the sterilization of the fertile valleys of this province."* (Jordana y Morera 1874: 14)

Such concerns continued to be more or less hypothetical throughout the American administration of the Philippines. The energetic efforts of the Bureau of Forestry to attract private investments in large-scale and mechanized logging elsewhere in the country did not begin to affect Cagayan Valley until many years after independence. Although a number of private concessions were issued, these were mainly for the collection of firewood needed for the curing of tobacco leaves. While the commercial extraction and processing of timber led to the development of a minor industry, this never entailed investments or activities on the scale of those pioneered by ILCO in Negros. The limitations this imposed on the extractive

capacity of these concessions is illustrated by the case of Divilacan, Isabela which was allowed to cut 2900 m<sup>3</sup> in 1903, but actually managed to extract only 113 m<sup>3</sup>.

The largest number of concessions and sawmills in the region lay in Cagayan: 30 in 1903, increasing to 35 in 1908. The total volume of wood extracted by these concessionaires was 3,446 m<sup>3</sup>; the 27 timber licenses in Isabela and the lone concession in Nueva Viscaya extracted 1,496 and 73 m<sup>3</sup> of timber respectively (Philcom 1908). Until 1924, the total capacity of the 4 registered sawmills operating here (3 in Cagayan and 1 in Nueva Viscaya<sup>21</sup>) was less than 70 m<sup>3</sup> per day (see also Map 7.1). The lack of economic interest aroused by the option of corporate logging in Cagayan Valley in the early years of the twentieth century is illustrated by the fact that in 1912 a concession in Abulug, Cagayan advertised by the Forestry Bureau as one in which "*red lauan, white lauan, apitong, narig, narra... and guijo are to be had in considerable quantity*" was still being offered in 1924 (Philcom 1912:103 and Fowler 1925).

Until 1924, Cagayan Valley was relatively isolated from the economic and political hub of the country. Three foot trails were used for the trade between central Luzon and southern Cagayan Valley: one was a low route from Dupax to Pantabangan, while the second ran from Imugan (Aritao) to Pangasinan. The third trail, between the towns of Sta Fe and San Jose, was turned into a gravel road in 1924 (Philcom 1925) and approximately 40 years later into what is presently known as the Dalton Pass route. After the opening of this road, Nueva Viscaya quickly overtook Cagayan as a timber producer. The relative importance of these provinces in the national logging industry is indicated by the forest charges collected from the various provinces in 1924: 1,245 pesos from Cagayan and 2,771 from Nueva Viscaya, compared to 1,57 pesos from Negros Occidental (where the large ILCO concession was operating), and only surpassed by Bukidnon (5,844) and Iloilo (5,247). In Isabela, logging had not yet started; the forest charges collected from this province amounted to exactly one Peso and 20 centavos.

On the basis of the limited sources of information on the settlement history of Cagayan Valley, which are presented in the following chapter, it must be concluded that the logging industry in the region only began to expand approximately forty years after agricultural expansion had taken on momentum here, in the early 1930s. In Cagayan, the Abulug concession was ultimately developed by Taggad Industries, Claveria in 1947. One of the first private concessions to cut timber in the Sierra Madre ranges of Isabela was granted to a tobacco trader in San Mariano in 1952; until the early 1960s, operations there depended entirely on manual labour. In 1978, during a visit to the Kalinga forest tribes of San Mariano (the largest town in Isabela, covering an area of over 200,000 hectares of forest land) W.H. Scott observed that

*"Despite at least two centuries of slash-and-burn swidden farming and 20 years of logging so intensive the sound of power saws was audible in most sitios, I saw no significant areas of cogon grass or raw erosion. Where the hillsides were not actually smoldering with the fires of new swiddens, they were densely covered with either centuries-old timber or thick bamboo groves and hectares of bananas"* (W.H. Scott 1982:167-8)

This more or less casual claim that logging had been underway here for almost 20 years by the time W.H. Scott visited San Mariano supports findings from interviews and secondary sources which indicate that commercial logging in Cagayan Valley only took off as a major, mechanized industry around 1965, starting in Nueva Viscaya and Cagayan, reaching Isabela a few years afterwards. In his description of the Philippine lumber industry in the early 1960s, for instance, Tamesis (1963) made no mention of forest industries in Cagayan Valley at all. A few years later, when Wernstedt and Spencer made their tour of Cagayan Valley, the three

<sup>21</sup> The lone sawmill of Nueva Viscaya was located in Bayombong and operated by the provincial government.

areas where forest industries of some significance had developed were still the same as those indicated on the Forestry Map presented by Fowler in 1925: Claveria, Cagayan, Aritao, Nueva Viscaya and San Agustin, Isabela (Wernstedt and Spencer 1967). The authors note that the Cagayan River cannot be used by barges, and see the poor quality of the region's road network as a reason for the stagnation in an industry which in other parts of the country had expanded rapidly after Philippine Independence (see 7.2). By 1966, when these authors were in Cagayan Valley, the Maharlika highway was only a gravel road, interrupted by tributaries of the Cagayan River where commuters and commercial goods were ferried across by boat.

In 1974 the cementing of the highway went no further than the northern parts of the province of Isabela.<sup>22</sup> On the basis of government data from that year, the Philippine Atlas speaks of an *"extensive expansion of logging operations during the past few years, particularly in the upstream provinces (FAPE 1975:47)*. This is supported by informal discussions and interviews with several foresters in the region, and the fact that the first College of Forestry in the region was set up in 1969. The aggregate log production of Cagayan, Isabela and Nueva Viscaya reached 832,727 cubic metres in fiscal year 1972-1973, turning Isabela and Cagayan into the top log-producing provinces in Luzon. Father Vermeulen witnessed the opening up of Quirino, a few years after the province had been established in 1971:

*"...In 1976, I often travelled to Maddella from Cordon. I used to see burnt tree-stumps all the way. These lands were left behind by the concessionaires but the trees were too large for people to be able to cut them, many of them were Tagalogs, not used to that kind of hard physical work. They put fires at the foot of these trees to kill them slowly. These families were very poor, they produced charcoal from the leftovers of the logging industry. You could smell it when you met them, they always smelled of charcoal."* (pers. com., rev. Vermeulen, April '96)

Regional office data on the number of timber-licensing agreements in Cagayan Valley show that of the 11 concessions issued in Quirino, only 6 were still operating in 1980. During that year, there were a total of 42 active logging concessions in Cagayan Valley; the total volume of timber that the Bureau of Forest Development allowed these companies to cut from their concessions was in excess of two million cubic metres per year (see table 7.1). Given the fact that such regulations were not enforced, the actual timber extraction rate during this period must have been higher.

The logging boom lasted almost two decades. During the peak period, between 1969 and 1982, an average 22,000 ha of virgin dipterocarp forest were logged annually (BFD 1987). In view of the annual allowable cut, this figure translated into an extracted volume of 100 m<sup>3</sup> per hectare of old growth. Countrywide, logging intensity (as expressed in the extracted volume per hectare) increased substantially between 1950 and 1970 (Bautista 1994b:30), probably as a result of the introduction of the Selective Logging System in the Philippines in 1954, which contained a new formula for the calculation of the annual allowable cut. Prior to 1950, an average 44 cubic metres of timber was extracted per hectare. The first drop in logging volume, which occurred in 1983, was due in part to a return to the lower original logging intensities resulting from the new AAC formula, and the fact that of the 17 logging concessions operating in Nueva Viscaya and Quirino until 1982, 13 ceased operating in 1983. The second, and final drop in logging operations occurred after 1989. As noted in Chapter 6, this drop is attributable largely to the appointment that same year of a new Regional Executive Director of the DENR. Together with the Philippine army and a multi-sectoral forest protection committee, this non-

<sup>22</sup> Based on the provincial profiles in the Atlas, which make explicit mention of the completion of the national highway in Isabela and that in Cagayan *"Only a very small percentage of its roads are hard-surfaced"* (Philippine Atlas 1974)

forester brought about the suspension and cancellation of more than half the region's corporate timber concessions, and substantially reduced the allowable cut of those that remained. Moreover, in 1992 a nationwide log ban was announced in old-growth forest, and from then on re-logging secondary stands was only permitted if the residual stand had a standing stock of 67 cubic metres of commercial timber. Although most of the region's old-growth forests had been logged by the time these changes came about, the Sierra Madre was still largely covered with residual forests of varying tree crown cover (see Chapter 3).

**Table 7.1 Annual Allowable Cut of Corporate Timber Concessions in Cagayan Valley**

Year	N°. Licensees	Volume Harvested (m <sup>3</sup> )
1972-3		832,727
1980	42	2,297,969
1981	41	2,240,017
1982	44	2,418,166
1983	28	1,477,357
1984	30	1,585,632
1985	35	1,843,614
1986	25	952,572
1987	30	1,020,976
1988	29	921,672
1989	28	1,319,104
1990	24	541,468
1991	20	484,295
1992	18	150,474
1993	13	152,057
1994	12	137,979
1995	10	109,332
1996	7	52,654
1997	4	19,997

Sources: 1972-3 Philippine Atlas (1975) 1980-1997 DENR Regional Office

Thus corporate logging only acquired more significant proportions in the northern Sierra Madre some fifteen years after the national logging boom started in other parts of the Philippines. This delay was due to the inaccessibility of the region, the poorer quality of its forests and the reputation of those forests as a stronghold of the New People's Army. Due to the pronounced dry season in Northeastern Luzon and the frequent occurrence of tropical storms, the forests of northeastern Luzon are said to be of less commercial value than those of the southern Philippines. The strong presence of the NPA inside these forests further discouraged investors from setting up operations in this part of the country. Despite this delay, the forests of the Sierra Madre were about to be depleted of commercially interesting species around the same time that national policies began to curtail the activities of logging companies.

It was not until after the EDSA revolution that the revamped bureaucracy was able to get some degree of control over forest utilization rates and practices in Cagayan Valley, heeding a warning issued by the RP-German forest inventory of 1988, which concluded that 33% of the region's legal forest lands had been denuded and that "in order to keep Region 02 a prime forest area, immediate steps must be taken before too many forests have been converted or degraded" (BFD 1987:41). The same report also concluded that between 1969 and 1981, 7,900 ha of residual forest were converted annually, compared to 22,000 ha of old-growth forest logged each year. The report saw landlessness as the most important cause of the loss of forest resources during the period 1969-1981, taking the variable "forest destruction per capita" as an indicator of the relative land scarcity in each province. The sparsely inhabited provinces

of Kalinga Apayao and Quirino, with the highest per capita forest areas (1.2 ha vs. a regional average in 1987 of 0.44), also have the highest per capita forest destruction rates 181m<sup>2</sup> and 131 m<sup>2</sup> per annum respectively. The report concludes that "these figures indicate a high percentage of landless farmers in these provinces" (BFD 1987:43). The validity of this causal relationship is open to question: if few people live in an area and forest conversion - as a result of a combination of extractive activities<sup>23</sup> - is roughly equal to the rates in more densely populated areas, the area of forest lost will always be higher. This theory was touched upon in Section 2.2 and its relevance will be examined again in the following chapter, which deals with the history of lowland settlement and forest migration in Cagayan Valley. But before discussing the deforestation phase that followed the large-scale extraction of commercial timber, I will conclude this chapter with a few remarks on the role of the Philippine Chinese in the corporate logging industry in Cagayan Valley.

## 7.4 Logging and the Cagayan Valley Chinese

### 7.4.1 Introduction

Corporate logging was an industry which almost from its inception was characterized by a high degree of politicization. Windfall profits were to be made by those who managed to secure a timber concession from the government. This made it possible for them to be generous when it came to sharing the proceeds of their activity with Government officials who had granted them that privilege. This section deals with one such group of actors who gained access to the majority of licenses in Cagayan Valley via a centuries-old strategy for dealing with its uncertain position in Philippine society. As we explore the role of Chinese entrepreneurs in the region's timber industry, it is important to keep mind that in other parts of the Philippines other dominant groups or families played a similar role as decision makers in the logging industry in their own areas at the start of timber-licensing. It is no coincidence that in the case of the Cagayan Valley, the logging boom (see Section 7.3.3) coincided with the rise and fall of the Marcos administration. To avoid the risk of stigmatizing this particular ethnic community by highlighting their role in the logging industry, it should also be noted that the majority of labourers, contractors, politicians, bureaucrats and field officials who shared in the bonanza of the seventies and eighties were Filipinos. The aim of this section is to examine the role that the Chinese entrepreneurs actually played in an industry which, as a whole, provided direct and substantial benefits to all actors involved.

### 7.4.2 Brief historical sketch of the Philippine Chinese

Different claims have been made regarding the earliest date of trading contact between China and the Philippines. Wu and Wu (1980, cited in Te Velde 1994) place these initial contacts in the seventh century, while others trace the origins of Sino-Philippine trade back to the Zhou dynasty between 1966 and 221 BC (Peplow 1991). By the 10th and 11th centuries, Chinese products were regularly reaching the Philippines, while the earliest written accounts in Chinese on trade between China and Ma-i (also spelt Ma-yi, or Mait, the Chinese names for the Philippines) date back to the 13th and 14th centuries (ibid:16). The earliest known evidence of trade between Cagayan Valley and China, either directly or through the Ilocos province, dates back to the 16th century, when the Ibanag buried their chiefs with elegant black textiles

<sup>23</sup> Kalinga Apayao had the largest TLA of the Region, the Cellophil Corporation, which was 190,000 ha in size, with an AAC of 400,000 m<sup>3</sup>/yr. (Records of the DENR Regional Office, 1994)

with gold-embroidered images of lions, fabrics which had clearly been made in China (W.H.Scott 1994:264).

Ever since these early trading contacts there has been a community of ethnic Chinese in the Philippines, *i.e.*, "people who speak and understand Chinese, who have undergone some form of Chinese education and who observe Chinese customs enough to be considered by themselves and their neighbours as Chinese" (see 1990 in Te Velde 1994:9). In 1990 it comprised between 600,000 and 1 million people in 1990, or roughly 1.5% of the population. Before examining in more detail the role of the ethnic Chinese in the Cagayan Valley logging industry, I will deal with the more general question of why they have always conducted themselves so obviously as a community, attaching great importance to establishing and maintaining close relationships with each other, and with their relatives in China, although they have also forged strategic alliances with local and national authorities in the wider society around them. The answer is to be found largely in the uncertain position they have occupied within Philippine mainstream society since colonial times.<sup>24</sup>

Until the late eighteenth century, economic life in Manila more or less revolved around the galleon trade. Spain's colonial administration of the Philippine islands depended heavily for its income on Manila's strategic position as a transshipment point between Southeast Asia and Spain's silver mines in Mexico. The majority of the Philippines' small Spanish community of priests, officials, businessmen and soldiers, which only began to exceed the 2000 mark after the opening of the Suez canal in 1869 (Roth 1983), lived in or near Manila, and looked down on trade as a less than honourable way of making a living. Thus while Spain's occupation of the Philippines placed the Chinese in the unpleasant position of being looked down upon and even socially ostracised, it also presented them with a new economic opportunity: exploiting distant markets via the galleons. Jesuit historian Francisco Colin gives an enthusiastic description of the wide range of Asian products traded through the Philippines to New Spain:

"The pearls and precious stones of India, the diamonds of Narsinga and Goa, the rubies, sapphires and topazes and the cinnamon of Ceylon, the pepper of Sumatra and Java, the cloves, nutmeg and other spices of the Moluccas and Banda, the silks of Persia, the wool and carpets of Ormuz and Malabar, the rich hangings and bed coverings of Bengal, fine camphor from Borneo, balsam and ivory of Abada and Cambodia, civet of the Lequios and silks of all kinds from China - raw and woven in velvets and figured damasks, taffetas and other cloths of every texture and design and color..." (Fr. Colin in Bain 1984:110)

Referred to as *sangleys*, a term which literally means 'merchant' but which had a negative connotation due to the contempt of the Spanish for the profession (Tan 1988), the Chinese had to live in so-called *parian* villages outside Intramuros, segregated from the Spanish and *indio* people. In 1764, when Spain regained Manila after two years of English rule, all the Chinese who had collaborated with the English army and authorities were expelled, reducing their number to under 1,500 by the end of the eighteenth century (Anderson 1988). As world commodity markets opened up in the nineteenth century, export-oriented agriculture gained in importance, and the Chinese were suddenly seen as potentially useful in opening up markets for the crops produced in this new sector (Wickberg 1965). As a result, the immigration ban on Chinese citizens was abolished in 1834, and Chinese immigration was openly encouraged. The Manila trading companies vacated when the Chinese were expelled had been temporarily handled by mestizo Chinese, descendants of itinerant traders and Filipina mothers. These

<sup>24</sup> For a more comprehensive discussion, see Edgar Wickberg's "The Chinese in Philippine Life" (1965, New Haven: Yale University).

mestizo Chinese now fanned out into the provinces to engage in agribusiness.

The American period brought economic prosperity to the Philippine Chinese. Although the Chinese Exclusion Act of 1934 limited the influx of Chinese to those with professional qualifications, traders and their direct dependants, Chinese businesses in the Philippines were able to expand and diversify by opting for industrial activities and moneylending. After independence, however, the vulnerability of their economic gains again became apparent: Public Markets were nationalized in 1948, the retail trade in 1954, and the rice and corn industry in 1960, and all the businesses in these areas which were owned by foreigners were liquidated. Such unexpected encounters with how were perceived and treated in the Philippines explains why many Philippine Chinese retained their Chinese citizenship even after having lived in the country for many years. However, they no longer had the option of leaving the Philippines after China closed its borders in 1949, isolating them from their relatives at home. Many Chinese survived by changing business, by using Filipino fronts, or by entering into common law marriages with Filipina women, which made it possible to own land, set up a business and acquire timber licenses without having to give up their Chinese nationality.

However, through a combination of thrift, economic competitiveness and, later on, license-based rent capitalism, the Chinese community has secured a more secure position within Philippine society. Former President Marcos realized the potential of establishing good relations with the affluent community of ethnic Chinese (Cariño in *te Velde* 1992:11) In 1975, he established formal diplomatic relationships with the People's Republic of China and laid down new conditions under which the Chinese who were illegally employed could apply for citizenship, an opportunity of which many availed themselves (*Te Velde* 1994:39). Nevertheless, the ethnic Chinese continue to be a cultural minority that is too conscious of its vulnerability to socioeconomic and political changes in mainstream society to abandon its longstanding strategy of maintaining strong cultural and economic ties with each other and, either individually or collectively, with other key actors in society.

#### 7.4.2 *The role of the Chinese in the Cagayan Valley wood industry*

The ethnic Chinese community in Cagayan Valley is still believed to number less than 10,000, not even 0.5% of the total population. Chinese tobacco traders were the first to arrive, from the late nineteenth century onwards. Equipped by wealthy relatives in Manila with 'substantial' cash advances to establish their businesses in the province (*Te Velde* 1994; pers. com, Engr. Masigan, Nov. 1994), they entered into the business of buying and selling tobacco leaves and the *papeletas* that growers had been given during the last years of the Monopoly. These were credit papers that guaranteed future payment for tobacco leaves already delivered. In this manner, Chinese traders were able to provide the agricultural credit that farmers needed to continue cultivating their crops. A second, and larger influx of Chinese migrants occurred during the American period, when the cultivation of tobacco once again flourished, and the Chinese were given more freedom to play their traditional role in the country's economic development. These migrants became isolated from their relatives at home when China closed its borders in 1949, but after the normalization of Sino-Philippine diplomatic relations in the 1970s, a third wave, consisting largely of relatives of those who had arrived before the Second World War, settled in Cagayan Valley.

Members of the ethnic Chinese community were among the most influential decision makers in the corporate logging industry in Cagayan Valley. Interviews with key informants in the DENR, local academics and people who worked for the TLA holders and their contractors in Cagayan Valley confirm reports by Vitug (1993) and the Philippine Centre for Investigative Journalism (1991) that most of the Sierra Madre logging concessions issued

between 1965 and 1975 were granted to Manila-based associates of President Ferdinand Marcos, many of whom were of Chinese descent. DENR records on the complicated ownership constructions of logging companies confirm that often the majority of those serving on the Board and holding shares of logging enterprises active in Region 02 have Chinese family names. While that does not necessarily mean that the ethnic Chinese were in full control of these enterprises, it does appear to confirm other reports that people of Chinese descent played an influential role in corporate logging in Cagayan Valley.

**Table 7.2 Chinese participation in Timber Licensing Agreements, Cagayan Valley, 1992**

(Source: DENR records, found in Vitug 1993:208-213)

	Area (ha)	AAC (m <sup>3</sup> )	Chinese participation
<b>CAGAYAN/KALINGA APAYAO</b>			
Southern Plywood	71,300	13,723	Board membership, shareholder minority
North Luzon Mahogany Exporters	54,760	17,998	Chairmanship, shareholder majority
Sta Teresita Wood Ind.	36,100	12,115	Board membership, shareholder minority
Sierra Madre Wood Ind.	19,050	9,010	Chairmanship, shareholder majority
La Villa Resources Corp.	57,620	15,469	Shareholder majority
<b>ISABELA</b>			
CLLMI	26,920	18,685	President, shareholder majority
LuzMaTim	26,125	6,760	None
Liberty Logging	27,260	10,964	Board majority, shareholder majority
<b>QUIRINO</b>			
Twin Peaks Devel. Corp.	21,290	10,805	None
Luzon Loggers	23,620	3,868	Chairmanship, all shareholders

NB: Shareholder minority/majority refers to the names of the persons concerned, and thus provides no information on the number of shares held by these shareholders

Of all the Chinese concessionaires operating in the Sierra Madre since 1970, Don Alfredo Lim was the most influential. During the 1980s, he managed a conglomerate of logging firms with access to over half a million hectares of rainforest in the Sierra Madre (Vitug 1993:16). Lim's logging operations were farmed out to local contractors in return for royalties, paid out per cubic metre. Lim amassed this conglomerate of concessions through his personal relationship with President Marcos. That link enabled him to pressure the Bureau of Forest Development to take action against violations of forestry regulations in a neighbouring concession, so that when it was suspended or cancelled, he could set up a new company to handle the concession. At the local level, Lim maintained his good rapport with political clans in Cagayan Valley, who brokered forest access between Lim and the New People's Army. Both the NPA and political brokers in the lowlands shared in the revenues resulting from such operations. Several government officials confirmed that the provincial governor of Isabela was in a position to extract logs from several forestry concessions in his province, either directly or through sharing agreements, in return for protecting them from harassment by the NPA (Lopez 1994:35, see also 5.3.2).

In 1994, Aggabao and Te Velde (1994) conducted the first and thus far the only survey in recent years on the Chinese business community in Cagayan Valley, more specifically, on the relative importance of the wood industry in their overall business portfolio. Because the Dutch researcher spoke Chinese, and her Filipino counterpart was a forester with an extensive network of trusted contacts in the wood industry, the results of this survey must be considered the first reliable glimpse behind the scenes of the inaccessible Chinese business community in Cagayan Valley. Before presenting the major findings of the survey, a number of remarks are in order on its scope and timing:

- 1) The corporate logging industry had already contracted significantly during the year this survey was carried out. As we saw earlier, the heyday of the wood industry in Cagayan Valley was the period 1970-1990; of the 24 corporate timber concessions still operating in Cagayan Valley in 1990, 19 were owned by Chinese. Because of the legal prerequisite for sawmills to be connected to a TLA, the same ratio applies here. The majority of mini-sawmills are owned by Filipinos (Aggabao 1994, citing DENR records). At the same time, small-scale wood-processing industries were expanding in 1994 because of new government initiatives to secure the supply of raw materials for these industries by legalizing carabao logging through community forestry projects.
- 2) The use of a legal business as a front for illegal activities has been commonly practised, particularly in the highly regulated wood industries. Hence official statistics and secondary data on a relatively inaccessible group like the Chinese can yield only limited insight into the actual composition of their business portfolio. This made it difficult for the researchers to verify their findings by comparing them with existing information from secondary sources.

In the eight towns covered by the survey, two large sawmills and five corporate logging firms were still operating, all managed by Chinese entrepreneurs. These logging activities were a relatively minor component of overall Chinese business interests: out of 679 Chinese enterprises, only 28 were involved in logging or wood-processing industries. Chinese participation in the furniture industry - by the time of the survey already a much more important sector than logging - was minimal: less than 2% of the 675 furniture-making shops were owned by Chinese entrepreneurs. The importance of the logging industry in the overall range of economic activities engaged in by the ethnic Chinese community in Cagayan Valley is now small and declining; 67% of the local Chinese earn a living in the trade and merchandising of bulk products like grain and cement, the transport sector, and in grocery and hardware stores stocking a wide variety of products, many from China. Financial services, especially informal money-lending, is the quintessential Chinese business in Cagayan Valley. Around the time corporate logging began to decline in the Sierra Madre, the influence of this activity on deforestation began to increase, as I will show in Chapters 8 and 9. By financing small scale logging, consumptive and crop-production loans in the lowlands and the introduction of the same crops on the farms of forest migrants, the ethnic Chinese continue to be influential actors in the changing patterns of land use and ownership in Cagayan Valley.

It would be true to say that the ethnic Chinese have played two more or less consecutive roles in the deforestation of the Sierra Madre. First, Manila-based Chinese opened the old-growth forests of the Sierra Madre, protected by the President of the Philippines and his associates in the bureaucracy. Relatives and trusted local members of the Chinese business community own most of the local contracting companies extracting forest products from the TLA concessions on a royalty basis. As on the national level, a relatively small number of Chinese in Cagayan Valley were in the logging business. The following chapters will examine how agribusiness and informal moneylending, the activity that brought most Chinese to the region from the late nineteenth century onwards, are currently taking over from logging, highlighting the second major role played by the Chinese in forest migration and deforestation in the Sierra Madre.

## 7.5 Conclusion

During its first fifty years of independence, the Philippine government managed the people and natural resources of Cagayan Valley in a manner suggestive of the way the nation itself was

governed during four centuries of colonial rule. Having taken upon itself the sacred mission of bringing *development* to the people and forests of Cagayan, and supported by the patronage of local political leaders, the national government enabled Manila-based entrepreneurs to log the lion's share of old-growth forest stands in the Sierra Madre. The ancestral land rights of the indigenous forest tribes were disregarded, the longstanding tradition of mutual fear and hostility between these groups and lowland communities was reinforced, and forest occupants were portrayed as the cause of the failure to achieve sustainable forestry operations by means of the Selective Logging System. By declaring all forests state property, defining corporate timber licenses as the sole legal mode of access to these lands, and declaring all the forest-based activities of 'forest occupants' illegal, government officials became the brokers between this large resource-base and various members of the citizenry, companies, forest occupants and indigenous forest people, with private stakes in the forest lands.

A few hundred years earlier, self-interest, mixed with the holy mission of Christianization, led Spain to occupy the Philippines. Colonial rule was established by linking up with indigenous *principalía*, who facilitated Spain's extraction of tributes from the local population. Ancestral rights to the land and resources of Cagayan were denied when all lands were declared the property of the King of Spain. When it proved impossible to bring upland tribes under control, the traditional enmity between these two groups of Filipinos was exploited in order to strengthen the position of the local elite. The Spanish authorities acquiesced in their monopoly on the trade in their prohibited products. Through the imposition of a tobacco monopoly, the discrepancies between the indigenous elite and the majority of poor farmers were intensified, and brokerage functions were added to the existing patronage role of the elite, reinforcing their leadership position.

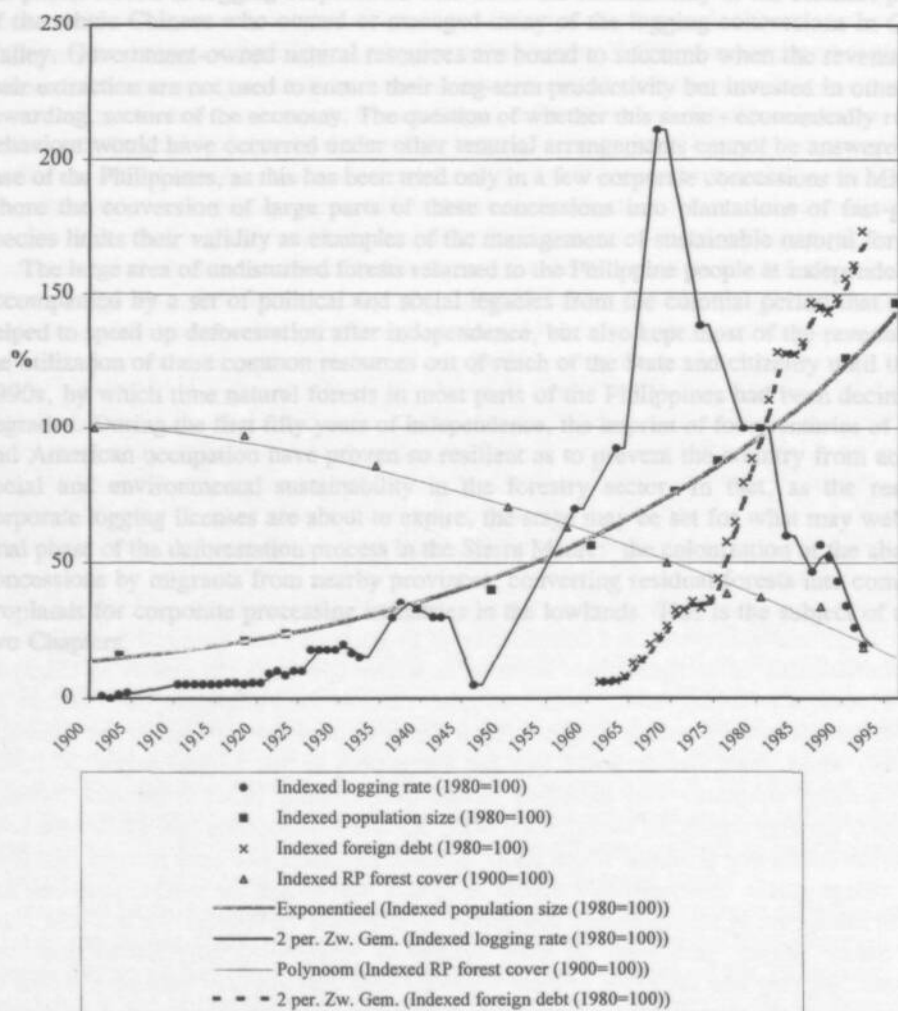
The role of these rural leaders, who resembled their pre-colonial predecessors in the sense that their reign was also based on a combination of magnanimity and intimidation, is crucial to an understanding of the similarities between these two epochs in the history of Cagayan Valley. Processes of social reform, which in other parts of the Philippines had been set in motion in the nineteenth century, did not reach Cagayan until the collapse of the Tobacco Monopoly, some years before Spain lost the Philippines to the United States in 1898. Cagayan's social structures were therefore handed over virtually intact to the new colonial government, the only significant modification being that a newly emerging mercantile elite now occupied the leadership positions which under Spanish patronage had been reserved for pre-colonial village chiefs. Motivated by a mix of economic interest and the need to convince the American electorate of its democratic mission to 'prepare the Philippines for self-rule', the United States swiftly introduced its own system of representation-by-district into the Philippines, playing into the hands of local leaders whose clientele now became a means of gaining access to a new level, where leadership could be consolidated: the nation-state and all the natural resources the Philippines had 'inherited' from its colonial rulers.

When Major Ahern introduced the system of public licenses for private logging corporations in the early twentieth century, his aim was to provide an incentive to invest in the machinery required for mechanized logging. This incentive proved effective in attracting short-term private investment into the forestry sector, but failed to persuade the majority of companies to commit themselves to the sector in the longer term. Not many entrepreneurs were prepared to invest resources and capital into the long-term productivity of a leased resource, let alone in a slow-growing natural forest owned by a government that could easily alter its policies before the investor was able to enjoy a return on his investment. Instead, concessionaires opted for the economically rational strategy of limiting their forestry engagement to short-term investments in mechanized systems of timber extraction, and putting

earnings from that activity into other, more profitable sectors of the economy. Thus the manner in which the Cagayan concessions were handled by their holders and contractors, many of whom share Chinese origins, tells us more about the sustainability of this concept of leasing out public forests to logging corporations than about the sustainability of the business practices of the ethnic Chinese who owned or managed many of the logging concessions in Cagayan Valley. Government-owned natural resources are bound to succumb when the revenues from their extraction are not used to ensure their long-term productivity but invested in other, more rewarding, sectors of the economy. The question of whether this same - economically rational - behaviour would have occurred under other tenurial arrangements cannot be answered in the case of the Philippines, as this has been tried only in a few corporate concessions in Mindanao, where the conversion of large parts of these concessions into plantations of fast-growing species limits their validity as examples of the management of sustainable natural forests.

The large area of undisturbed forests returned to the Philippine people at independence was accompanied by a set of political and social legacies from the colonial period that not only helped to speed up deforestation after independence, but also kept most of the revenues from the utilization of these common resources out of reach of the State and citizenry until the early 1990s, by which time natural forests in most parts of the Philippines had been decimated or degraded. During the first fifty years of independence, the imprint of four centuries of Spanish and American occupation have proven so resilient as to prevent the country from achieving social and environmental sustainability in the forestry sector. In fact, as the remaining corporate logging licenses are about to expire, the stage may be set for what may well be the final phase of the deforestation process in the Sierra Madre: the colonization of the abandoned concessions by migrants from nearby provinces, converting residual forests into commercial croplands for corporate processing industries in the lowlands. This is the subject of the next two Chapters.

**Fig. 8.1 Indexed logging rate, population, foreign debt and forest cover, Philippines (1900-1995)**



Sources: Bautista 1990, 1994; Boyce 1993; Kummer 1992; NSO 1995; various censuses and Phil. Com reports; see also fig 7.1.

## Perpetual Land of Promise; forest migration in historical perspective

### 8.1 Introduction

Population growth, and the accompanying increase in the demand for timber, fuelwood and agricultural land, are commonly seen as factors contributing to tropical deforestation (see Section 2.2.2). The rapid loss of Philippine forest cover did indeed go hand-in-hand with a steady increase in the population. However, as Figure 8.1 illustrates, other factors of potential influence on forest cover, such as corporate log extraction rates and the national debt, also changed dramatically in the postwar years. Between 1962 and 1992, the national debt rose from 1.5 to 30 billion dollars (Boyce 1993; NSO 1995). During the same period, government records (cited in Bautista 1991) show that 230 million cubic metres of premium hardwood were extracted from the country's natural forest stands. As we saw in the previous chapter, there is poor congruence between official records and actual log extraction levels. This, and the high extractable volume of 100 m<sup>3</sup> per hectare which is assumed, means that at least four million hectares of old-growth dipterocarp was opened for logging during this period. But does the fact that forest decline and population growth were correlated in statistical terms tell us how population growth influenced deforestation? This chapter aims to answer this question for the case of the Sierra Madre.

Issues dealing with the relation between population growth and deforestation are influenced by undercurrents of - largely implicit - ideology. In the Philippine context, for example, in questioning whether population pressure *per se* matters that much to deforestation one risks playing into the cards of anti-family-planning groups, such as the influential Roman Catholic Church. On the other hand, a focus on population growth as the key cause of deforestation loses sight of the political and economic dimensions of environmental degradation, and may be interpreted by progressive groups as naive and conformist. My investigation does not take sides on this issue. Accepting the relevance of the population-resource equation for sustainable development, this chapter approaches the question via one of the causes of deforestation identified in Chapter 4: forest migration. I will begin with a brief sketch of the region's agrarian history, examining how its migration balance with neighbouring regions changed over time. Combining a limited amount of secondary data with assumptions derived from general land-distribution patterns in the Philippines as a whole will make it possible to estimate the per capita availability of farmlands in the Cagayan Valley lowlands. To gain a better idea of the possible role of constrained access to farmlands as a possible source motive in forest migration, I will give some indication of the way the region's farmlands are distributed among the farming population. Illustrations of landowner response to the various land reform initiatives undertaken this century point up the resilience of this distribution pattern. The role of credit is then examined as a factor contributing to the poor results of land distribution policies. I conclude with an overall synthesis of the context of forest migration to the Sierra Madre.

## 8.2 Contours of the original landscape

Cagayan Valley has always been one of the Philippines' most sparsely populated regions. Still, archeological findings suggest that the province of Cagayan was among the first inhabited areas on the island of Luzon. The oldest known artefacts of human habitation in Cagayan Valley were found in the Musang Caves in Peñañablanca, Cagayan and date back to 12,000-9,000 B.C. Excavations at Palanan Bay revealed the post-hole settings of two houses, evidence of human habitation between 2,500 and 1,500 B.C. (Bellwood 1985:223). Scott (1981) attributes the early inhabitation of the area to the natural savannahs and open floodplains of the Cagayan river, which offered early inhabitants open hunting grounds. Bellwood (*ibid.*) concurs, and hypothesizes that if there had been lowland rainforests here, as in most other parts of the Philippines<sup>1</sup> these would probably have been reduced or broken up during the dry glacial periods, creating savannahs that have been sustained by the region's pronounced dry season and the rain-shadow effect of the mountain ranges surrounding it<sup>2</sup>.

Travel accounts of early visitors to the region indicate that not all grasslands here are of natural origin. While most towns in Cagayan Valley are today surrounded by vast areas of cultivated land and 'idle grasslands' (Maus and Schieferli 1989), Dean Worcester<sup>3</sup>, made the following observation after his visit to Isabela in early 1900:

*"the whole province of Isabela, practically, with the exclusion of the territory inhabited by the wild people, is included within the towns. You can find a virgin forest within the limits of a municipality"* (Phil. Com. 1910:562).

However, an earlier traveller writing about his southbound passage through the town of Cabagan, one of the oldest settlements in Cagayan Valley, noted that *"from the road via Cabagan there is nothing else to be seen but grasses and reeds..."* (Jordana y Morera 1874: 15).

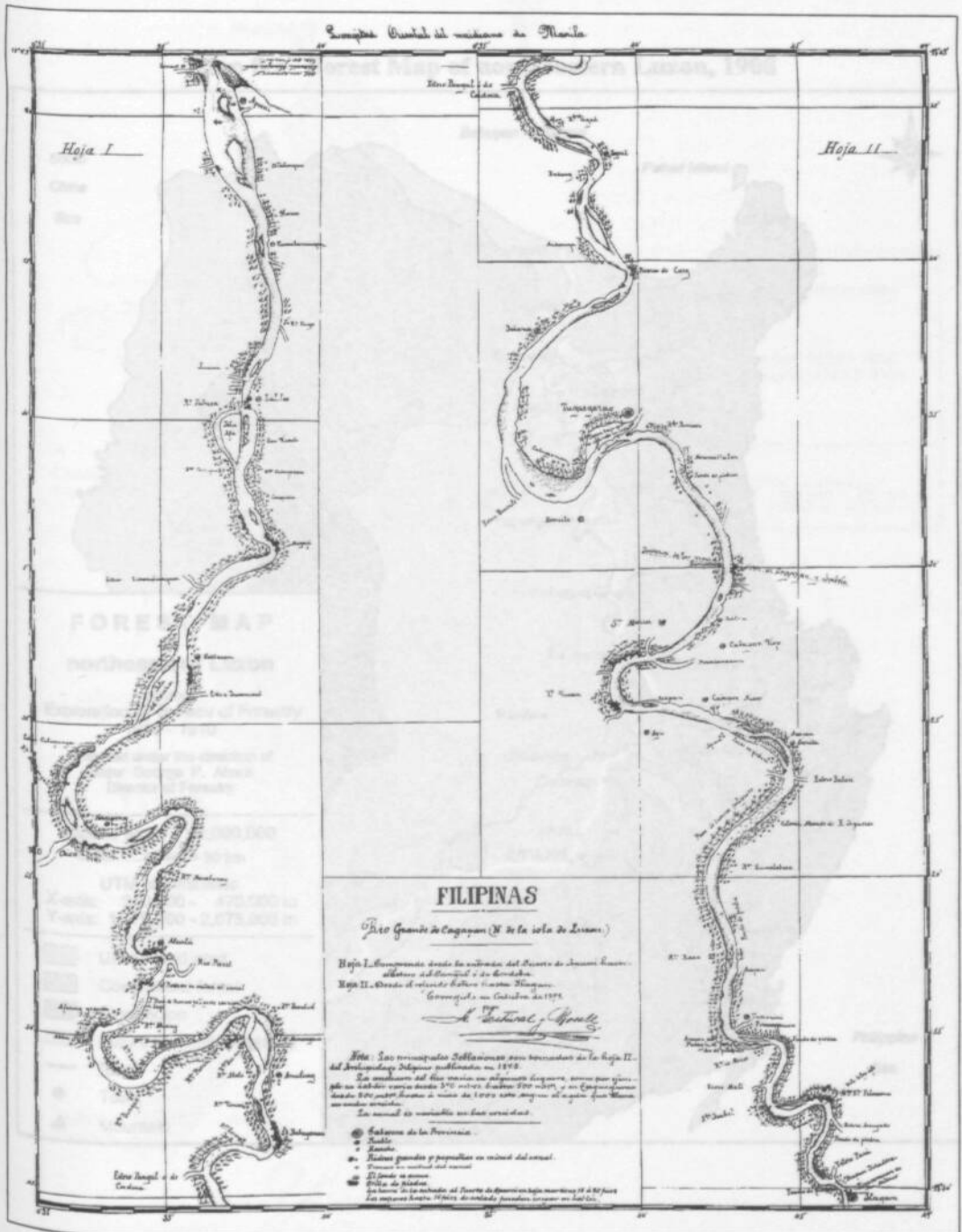
Neither impression can be accurately verified, since there are no geographical or land-use surveys prior to 1900 (U.S. Coast and Geodetic Survey 1900:3). The first American government administrators managed the natural resources of the Philippine Islands using maps largely based on nineteenth-century data compiled by the Jesuit friars of the Manila Observatory. Annex D shows the map of Nueva Viscaya, Isabela and Cagayan which they prepared, and which were published by the U.S. Coast and Geodetic Survey in 1900. Maps 8.1 and 8.2 are examples of the kind of land-use information that the American administrators had on land use in Cagayan Valley. Map 8.1 is a late-nineteenth-century navigation map of the northern half of the Cagayan River, the region's main transportation artery until well into the twentieth century. This map confirms the observations of both

<sup>1</sup> *Botanists are generally agreed that when man first reached the Philippines, the archipelago was largely covered by that form of vegetation called a tropical rainforest* (W.H. Scott 1981:5).

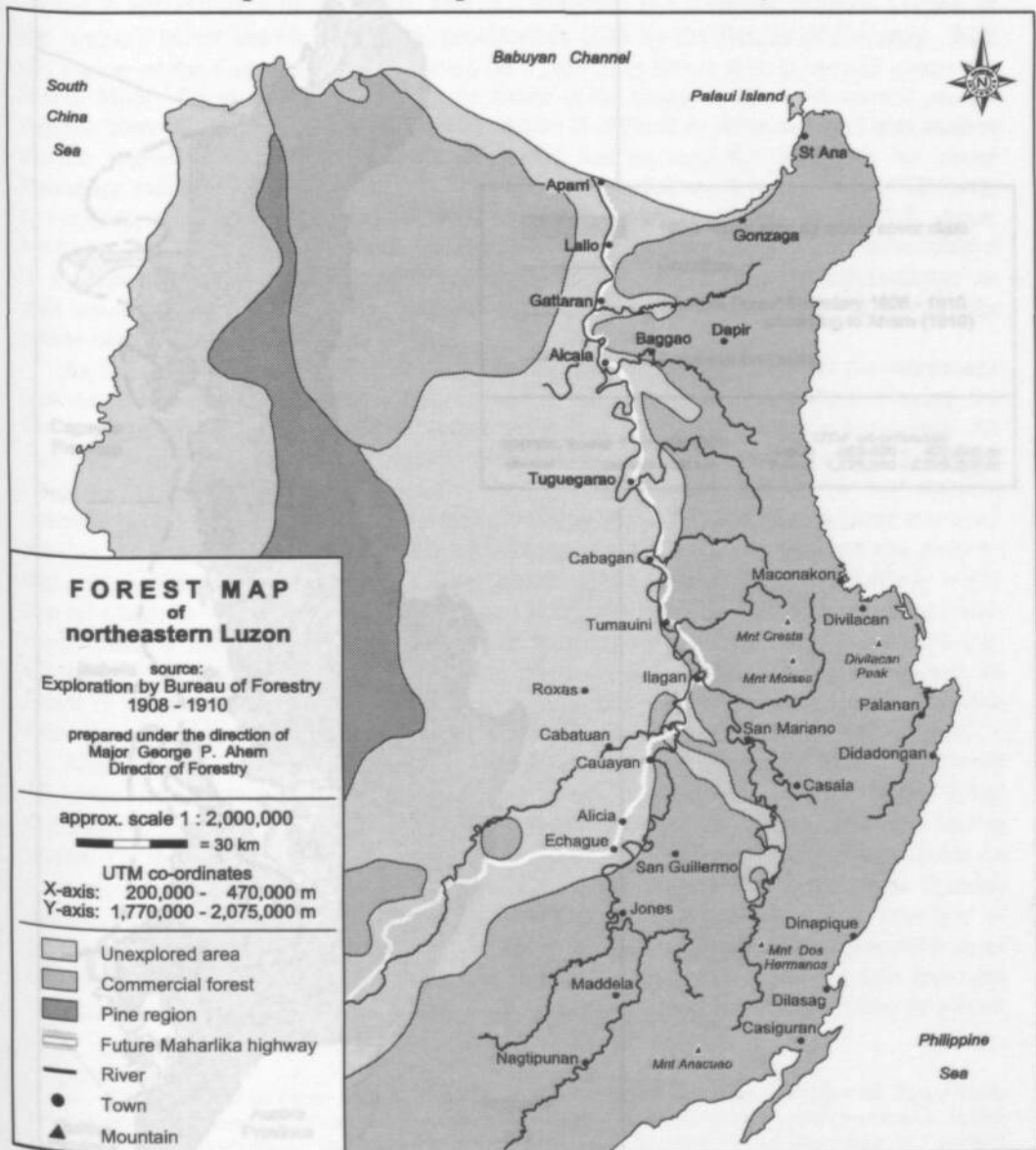
<sup>2</sup> *"there have been 20 full glacials within the past 2 million years, and the same number of intervening true interglacials. ...There is still some disagreement about the duration of the glacial-interglacial cycles, but present views seem to favour long glacials of about 100,000 years, separated by much shorter interglacials of about 10,000 to 30,000 years.....The major worldwide effects of glaciation were to lower sea-levels, vegetation zones and temperatures, and these changes were all felt quite strongly in tropical latitudes"* (Bellwood 1985:18-19)

<sup>3</sup> Dean C. Worcester was a member of the first and second Philippine Commission, Secretary of the Interior of the Government of the Philippine Islands until 1913 and is described as *"the most influential man in the Philippines between 1901 and 1912"* (Glecek 1976, cited in Sullivan 1992:99). After his career as a senior government official, he developed considerable business interests in the Philippines, particularly in the coconut industry, cattle raising and shipping. Sullivan (1992) offers a detailed analysis of Worcester's role in the American administration of the Philippines.

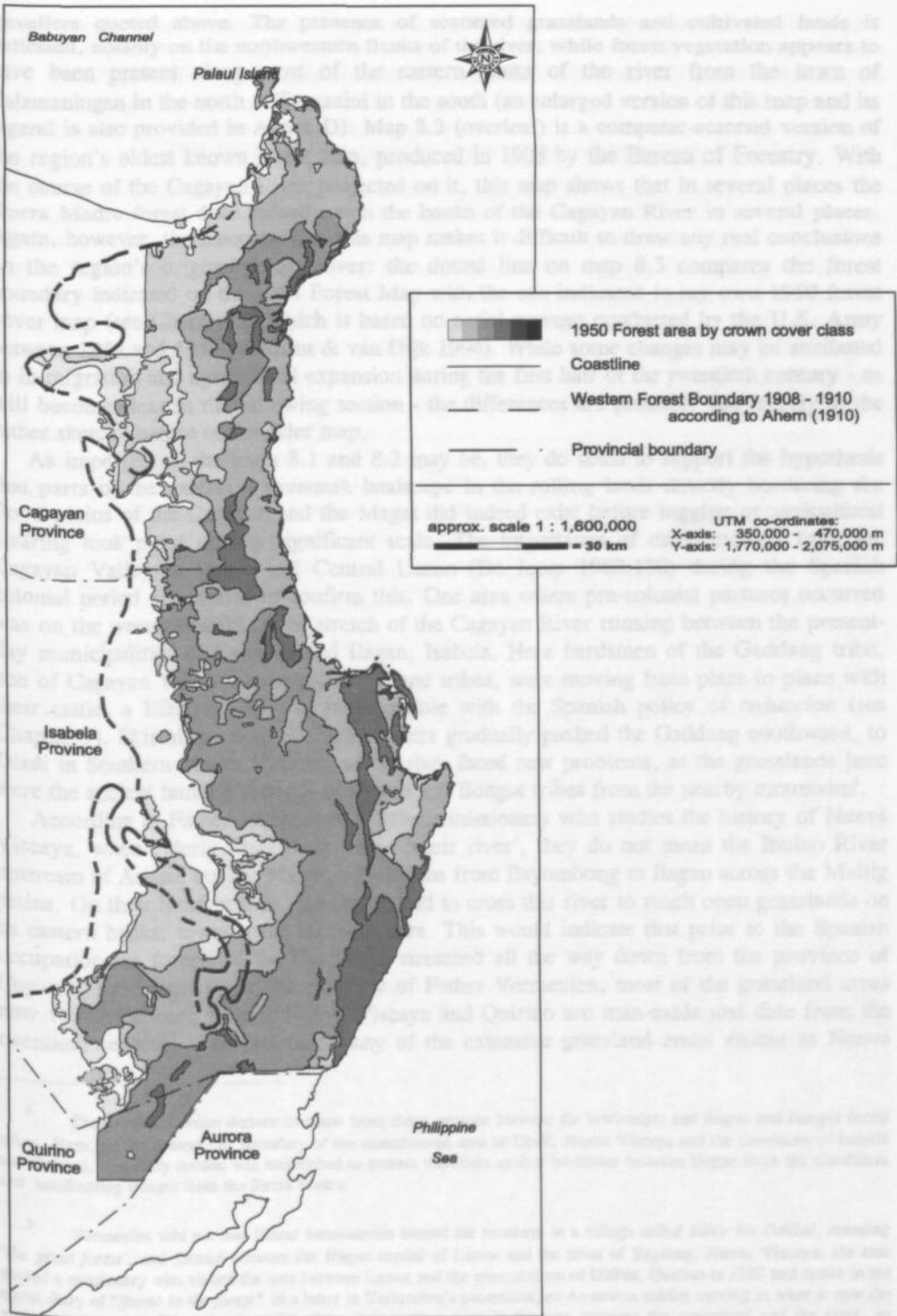
Map 8.1 Navigation Map of the lower Cagayan River, 1898



**Map 8.2 Forest Map of northeastern Luzon, 1908**



**Map 8.3 A comparison of 1908 and 1950 forest boundary, Northern Sierra Madre**



travellers quoted above. The presence of scattered grasslands and cultivated lands is indicated, notably on the northwestern flanks of the river, while forest vegetation appears to have been present along most of the eastern banks of the river from the town of Calamaniugan in the north to Tumauni in the south (an enlarged version of this map and its legend is also provided in Annex D). Map 8.2 (overleaf) is a computer-scanned version of the region's oldest known forest map, produced in 1908 by the Bureau of Forestry. With the course of the Cagayan River projected on it, this map shows that in several places the Sierra Madre forest does indeed touch the banks of the Cagayan River in several places. Again, however, the inaccuracy of this map makes it difficult to draw any real conclusions on the region's original forest cover: the dotted line on map 8.3 compares the forest boundary indicated on the 1908 Forest Map with the one indicated in my own 1950 forest cover map (see Chapter 3), which is based on aerial surveys conducted by the U.S. Army between 1949 and 1952 (Clement & van Dijk 1994). While some changes may be attributed to in-migration and agricultural expansion during the first half of the twentieth century - as will become clear in the following section - the differences are probably due largely to the rather sketchy nature of the older map.

As imperfect as the maps 8.1 and 8.2 may be, they do seem to support the hypothesis that parts of the extensive savannah landscape in the rolling lands directly bordering the flood plains of the Cagayan and the Magat did indeed exist before logging or agricultural clearing took place on any significant scale. The importance of cattle exports from the Cagayan Valley to Ilokos and Central Luzon (De Jesus 1980:130) during the Spanish colonial period also seems to confirm this. One area where pre-colonial pastures occurred was on the western banks of the stretch of the Cagayan River running between the present-day municipalities of Cauayan and Ilagan, Isabela. Here herdsmen of the Gaddang tribe, one of Cagayan Valley's indigenous lowland tribes, were moving from place to place with their cattle, a lifestyle that was incompatible with the Spanish policy of *reduccion* (see Chapter 7). Skirmishes with Spanish soldiers gradually pushed the Gaddang southward, to Diadi in Southern Nueva Viscaya, where they faced new problems, as the grasslands here were the ancient hunting grounds of Ifugao and Ilongot tribes from the nearby mountains<sup>4</sup>.

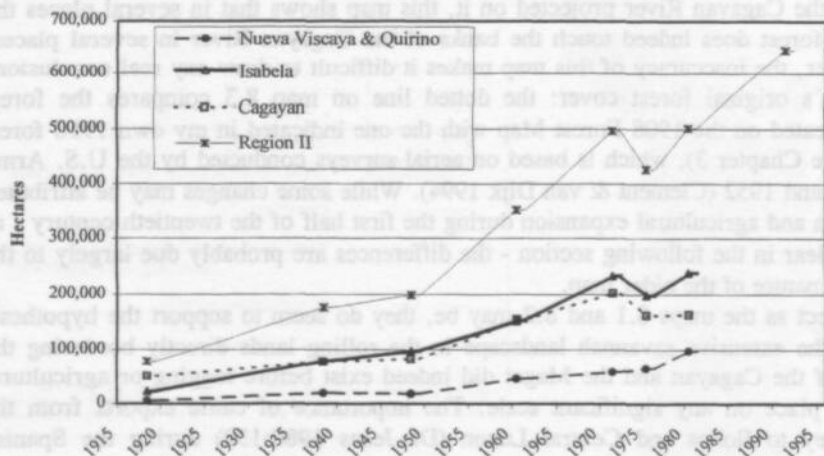
According to Father Vermeulen, a Scheut missionary who studies the history of Nueva Viscaya, when elderly Ifugao talk about 'their river', they do not mean the Ibulao River upstream of Aritao, but the Magat, which runs from Bayombong to Ilagan across the Mallig plains. On their hunting trips, the Ifugao had to cross this river to reach open grasslands on its eastern banks, towards the Sierra Madre. This would indicate that prior to the Spanish occupation the forests of the Cordillera stretched all the way down from the province of Ifugao to the Magat River. In the view of Father Vermeulen, most of the grassland areas now visible between Ifugao, Nueva Viscaya and Quirino are man-made and date from the twentieth century<sup>5</sup>. The fact that many of the extensive grassland areas visible in Nueva

<sup>4</sup> The town of Cordon derives its name from these tensions between the lowlanders and Ifugao and Ilongot forest tribes. Here, on the present-day boundary of the mountainous area of Diadi, Nueva Viscaya and the provinces of Isabela and Quirino, a military cordon was established to protect travellers against hostilities between Ifugao from the Cordillera and headhunting Ilongot from the Sierra Madre.

<sup>5</sup> Vermeulen told me that *Scheut* missionaries hunted for monkeys in a village called *Bakir Na Dakkal*, meaning 'the great forest', and located between the Ifugao capital of Lamut and the town of Bagabag, Nueva Viscaya. He also quoted a missionary who visited the area between Lamut and the present town of Diffun, Quirino in 1927 and spoke in his travel diary of 'Ifugao in the forest'. In a letter in Vermeulen's possession, an American soldier serving in what is now the police compound in Bayombong, writes about deer-hunting trips in the area between the compound and the river, an indication that they did not need to cross the Magat river (in a westward direction) to reach the Cordillera forest, 'that is

Viscaya today are of fairly recent origin may also be concluded from the words of a friar who worked in that province in 1895 and wrote that "stockraising is not prospering here, because of a lack of pastures" (Fr. Francisco Carrozal in Malumbres 1918:483).

Fig 8.2 Changes in cultivated farm-area, Cagayan Valley (1918-1991)



Sources: Agricultural censuses; NSO 1995; Data furnished by DA Tuguegarao, Cagayan

In the 20<sup>th</sup> century, the region's non-forest areas began to expand. Fig. 8.2 shows the changes in cultivated farm area in the Cagayan Valley and its three major provinces (the province of Quirino was carved out of Nueva Viscaya in 1971). The total area of cultivated farmlands expanded from 78,796 hectares in 1918 to more than 600,000 hectares in 1991. Although some expansion took place before independence, by far the largest area (400,000 ha) of farmlands was added after 1948. The following section examines the region's settlement history in more detail.

### 8.3 Migration and agricultural expansion in the Cagayan Valley lowlands

#### 8.3.1 Late Spanish period: tobacco farmers migrate to Cagayan

Throughout the Spanish colonial occupation, Cagayan Valley was a sparsely populated province; its indigenous lowland communities, such as the *Ybanag*, *Gaddang*, *Itawi* and *Yogad*, lived in scattered settlements along the lower and mid-reaches of the Cagayan River, where the its most extensive floodplains lay. In addition to these lowland tribes, who are of Malay origin, there are the negrito *Agta* or *Dumagat*: they are of Australoid origin, and are believed to have migrated to the Philippines before the Malay or Austronesian groups began to arrive, five or six thousand years ago (Scott 1994:11). The *Agta* lived in the forest lands, conducting occasional barter trade with the communities in the lowlands.

The already small population living along the banks of the Cagayan decreased further

how far the forest reached during that time. On the other hand, there were also some savannas already in the surroundings of Lamut, so says Galves, who made some expeditions to Kiangan between 1810 and 1820" (pers. com. Rev. Vermeulen, April 1996)

during the first two centuries of Spanish occupation; seventeenth-century census data show a decline in the registered population in Lower Cagayan from 20,200 in 1591 to 2,400 in 1612 (Keesing 1962:27). The decrease is believed to have resulted from a disinclination to register among Cagayanos, because this required them to pay tribute and take religious education. After a period of gradual recovery in the eighteenth century, the registered population, or number of *tributes*, dropped again after 1780 during the economic crisis caused by the ban on tobacco cultivation in Cagayan Valley (see Section 7.2.2). The economic situation worsened after strong typhoons in 1788 and 1789, followed by plagues of locusts and rats. Thus in Cagayan the ban on tobacco production defeated its stated purpose of raising government revenue from the production and sale of tobacco, as farmers were deprived of what had until then been their most important source of cash income: "In the end, famine conditions reduced people to eating the animal hides used in chairs and saddles and made them vulnerable to the epidemic which then ravaged the province" (De Jesus 1980:130) Faced with these hardships and the continued collection of tribute, people fled the province in their thousands and enlisted as soldiers or went into service in private homes as coachmen and domestic helpers:

*"The natives, abandoning their fields, go to Manila and other provinces to seek a better fortune and to leave behind the miseries of their land; and it is surely most lamentable to see the biggest province in area, [endowed] with excellent soil, not to say the best on the island of Luzon, reduced to the small number of 8,000 to 9,000 tributes"* ("Informe sobre la Provincia de Cagayan, y decadencia de ella desde se proivió el plantío de tabaco, y estanco de este", Archiva de la Provincia de Nuestra Señora del Rosario, appr. 1790 in *ibid.*: 135)

In 1797, Hacienda San Francisco in Ilagan became the first estate in Cagayan Valley to be allowed to grow tobacco for the Spanish Tobacco Monopoly. The northern part of Nueva Viscaya, the contemporary province of Isabela, had superior growing conditions for tobacco: the mountainous climate was less harsh than that of northern Cagayan and the salty influence of the sea wind was not a problem here. Between 1830 and 1850, the region overtook Gapan as the top producer of prime cigar tobaccos for the Monopoly. In 1851, tobaccos from this area won a gold medal at the London Universal Exposition. Eight years later this led to the establishment of the province of Isabela in honour of Isabela, Queen of Spain (Corpus 1997:121). Its municipalities of Cabagan and Tumauni in the north were taken from Cagayan, and its other municipalities, including Palanan on the Pacific coast, from the southern province of Nueva Viscaya.

As the international fame of Cagayan Valley tobacco further boosted demand, the scarcity of agricultural labour was being increasingly felt, and the Monopoly began to subsidize the migration of tobacco farmers to Cagayan Valley. Since most economic exchanges with Manila took place via the Cagayan River and the northern towns of Aparri and Tuguegarao, Ilokos Norte was the logical province to look for immigrant tobacco growers. Despite objections from the *Alcalde*, or provincial governor, of Ilokos, who feared the loss of tribute, between 1849 and 1881 several incentive packages were offered to encourage farmers to migrate to Cagayan Valley. Immigrants were allowed to settle anywhere they wanted to and cultivate any crop they wanted to, although there were additional benefits in store for those opting to grow tobacco. They were allowed to farm barrios of their own and received financial assistance in the form of loans, to help them pay off debts in their place of origin and to cover the cost of travel and establishing a home in Cagayan. They were not required to pay tribute during the first eight years according to the 1849 decree, later reduced to the first two years in the 1881 decree. Migration remained free throughout the Philippines, but these incentives were only offered for migration to

Isabela and Cagayan (De Jesus 1980; Malumbres 1918).

The incentives did not spur any substantial inflow of migrants; there were not many from Bohol or the Visayas, with the exception of one group of Muslims from Balangigi Island (Sulu sea), who arrived in Echague and started to cultivate corn and tobacco. Spain also looked to China as a source of labour; in 1850, more than 200 Chinese migrant labourers were offered a five-year exemption from the payment of tribute if they wished to cultivate tobacco. Spain's Chief Forester, Don Ramon Jordana y Morera, wrote pessimistically about the likelihood that the population would ever rise above the density of 5 inhabitants per km<sup>2</sup> recorded in the 1865 census:

*"... the climate, that feels very unhealthy because of the most abundant humidity that the rivers, ricelands and forests maintain and because of the mosquitos that stagnant pools fill the atmosphere with, will hamper the growth of the population.."*(Jordana y Morera 1874: 22)

However small the number of Ilokano tobacco-growers who arrived in the second half of the nineteenth century in comparison with later waves of immigrants from the south, their labour was of great importance for the development of the tobacco haciendas during this period: by 1880, the majority of the workers in the industry were Ilokano (Malumbres 1918). The early migrants settled mainly in the lower reaches of the Cagayan River, where there were large floodplains suitable for the cultivation of native tobacco. New settlements were built near the river, where Spanish authority had more or less stabilized, and there was protection against hostile attacks by *infielos*. Based on Cagayan's peak production of 716,899 fardos of tobacco in 1872, and taking from Box 8.1 an average yield of 14 fardos per hectare, an estimated 52,800 ha of tobacco haciendas was devoted to growing tobacco for the Monopoly at the end of the nineteenth century. Most administrative and economic contact between Cagayan Valley and the outside world went via the northern route, as reflected in the fact that by the end of the Spanish administration of the Philippines, three-quarters of the population of the upstream province of Nueva Viscaya was classified as 'wild' in the 1903 census (Keesing 1962:177).

### Box 8.1 Tobacco agronomy

#### Measures

- De Jesus 1980: 1 stick = 16 leaves, 1 fardo = 30 mano = 300 sticks
- Cureg, pers.com. 1994: 1 stick = 50 leaves, 1 fardo = 100 sticks = 5000 leaves)
  - 1 fardo = 100 sticks = quintal
  - 1 bale = 2.5 fardo = 250 sticks

#### Weight

- 1 quintal = 46 kg = fardo (5000 leaves)
- 1 bale = 125 kg = 2.5 quintal 110 kg + 15 wapper

#### Yield

- vd Muijzenberg (1973:77), Nueva Ecija: 60 fardos per quinon = 2.8 ha = 20 fardos/ha
- Cureg, pers. com, 1994: 12 bales/ha = 30 fardos/ha = 3000 sticks/ha (four times 2-3 or 4 leaves = 10-12 leaves per plant), 10,000 plants/ha = 110,000 leaves/ha = 9 bales/ha (23 fardos/ha)
- de Jesus: 6400 plants/4460m<sup>2</sup>(=1.67x 1.67m), yield of 25 - 31 fardos/ha
- Production records never show yields of more than 7 bales = 17.5 fardo/ha. At 10-12,000 plants per hectare, that means 7-9 leaves are harvested per plant
- 1992 Price: 750P -1000 P per quintal

### 8.3.2 *The American period: colonization of the southern lowlands*

*"The province possesses vast resources. The forests of the Caraballo and the Sierra Madre are almost untouched as a result of the lack of transportation. There are extensive tobacco lands which are available for homesteading or can be leased very cheaply from the Government. The grasslands of the slopes offer great possibilities for cattle industry. Much fish is caught in the rivers and game abounds in the grassy plain and in the forests. ... Better transportation facilities and government encouragement would assuredly result in increased immigration, settlers and labourers being the chief need of Isabela"* (U.S. Coast & Geodetic Survey 1900:167)

Throughout the Spanish period, scarcity of labour had constrained the development of more agricultural lands in response to the market opportunities offered by the tobacco industry, and colonial policies to stimulate migration to Cagayan Valley did not significantly ease this constraint. The inaccessible Caraballo mountains probably prevented a northward extension of the influx of Ilokano settlers into central Luzon between 1820 and 1920, when the role of commercial agriculture expanded and population growth had eased labour scarcity in neighbouring provinces (Roth 1983). Larkin refers to this as the 'century of the frontier', when the central Luzon plain was cleared, *"world commerce arrived in the Philippines and the archipelago became irrevocably tied to the rest of the world"* (Larkin 1982:613).

Out-migration from Ilokos was spurred by several factors. Larkin stresses the rapid population growth in Ilokos and its environmental constraints (poor soil and low rainfall), which limited the minimum size of a viable farm, as well as the decline in payment for farmers offering wage labour, and the speculative motives of landowners using freely available labour to expand their land holdings and trading businesses. Lewis (1991) adds the enterprising, opportunity-seeking nature of the Ilokano as a factor which stimulated out-migration from Ilokos.

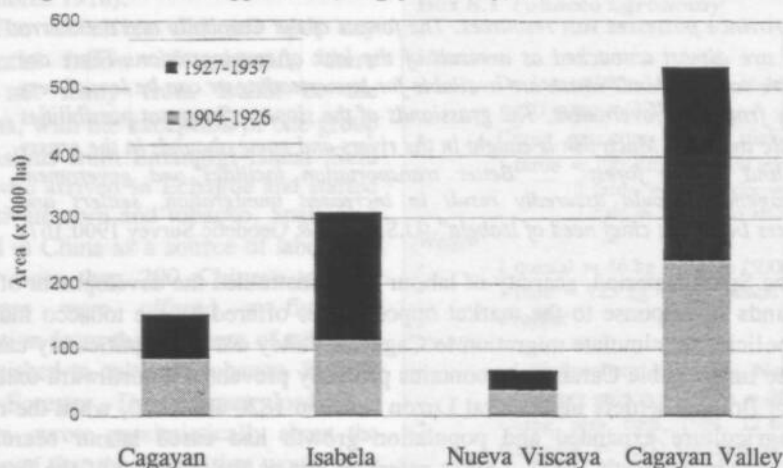
The fact that these migrants did not push onwards to the north may be attributed to the presence of unoccupied lands in central Luzon and to the inaccessibility of the Caraballo and Sierra Madre mountains sheltering Cagayan Valley. This barrier was lowered, if not removed, by 1924, when one of the trails across the Caraballo was widened into a dirt road. Another 45 years would pass before this access route to the north was upgraded into the Dalton Pass Road.

The opening of the Dalton pass sparked a greater response to an earlier government incentive, the 1904 Homestead Act, which offered Philippine citizens aged 18 and over the right to open up a plot of public land up to a maximum of 24 hectares for farming purposes. Once the settler could show that 20% of his land was actually cultivated and that his house and family were there, he was entitled to a patent to the land<sup>6</sup>.

In the late 1920s, the option was added of turning a homestead patent into a real title if a patent holder could prove he had cultivated the land since July 4, 1926. From 1952 onwards, evidence of having paid taxes on the land since 1945 became sufficient ground to claim ownership, even if the land had not been cultivated, provided it had not been occupied by another person (Noblejas 1961).

<sup>6</sup> The homestead patent was not equivalent to an ownership title, since it *"is not conclusive proof of title and confers no better right than that conferred by the patent. A patent which attempts to convey land to which the Government had not title at the time of its issuance vests no title in the patentee as against the real owner"* (Noblejas 1961:87).

Fig. 8.3 Homestead applications, Cagayan Valley, 1904-1937



Sources: PhilCom reports 1903 - 1932, Commonwealth of the Philippines 1939

Table 8.1 Homestead Applications &amp; patents issued, Cagayan Valley 1904-1937 (Ha.)

	Nueva Viscaya		Isabela		Cagayan		Cagayan Valley		
	Applied	Patented	Applied	Patented	Applied	Patented	Applied	Patented	%Patented
1904-1926	38.398	9.180	114.391	21.149	84.690	28.543	237.479	58.872	24,8
1927-1937	30.582	3.734	196.283	62.569	70.362	15.112	297.227	81.415	27,4
1904-1937	68.980	12.914	310.674	83.718	155.052	43.655	534.706	140.287	26,2

Source: Philippine Commission Reports, 1904-1937

Initially, the Act did not meet with much response; the Director of Lands attributed the low number of applications to the Filipino's attachment to his place of origin: "*the Filipino is not a pioneer, and his traditional tendency is to live in the neighbourhood where he was born and not to seek new land.*" (Report of the Director of Lands, fiscal year ending on June 30, 1909: 25). Worcester mused that farmers probably did not sense the urgency of registering their clearings because: "*the natives just move onto a piece of land, cultivate it until it begins to run down and then move on to another, and no one says them nay...*" (Worcester in 'Hearing of House Committee on Insular Affairs' 1910:545). In the case of Cagayan Valley, however, after 1924 in-migration, mainly of Ilokanos from the Ilokos and central Luzon regions, into the southern provinces of Cagayan Valley began to accelerate (see Table 8.1 and Fig. 8.3). There was a rapid increase in the number of applications after 1924; in the ten years between 1927 and 1937 nearly twice as many people applied as in the previous twenty years. The abundance of land is reflected in the average size of the application: 17.4 hectare per household. The slow response of the Bureau to the applications is noteworthy. As the end of the pre-war American presence in the Philippines approached, less than 30% of the area submitted for patenting had actually received a positive response. For the Philippines as a whole, the situation was not much better; between July 26, 1904 and December 31, 1937 homestead applications were received for a

total area of 6.2 million hectares; applications covering 2.2 million hectares had been approved and actual patents issued for 701,000 ha (or 12%). The *Philippines Herald Mid-Week Magazine* of September 11, 1940 calls attention to opportunities for landless people to benefit from agricultural subdivision projects being developed by the government in various regions, 'especially those traversed by roads'. In Cagayan Valley, 40,000 hectares of "vacant public lands, of positive value for agriculture". (Philippine Commonwealth 1939:13-14) were developed for immigrants in Allacapan (Cagayan), Echague and Gamu (Isabela), and Pinnapagan (Nueva Viscaya).

21c  
5  
"The Herald"



# The Herald Mid-Week Magazine

Wednesday,  
September 11, 1940

Volume X  
Number 41

## LAND FOR THE ASKING

Jose P. Dans

WHILE in other countries the struggle for existence is very keen in view of their limited resources and the excess of population, the Philippines has extensive public lands which can accommodate, without crowding more than twice the present population of this country.

The lands of the public domain are indeed our most valuable gift from our Creator. Considerable portions of these lands are needed for forest or mining purposes, but the greatest bulk of the public domain is rich agricultural land that can provide homes and farms for millions of people. About one-half of the total area of the Philippines—twenty-nine million hectares—will form part of the public domain and may be converted into productive farms.

To provide homes for those who have none, the government thru the Bureau of Lands is distributing lands of the public domain. Thousands of hectares of agricultural lands are subdivided and distributed yearly, partly thru sale or lease, but mostly in the form of homesteads and free patents. The sum of two and one-half million pesos has been appropriated by the National Assembly to expedite the classification and subdivision of public lands in different parts of the Philippines especially regions traversed by national roads.

Virgin lands along the Cotabato-Davao and Cotabato-Bukidnon national highways, the Banganga-Dapitan and Resa-Genetic — Maker roads in Mindanao, the Lubuagan — Enrie road in the subprovince of Kalanga, MI Province, and the Calabunogan-Sia, Maria road, Ilocos Province, are being subdivided and taken up very rapidly.

Other public land subdivisions are being executed in the following provinces: Cagayan, Apayao, MI Province, Tuzuba, Mindoro, Palawan, Samar, Negros Occidental, Negros Oriental, Zamboanga, Agusan, and Misamis Oriental.

The greatest good to the greatest number is the slogan of the government in land disposition. The main object of the government is to distribute the land resources of the Philippines to the greatest number of people possible so as to increase the number of small land owners which constitute the backbone of any na-



given to a citizen of the Philippines who must be at least eighteen years of age or the head of a family so that he can have a farm of his own whereon to establish his home. This grant is especially for the poor people because one who is already the owner of more than twenty-four hectares may be allowed to apply for a homestead. After cultivating at least one-fifth of the land applied for and has established his home on the land or at least within the municipality adjoining that in which the homestead is situated, the homesteader is given the patent to the land and from that time on becomes the sole owner of the land. For all of this he pays nothing to the government except the nominal fee of P10.00, which is payable in two installments; P5.00 upon filing his application and P5.00 before the patent or the title is issued to him.

### Free Patent

There are many people who have been occupying small parcels of land, presumably of the public domain, since the American occupation but due to poverty and ignorance they have not been able to perfect their titles to their holdings. Natural-born citizens of the Philippines who have been occupying agricultural public lands since July 4, 1926, are assisted by the government in obtaining title to their lands. The Bureau of Lands surveys the land claimed by these people, and helps them prepare the necessary papers preliminary to the issuance of the free patent. While the government is spending for each parcel of not more than twenty-four hectares an average of P50.00, the claimant, however, is not required to pay anything for the work. The government does all of this so that the holder of the land may obtain a good title to his land and so that he can be free from interference by any land grabber and in case of necessity, he can use the title as security for a loan which may be obtained from banks.

### Sale or Lease of Public Lands

To persons having a little capital, the government may sell or lease agricultural lands or lands suitable for residential, industrial

tion. In the distribution it is expected that the development of the natural resources of the country will be hastened, at the same time preventing unnecessary accumulation of population in the cities and other sections of the country. There is enough land for everybody. There is no reason why people should crowd in certain sections of the country where there is not enough room

for all of them or to flock to the cities where there are from ten to twenty applicants for every position no matter how humble be it in the government or private establishments.

### The Homestead

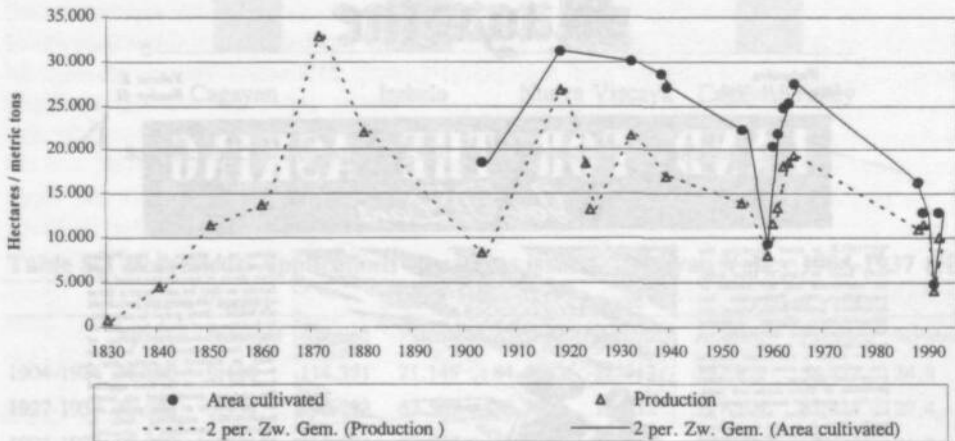
This is a piece of agricultural public land containing not more than twenty-four hectares that is

The Philippines is more fortunate than most other countries in this world because of its extensive public lands that can accommodate more than twice its present population.

These public investments in support of migration into less populated areas were intended to "solve the agrarian problem arising from congestion of population in small and poor-quality soil areas.....and last but not least: it makes the people happy and contented, the outstanding bulwark of a strong and stable government." (Dans 1940:2).

Pre-war agricultural expansion was most rapid in the province of Isabela, which means that most migrants passed through Nueva Viscaya on their way there, opting not to settle there but to move on until they reached the empty rolling lands adjacent to the valley floor of the Cagayan River in Isabela. No doubt this had to do with the above mentioned tensions between the lowlanders and forest tribes from the surrounding uplands, as well as the extensive forest cover of this province. In-migration and agricultural expansion in Nueva Viscaya only accelerated after 1960 (see 8.3.3).

Fig 8.4 Tobacco area & production, Cagayan Valley (1830-1995)



Sources: Censuses 1903-1918; DAC 1939; De Jesus 1980; NSO 1995; Philippine Atlas 1975; PTA 1966

During the American occupation, the production of the region's vintage native cigar tobaccos grew back to the levels recorded in the best years the Monopoly (see fig 8.4). American smokers appreciated the quality of Manila cigars: consumption jumped from 698,000 in 1902, to 90 million in 1912, and to 230 million in 1923 (Galang 1949:29). Cagayan still produced the top quality leaves, as this regulation shows<sup>7</sup>:

*"To be classed as standard, cigars must be manufactured under sanitary conditions from good to clean, selected tobacco, properly cured and seasoned, of a crop which has been harvested at least six months, exclusively the product of the provinces of Cagayan, Isabela and Nueva Viscaya"* (AO 35, Section 9, *Tobacco Inspection Regulations for Leaf and Manufactured Products of Tobacco*, Bureau of Internal Revenue, March 1, 1918. In: Paguirigan and Madamba 1927:88)

<sup>7</sup> In an illustrated book on the Philippine Islands, American publisher William Boyce writes that soon after the American take-over, the American market was flooded with a large volume of low quality cigars. Soon afterwards, an American "could no longer say, as he puffs away at a Philippine cigar: well, this is certainly made of Manila rope!" as exporters improved the quality of their product and orders went beyond the capacity of the cigar factories in Manila. In a footnote he mentions that Mr. Olsen (one of the buyers of the Sta Isabel estate) "a former Chicago boy, now a successful tobacco manufacturer's agent in Manila" sends him 100 cigars every month, and that he prefers them to Havana cigars. (Boyce, n.d.: 117)

Cagayan Valley's share of the national tobacco output was about 45%; other major tobacco areas of the early twentieth century were La Union, Ilokos, Pangasinan, Sulu and Cebu. Thus by 1920 the entire area of farmlands in Cagayan Valley that used to produce for the Monopoly was again under tobacco. Cagayan and Isabela each produced about half of the region's tobacco output. The more delicate leaf tobacco came from Southern Isabela (Echague, Jones, Angadanan), while northern Isabela (Cauayan, Naguilian, Reina Mercedes, Ilagan, Tumauni, Cabagan, San Pablo, Sta Maria) and Cagayan (Tuguegarao and Gattaran) produced mainly wrapper leaves.

### 8.3.3 After independence: logging and agricultural expansion towards Isabela

During the 1960s, the Ilokos provinces gradually overtook Cagayan Valley as the Philippines' leading tobacco-growing area. The lighter and more aromatic Virginia tobaccos, used for the production of cigarettes, grew better there and were more in demand, as cigarettes replaced cigars as the leading tobacco product. The production of native tobacco increasingly required government intervention, including the establishment of a National Tobacco Administration in 1964, and legislation that for every bale of Virginia tobacco, the NTA was required to buy a fixed amount of native tobacco against guaranteed prices (pers. com., Engr. Masigan, Oct 1994).

In the postwar Philippines, the "Land for the Landless" slogan continued to be translated into giveaways of public lands rather than redistributive policies, and more settlers were invited into the public forest lands. A National Resettlement and Rehabilitation Administration (NARRA)<sup>8</sup> was established to "help speed up the free distribution of agricultural lands in the public domain to landless tenants and farm workers who are citizens of the Philippines and to encourage migration to the sparsely populated regions..." (Noblejas, 1961:76). These new measures to encourage resettlement resulted in increasing in-migration into the southern lowlands of Cagayan Valley (and the other frontier regions, such as southern Mindanao and southern Tagalog); the importance of postwar immigration is reflected in the speed with which the region's farm area expanded during these two periods (see Fig. 8.2). Between 1918 and 1939, nearly 100,000 ha of new agricultural lands was developed, whereas 200,000 ha, or 62% of all the farmland cultivated in Isabela and Nueva Viscaya in 1970 was opened up between 1948 and 1970.

The majority<sup>9</sup> of the immigrants arriving in Cagayan Valley between 1960 and 1970 came from the more densely populated<sup>10</sup> regions of Ilokos and Central Luzon. But a relatively small number of skilled labourers employed by the first logging corporations entering the southern provinces during this period were also part of this influx. Bicol, Metro Manila and Mindanao were the regions where these skilled labourers were recruited, after having developed skills as chainsaw operators, tree-cutters, bulldozer operators and truck drivers in logging operations there. The combined inflow of colonists and logging company employees produced a 61% population growth in Nueva Viscaya between 1960 and 1970. An abundance of unoccupied lands remained, if we may believe American

<sup>8</sup> Republic Act 1160, June 18, 1954

<sup>9</sup> The Ilokos and central Luzon regions together produced 78% of all migrants arriving in Cagayan Valley between 1960 and 1970 (Flieger 1976 in Zosa Feranil 1994:336-340)

<sup>10</sup> In 1960, the population densities of the Central Luzon, Ilokos and Cagayan Valley regions were 137, 113 and 33 inhabitants/km<sup>2</sup> respectively (Conception 1983 in Zosa Feranil 1994 :327)

geographers Wernstedt and Spencer, who were almost lyrical about their visit to the Cagayan Valley in the mid-1960s:

*"In-migration will occupy the still vacant lands, population will increase at a rate greater than the national rate, the variety of agricultural production will increase, the total agricultural surplus may grow still larger, the patterns of urbanism and industrial processing will tend toward greater variety, complexity and maturity, and the region will play a more significant role in the national economy than has been the case in the past. For the present, one answer to the Philippine problem of population pressure on the land can still be: "Go North, young man, go North" (Wernstedt and Spencer 1967:328)*

None of these predictions came true; regional population growth initially followed the national trend, falling below it after 1980, as Fig. 8.5 illustrates. The declining demand for the region's tobaccos did not lead to diversification but rather to a shift to the production of grain. As we saw earlier (Chapter 3 and Section 5.3.1), rice and corn occupied 98% of all cultivated lands in Cagayan Valley in 1991. Agro-industrial development was practically non-existent, as both crops were produced largely for consumption or processing elsewhere, maintaining the region's strong reliance on agriculture. In terms of per capita domestic product, Cagayan Valley was still the second poorest region in the country in 1990. Temporary off-farm employment opportunities in the corporate logging operations, and the growing disparity in population density between the Valley and its neighbouring regions (Zosa Feranil 1994:327, table 2) could not alter the fact that immigrants were increasingly outnumbered by people leaving the Valley in search of greener pastures.

The increasing importance of rural-to-urban migration is the main characteristic of out-migration in the period 1960 to 1970; young females with little formal education represented a disproportionately high share of those attracted by the new employment opportunities in the industrializing regions of southern Tagalog, Metro Manila and central Luzon (Zosa Feranil 1994). These new opportunities not only stimulated out-migration from the region, but also syphoned off potential immigrants who might otherwise have opted to settle in Cagayan Valley. For these reasons, Cagayan Valley's role as a net importer of migrants from other regions was not to last beyond the 1960s.

#### 8.3.4 Population growth and the post-1970 migration pattern: an analysis

Nationwide, the post-1970 migration pattern has four main characteristics (Zosa Feranil 1994: 348-358):

- consolidation of the rural-to-urban bias in interregional migration
- influence of *intra*regional demographic trends on population growth greater than that of *inter*regional migration
- increased importance of short-distance migration
- rural migration increasingly oriented towards the uplands.

For reasons that I will address in Section 8.4, Cagayan Valley was no exception to the tendency for *intra*regional demographic trends to gradually outweigh the importance of *inter*regional migration after 1970, except for the importance of forest migration. The region continued to experience a steady influx of migrants, but the significance of their numbers was declining in comparison with the growth of the resident population (Tables 8.2 and 8.3).

Fig. 8.5<sup>a</sup> Indexed Population growth, Cagayan Valley and Philippines, 1850-1996 (1996=100)

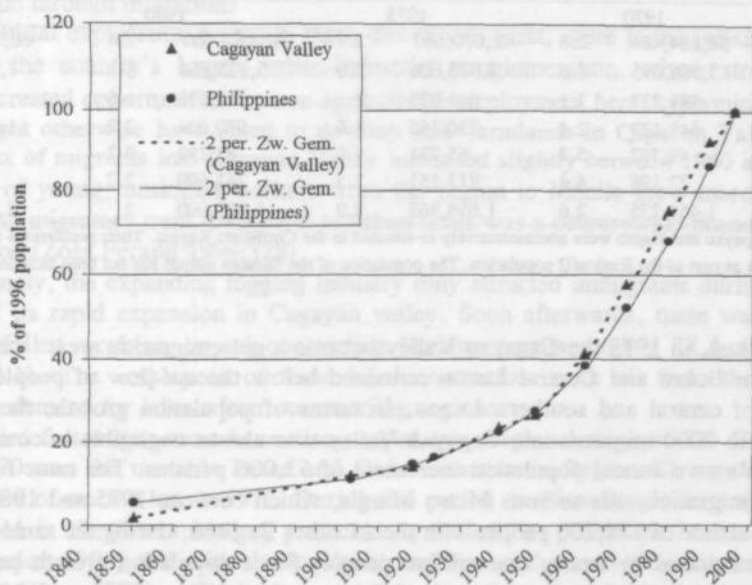
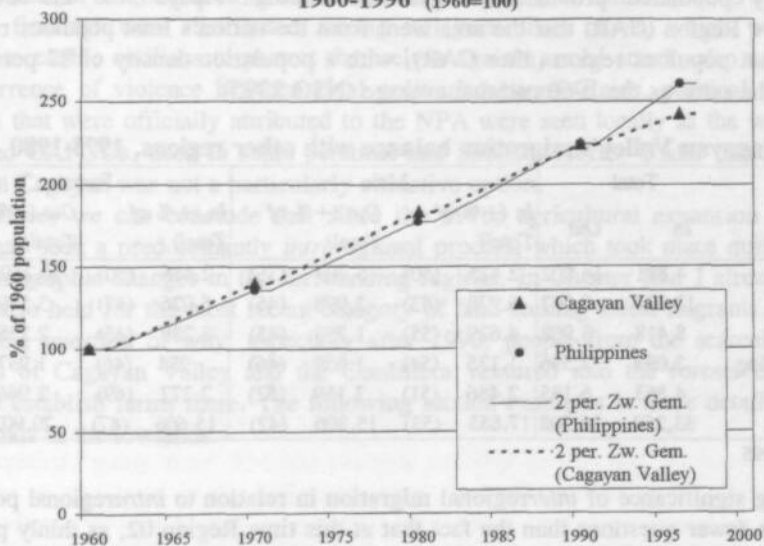


Fig. 8.5<sup>b</sup> Indexed Population growth, Cagayan Valley and Philippines, 1960-1996 (1960=100)



**Table 8.2 Population growth, Cagayan Valley and National Capital Region**

	Population	Growth rate (%)	Population	Growth rate (%)	Population	Growth rate (%)	Population
	1970		1975		1980		1990
Philippines	36,684,486	2.8	42,070,660	2.7	48,098,460	2.4	60,703,206
Manila (NCR)	3,966,695	4.6	4,970,006	3.6	5,925,884	3	7,948,392
Cagayan	581,237	2.1	644,075	2	711,476	1.6	829,867
Isabela	648,123	2.4	730,386	3.6	870,604	2.2	1,080,341
Quirino	49,767	5.7	65,731	4.8	83,230	3.2	114,132
Nueva Viscaya	72,198	4.4	213,151	2.5	241,690	2.2	301,179
Region 02*	1,451,235	2.6	1,653,365	2.9	1,907,000	2	2,325,519

\*In 1980, Kalinga Apayao and Ifugao were administratively re-situated in the Cordillera Region. Their populations are regarded in this table as part of the Region 02 population. The population of the Batanes islands has not been included here.

Source: NSO 1995

Although only just, in 1975 the Cagayan Valley became a net emigration area: the inflow of farmers from Ilokos and Central Luzon remained below the out-flow of people to the urban centres of central and southern Luzon. In terms of population growth, the annual influx of 3000 to 7000 migrants into Cagayan Valley was almost negligible in comparison with the region's own annual population increment of 53,000 persons. The same held true for a major in-migration area such as Metro Manila, which between 1975 and 1980 had a net migration balance of 174,100 people with the 11 other Regions; during the same period, its population increased by nearly one million people. Since population growth kept pace with the national average of approximately 3% per year between 1948 and 1980, the average population density, 60.9 persons/km<sup>2</sup> in 1980, remained approximately half the national average. In the next decade, population growth slowed to only 2% percent per annum, and it was only because of the administrative realignment of two of the region's most sparsely populated provinces, Ifugao and Kalinga Apayao, to the Cordillera Administrative Region (CAR) that the area went from the nation's least populous region to its second least populous region (after CAR), with a population density of 87 persons per km<sup>2</sup>, almost the same as the 1960 national average (NSO 1995)

**Table 8.3 Cagayan Valley's migration balance with other regions, 1975-1980**

	Total		Male				Female			
	In	Out	In (+% of Total)	Out (+% of Total)	In (+% of Total)	Out (+% of Total)	In (+% of Total)	Out (+% of Total)		
Manila/NCR	4,881	16,002	2.425 (50)	5.707 (36)	2.456 (50)	10.259 (64)				
Ilokos	13,004	6,567	6.978 (53)	2.998 (46)	6.026 (47)	3.569 (54)				
Central Luzon	8,418	3,908	4.629 (55)	1.753 (45)	3.789 (45)	2.155 (55)				
Southern Tagalog	2,093	2,596	1.135 (54)	1.659 (46)	958 (46)	1.937 (54)				
Other Regions	4,863	6,135	2.486 (51)	3.159 (52)	2.377 (49)	2.946 (48)				
Total	33,259	36,208	17.653 (53)	15.306 (42)	15.606 (47)	20.902 (58)				

Source: NSO 1995

The declining significance of *interregional* migration in relation to *intra*regional population growth raises fewer questions than the fact that at this time Region 02, as thinly populated as it was, was already becoming a net exporter of migrants. Moreover, some of the country's most densely populated regions - central Luzon, Ilokos and the National Capital Region - either border on Cagayan Valley or can be reached within a few hours. In the 1970s, at least, there must have been relatively good prospects of finding free lands in

Cagayan, as only a fraction of the farmlands developed by 1990 were then cultivated, and logging companies were creating access routes to potential farming areas inside the public domain. Why did such a lightly populated area as the Cagayan Valley lose rather than gain population through migration?

An initial exploration points in three directions. First, there is the proximity of Metro Manila, the country's largest urban-industrial conglomeration, where strong economic growth created opportunities for non-agricultural employment here, syphoning off migrants who might otherwise have opted to develop new farmlands in Cagayan Valley. Although the influx of migrants into Cagayan Valley increased slightly between 1960 and 1980<sup>11</sup>, the outflow of young, unskilled workers from the region to Manila grew more rapidly. This increasing migratory trend from rural to urban areas was a countrywide phenomenon during this period (Zosa Feranil 1994:328).

Secondly, the expanding logging industry only attracted immigrants during the first ten years of its rapid expansion in Cagayan valley. Soon afterwards, there was less need to import skilled workers, as sub-contracting became popular among TLA concessionaires (see 6.2.1). The employees of these local contractors were all from the region, thus reducing demand for labour from surrounding regions.

A third factor that must have discouraged inter-regional migration to Cagayan Valley after 1970 was the unstable Peace and Order situation in Region 02, especially after the declaration of martial law in 1972. During this period the New People's Army established a stronghold in the Sierra Madre, protected by influential politicians in the region (Jones 1989; Lopez 1994) and with the logistical and financial means extorted from the timber industry (Vitug 1993). NPA units carried out raids against institutions and individuals associated with the political and military establishment in the lowlands, abducted government officials, and threatened owners of ranches and estates. The local population was more acutely involved in the government's counterinsurgency operations through the establishment of the Civilian Armed Forces Geographical Units (CAFGUs) in 1988, whereby firearms were distributed among villagers. This move, which was officially intended to enable civilians to protect themselves against armed attack, also contributed to the occurrence of violence between rival political factions. Raids, political murders and robberies that were officially attributed to the NPA were seen locally as the work of hired goons and CAFGUs, used to settle personal and political scores. Under these conditions, settling in Cagayan was not a particularly attractive option.

Therefore, we can conclude that since the 1970s agricultural expansion in Cagayan Valley, has been a predominantly *intra*regional process, which took place quite separately from demographic changes in the surrounding regions. In Chapter four I already indicated that this also held for the most recent category of land-seeking forest migrants. This leaves us with the question of why, especially after 1990, people from the scarcely populated provinces of Cagayan Valley and the Cordillera ventured into the forests of the Sierra Madre to establish farms there. The following section examines in more detail the scarcity of farmlands in the lowlands.

<sup>11</sup> Between 1960 and 1970, an average 8,250 people migrated into Cagayan Valley annually; this figure decreased slightly between 1970 and 1980, to an average 5,000 per year (Tables 9, 15 and 23, Zosa Feranil 1994).

#### 8.4 A first assessment of farmland scarcity in the lowlands<sup>12</sup>

Actual land scarcity is higher than the average population densities found in the previous section would suggest, for the following reasons:

- The vast majority of the Cagayanos are 'huddled together' in the settlements close to the river, while half the region's land area consists of virtually uninhabited grasslands, classified forests and non-classified public lands. As we saw in Section 4.2, in 1990 the Valley was home to at most one percent of the region's population.
- Cagayan Valley has the country's lowest urbanization rate; in the 1990 population census only 24.3% of the population was registered as holding urban residence (compared to 48.5% for the country as a whole, see Chapter 3). Many people residing in urban areas also derive part of their income from farming, either directly or via sharecropping. According to the 1990 population census, of the region's 1.4 million people aged 15 and older, 356,000 were farmers, forestry workers or fishermen, 144,000 had 'elementary occupations' (including farm labourer), and 485,000 had 'non-gainful occupations' (including housewives and pensioners) (NSO 1990). Hence it is safe to assume that at least 80% of the population of Cagayan Valley depended directly on agriculture for a living.
- Land ownership, as well as access to tilling rights is unevenly distributed. I will return to this point shortly.

On the basis of these assumptions, and on data presented earlier on the total area of farmlands available in the region in 1980 and 1990, Table 8.4 calculates the farming population per square kilometre of farmland in each province. Having no access to other than aggregate results of the 1990 census, this table uses projections of the total population and their distribution over rural and urban areas, in order to arrive at indication of the average area of farmland available per rural household. The aggregate results of the 1990 census are given to indicate the accuracy of these projections. The table also assumes the total area of cultivated farmlands in the lowlands to be constant after 1990. The resulting estimates, ranging between 88 and 247 persons per km<sup>2</sup> of farmland are of the same order as the average population densities in the Regions of Ilokos (277/km<sup>2</sup>) and Central Luzon (340/km<sup>2</sup>), which lost most of their forest cover decades ago and functioned as source areas of land-seeking migrants for many decades. Census data on arable land and gross population size in 1960<sup>13</sup> gathered by Van den Muijzenberg (1975), in a study on rural-to-urban migration in relation to access to agrarian resources in a densely populated barangay in Nueva Ecija, produced farmland densities of well over 500 persons/km<sup>2</sup>. But still, few people from this area opted to leave for Isabela and Mindanao, in spite of a clear preference for agriculture over other sources of livelihood. Instead, young males with little access to agricultural lands 'circumvented' between their rural homebase and Metro Manila, engaging in casual employment there during periods of slack demand for agricultural labour in their hometowns. The casual nature of their employment and the low level of earnings kept them

<sup>12</sup> This section focuses on land scarcity in the lowlands of Cagayan Valley. Its relevance for the migration motives of migrants from Ifugao province has yet to be ascertained. A detailed study of Ifugao migrant communities in Quirino province is to be found in the forthcoming dissertation of Ms. Esther Moonen (Moonen, in prep.).

<sup>13</sup> These calculations led to the following farmland densities in Central Luzon in 1960: Bulacan 895, Pampanga 770, Pangasinan 823, Nueva Ecija 351. As urbanization rates were not taken into account, these figures probably overestimate actual densities by 25% (urbanization rate in Central Luzon was 30% in 1970, Zosa Feranil 1994:367)

from bringing their families to Manila, even though they spent several months per year there (Van den Muijzenberg 1973:369). This same practice was observed in the first phase of the process by which new forest migrants from Ifugao and the nearby lowlands migrated to, and settle inside, the Sierra Madre (see Section 4.3.1). The agrarian population densities presented below confirm that the lowlands of Cagayan Valley may well be a source area for shuttling newcomers currently establishing new farms inside the Sierra Madre.

**Table 8.4 Changes in people-to-land ratio in three provinces of Region 2 (1980 - 2020)**

	1980 <sup>1</sup>	1990 <sup>2</sup>	1990 <sup>3</sup>	2020 <sup>4</sup>
<b>CAGAYAN</b>				
Area	: 900,267 ha			
Agr/lowland	: 285,620 ha			
Total Pop.	713,485	882,326	829,974	1,338,503
Urban	103,679	149,423		365,428
Rural	609,806	732,903		973,075
upland		26,282 <sup>5</sup>		37,122 <sup>6</sup>
lowland		706,621		935,953
<b>Rural people to land ratio (persons/km<sup>2</sup>)</b>		<b>247</b>		<b>328</b>
<b>ISABELA</b>				
Area	: 1,066,456 ha			
Agr/Lowland	: 470,519 ha			
Total Pop.	877,178	1,135,340	1,080,341	1,906,901
Urban	146,623	243,055		800,052
Rural	730,555	892,285		1,106,849
upland		22,514 <sup>5</sup>		29,186*
lowland (/km <sup>2</sup> )		869,771		1,077,663
<b>Rural people to land ratio (persons/km<sup>2</sup>)</b>		<b>185</b>		<b>229</b>
<b>QUIRINO</b>				
Area	: 390,387 ha			
Agr./lowland	: 78,333 ha			
Total Pop.	84,018	119,209	114,132	247,632
Urban	16,170	28,845		110,979
Rural	67,848	90,364		136,653
upland		21,108 <sup>5</sup>		27,232*
lowland(/km <sup>2</sup> )		69,256		109,421
<b>Rural people to land ratio (persons/km<sup>2</sup>)</b>		<b>88</b>		<b>140</b>

\* The provinces of Nueva Viscaya and Batanes are not included here, as they have little or no relevance for contemporary forest migration into the northern Sierra Madre.

1 Based on Census 1980 and NEDA (1991)

2 Projection based on moderate fertility decline and moderate mortality decline

3 Census 1990 (NSO, 1990)

4 NSO 1990

5 GTZ Inventory of Forest Occupants (1989)

6 CVPED Team III (1994)

As we saw earlier (in Fig. 8.2), the total area of land in Cagayan Valley under cultivation with rice and corn rose rapidly between 1960 and 1992; the aggregate area for these two crops doubled, going from 334,000 hectares in 1960 to 650,000 hectares in 1992, and stabilizing at that level in the following years. A small portion of this increase was the result of farmers' switching from the cultivation of the region's native tobacco to the less labour-intensive and more marketable corn. The total area of tobacco lands in Region 02 declined from a peak of 28,000 hectares in 1964 to just under 5,000 hectares in 1991, recovering somewhat in 1992 (see Fig. 8.4). The point here is that these are relatively small areas, and hence most of the expansion of lands under rice and corn must be

attributed to the development of new farmlands during this period. As a result, per capita available farmland (the ratio between total farmland and total population) remained fairly constant at around 0.3 hectares (see Fig. 8.6). Taking differences in urbanization rates into account, changes in the average area of farmland per rural household in Cagayan Valley did not differ greatly from the national average (see Table 8.5).

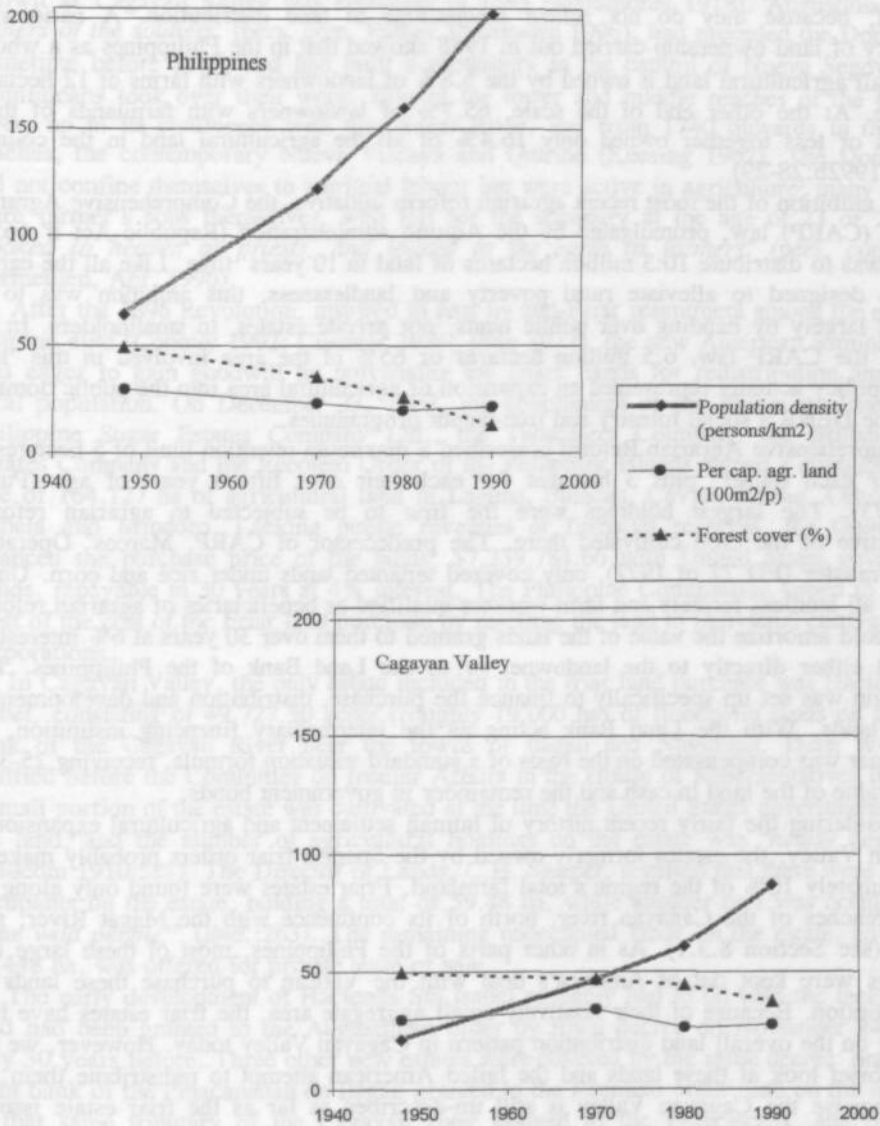
**Table 8.5 Cagayan Valley and the Philippines: a comparison of socioeconomic indicators**

	<i>Cagayan Valley</i>				<i>Philippines</i>			
	1948	1970	1980	1990	1948	1970	1980	1990
Population (millions)	0.7	1.5	1.9	2.3	19.2	36.7	48.1	60.7
Population density (persons/km <sup>2</sup> )	21.3	46.5	60.9	87.2	64.1	122.3	160.3	202.3
Population growth (%)		3.4	2.8	2.0	2.1	2.8	2.7	2.4
Forest cover (%)	49.6	46.8	44.0	37.1	49.1	36.3	25.9	13.0
Per capita forest cover (ha)	2.0	0.9	0.6	0.4	0.8	0.3	0.2	0.1
Total forest area (10,000 ha)	133.1	125.6	118.1	99.6	1480	1090	780	400
Annual log prod. (1000m <sup>3</sup> /yr)	0	832	2446	334	750	10177	7330	2502
Agricultural land (10,000 ha)	19.8	49.7	50.1	64.5	572.7	849.4	972.5	1310
Per cap. agr. land (ha)	0.28	0.33	0.26	0.28	0.30	0.23	0.20	0.22
Urbanization rate (%)		14.1	16.7	24.4	26.9	31.8	37.5	48.5
No. of rural households (x1,000)		251.2	319.7	353.8	2807.0	5006	6013	6252
Farmland per rural household (ha)		2.0	1.6	1.8	2.0	1.7	1.6	2.1

On the basis of the foregoing, we may conclude that, even though the region's population density continued to be well under the national average, the level of farmland scarcity in the Cagayan Valley more or less corresponded to the national level. Nevertheless, this region retained a much larger share of its original forest cover than the country as a whole. The seemingly low population densities in this region mask the fact that farmland was not actually more freely available here than in other parts of the Philippines, clarifying my earlier finding that interregional migration to Cagayan Valley declined in significance after 1970.

In view of the fact that farmlands were already quite scarce in the period 1970-1990, there must have been other major obstacles or disincentives preventing a major migration movement towards the Sierra Madre at this time. Kummer (1992a) found that overall road density accounted for 75% of nationwide variations in the 1957 forest cover of the Philippines. Once roads are in place, changes in agricultural area become more significantly related to forest cover, as accessible forest lands are converted into farms. In effect, forest migration was facilitated by the numerous bulldozers and trucks of the logging companies operating throughout the boom years of timber extraction and the construction of access roads into the Sierra Madre. I will return to this point in the summary of this chapter, where the issue of access to lowland farmland is integrated into the overall set of source and destination motives which are of relevance for forest migration. But first we will examine the issue of land distribution, in order to gain a better understanding of the possible role of land pressures in the decision of migrants to leave the lowlands in search of better livelihood opportunities in the Sierra Madre.

Fig. 8.6 Forest cover & per capita agricultural land, Philippines and Cagayan valley, 1948-1990



### 8.5 Farmland distribution and agrarian reform

The average farm area per capita recorded in the previous section overestimates the farming area that the majority of smallhold farmers in Cagayan Valley actually have at their disposal, because they do not reflect inequalities in land distribution. A nationwide inventory of land ownership carried out in 1988 showed that in the Philippines as a whole, half of all agricultural land is owned by the 5.8% of landowners with farms of 12 hectares or more. At the other end of the scale, 65.7% of landowners with farmlands of three hectares or less together owned only 16.4% of all the agricultural land in the country (Putzel 1992b:28-29).

The ambition of the most recent agrarian reform initiative, the Comprehensive Agrarian Reform (CARP) law, promulgated by the Aquino administration (Republic Act nº 6657, 1988), was to distribute 10.3 million hectares of land in 10 years' time. Like all the earlier policies designed to alleviate rural poverty and landlessness, this ambition was to be realized largely by handing over public lands, not private estates, to smallholders. In the case of the CARP law, 6.5 million hectares or 65% of the area involved in this 'land reform policy actually represented an expansion of agricultural area into the public domain, under the DENR's social forestry and free-patent programmes.

Comprehensive Agrarian Reform prescribed a maximum retention limit of 5 hectares of land for each owner, plus 3 hectares for each heir over fifteen years of age (Putzel 1992:273). The largest holdings were the first to be subjected to agrarian reform, irrespective of the crop cultivated there. The predecessor of CARP, Marcos' Operation Land Transfer (PD 27 of 1972), only covered tenanted lands under rice and corn. Under CARP, all landless farmers and farm workers qualified as beneficiaries of agrarian reform; they would amortize the value of the lands granted to them over 30 years at 6% interest, to be paid either directly to the landowner or to the Land Bank of the Philippines. This institution was set up specifically to finance the purchase, distribution and development of CARP lands. With the Land Bank acting as the intermediary financing institution, the landowner was compensated on the basis of a standard valuation formula, receiving 25-35% of the value of the land in cash and the remainder in government bonds.

Considering the fairly recent history of human settlement and agricultural expansion in Cagayan Valley, the estates formerly owned by the Spanish friar orders probably make up approximately 10% of the region's total farmland. Friar estates were found only along the lower reaches of the Cagayan river, north of its confluence with the Magat River, near Ilagan (see Section 8.3.1). As in other parts of the Philippines, most of these large land holdings were kept out of America's deal with the Vatican to purchase these lands for redistribution. Because of their relatively small aggregate area, the friar estates have little bearing on the overall land distribution pattern in Cagayan Valley today. However, we will take a brief look at these lands and the failed American attempt to redistribute them, not only because the Cagayan Valley is still un-described as far as the friar estate issue is concerned, but also to illustrate the argument pursued in the remainder of this section by means of one of the earliest examples of frustrated land reform in the region.

#### 8.5.1 Cagayan Valley's friar lands: the first land reform that failed

Tomas de Comyn, a former general manager of the Tabacalera company calls the friar orders the most considerable class of proprietors of estates in the nineteenth-century Philippines (de Comyn 1969, or. 1820:20). Friar estates were created by royal decree and gradually enlarged afterwards, partly by annexation and partly as a result of deathbed

donations of lands which had originally been granted to deserving Spanish laymen (Roth 1977). The oldest tobacco lands in Cagayan and Isabela were developed, owned and managed by the Dominican Order, to whom the religious instruction of the entire area now known as Cagayan Valley was entrusted in 1595 (Malumbres 1918). Augustinians, *'the fathers of the soldiers'* (pers. com. Father Vermeulen 1996), had preceded the Dominicans sometime before 1595, and had built a monastery in the capitol of Nueva Segovia. The Dominicans took over their work, first in the lower and middle reaches of the Cagayan river, up to its confluence with the Magat River, and from 1740 onwards in the upper reaches, the contemporary Nueva Viscaya and Quirino (Keesing 1962). The Dominicans did not confine themselves to spiritual labour but were active in agriculture; many of them were farmer's sons themselves, who left for the seminary at the age of 23 or 24; they *"looked to heaven as priests, and looked to the earth as farmers"* (pers. com. Rev. Vermeulen, Apr. 1996).

After the 1896 Revolution, inspired in part by anti-Friar resentment among the educated Filipino elite (Conolly 1992; Cushner 1986; Roth 1977), the new American administration was eager to gain goodwill by purchasing the friars' lands for redistribution among the local population. On December 23, 1903, the government of the Philippine Islands, the Philippine Sugar Estates Company Ltd., the Tabacalera Company, the British-Manila Estates Company and the Recoleta Order of the Philippine Islands signed a contract for the sale of 164,127 ha of agricultural land in Laguna, Bulacan, Cavite, Bataan, Cebu, Rizal, Isabela and Mindoro. Lacking public revenues or financial reserves, the Government financed the purchase price of the lands, \$7,239,784.66 with United States government bonds, repayable in 30 years at 4% interest. The Philippine Commission hoped to recover most of the cost of the Friar land purchase by reselling the land to individual cultivators and corporations.

In Cagayan Valley, the only estate included in the friar land purchase was Hacienda Sta Isabel, consisting of 49,727.50 acres (roughly 19,000 ha) of floodplain lands on the west bank of the Cagayan River near the towns of Ilagan and Naguilian. Dean Worcester testified before the Committee on Insular Affairs in the House of Representatives that only a small portion of the estate was cultivated at the time the United States government bought the land, and the number of agricultural holdings on the estate was *"nearly negligible"* (Philcom 1910:521). The Director of Lands, C.H. Sleeper, testified that there were only 93 occupants on the estate, holding a total of 59.48 ha, while another part was occupied *"by some wild people"* (*ibid.*:263). The remaining unoccupied lands on the estate, an area of 19,448 ha, was offered for private lease or sale.

The early development of Hacienda Sta Isabel probably had to do with the fact that the land had been granted to the Augustinian order by royal decree on November 24, 1879, only 30 years before. Three other new estates were covered by the same decree: one on the right bank of the Piñacanauan de Ilagan granted to the Recoleta order, one on the left bank of that same tributary of the Cagayan river granted to the Franciscans, and one near Gattaran, Cagayan granted to the Dominicans (Malumbres 1918:134-135). The description of the boundaries of the Recoleta estate indicates that this is the one which later became known as Hacienda San Antonio<sup>14</sup>; this is confirmed by the fact that Malumbres calls this estate a contemporary of Sta Isabel and a jewel in the crown of the Tabacalera company in Isabela:

<sup>14</sup> The estate was named after Don Antonio Lopez y Lopez, apparently a well-known figure during his lifetime (no further details are given on his role in society).

*"The hacienda house is by far the best among those of the Company in this Province. We paid a personal visit to this beautiful Hacienda of San Antonio and we were totally enchanted with the grandiosity of the Casa Hacienda, of its warehouses and the delightful panorama that offers itself when one looks from the verandas of the house" (ibid.:597)*

Three of these estates were granted to the friar orders specifically to promote the cultivation of tobacco, while one, Hacienda San Francisco, on the left banks of the Piñacanauan of Ilagan river, was given to the Franciscan Friars for their 'Hospital of the Sacred Waters'. The year after the Friars had been granted these new Haciendas, the Tobacco Monopoly went bankrupt after a period of financial trouble and delayed payments to tobacco growers going back to 1863 (De Jesus 1980). Most likely, therefore, these estates only became fully developed during the early decades of the twentieth century. This also holds true for Hacienda San Luis, which had not yet been established by the time Sta Isabel and San Antonio were donated to the respective orders of friars.

There is less certainty about the date of establishment of other, private haciendas mentioned by Malumbres; Haciendas Comilles and Ammobucar are located *"close to the parcel which Mr Moriones gave to the Augustinian fathers"* (Sta Isabel), and was owned by Don Manuel Nieto Sr, leader of a prominent family in Ilagan, who later served as private secretary of President Manuel Quezon<sup>15</sup>. He also mentions the Malanut estate, or Hacienda San Marian, a small estate which was managed by a German tobacco trader who had apparently acquired a considerable position in the tobacco trade in Isabela:

*"in the vicinity of Ilagan, tobacco is the only industry, because with the exception of some people engaged in tree-cutting, everyone is subjected to a certain foreigner, called Don Oton Fichler, who monopolizes this industry and that of beeswax in the surroundings of a small hacienda which, in the words of the local people, is located in Malanut."* (Malumbres 1918:481)

Hacienda San Mariano had a tobacco-curing plant owned by the Compania Germinal, to whom Fichler delivered his produce. Near the Sierra Madre, where wood required for the curing process was found, there were two plants owned by Tabacalera. In addition to Fichler, there were two other German hacenderos in Isabela in the late nineteenth and early twentieth century. German merchant Julius Baer of the Manila-based firm *Baer senior und Cie*, bought his first 138 hectares of tobacco land in Isabela in 1869, resettling 200 farmers there, to overcome local labour shortages. In the early 1880s, he acquired another two tracts of land here of 481 and 241 hectares (Salazar 1997b:138). The San Francisco hacienda, presently known as Hacienda Moldero (on the eastern floodplains of the Cagayan River near Tumauni), used to be owned by a German national by the name of Lohmann. During the period 1880-1887 there was a boom in German-Philippine trade; tobacco from Isabela and Cagayan was a major component of the Philippine exports to Germany<sup>16</sup>. In the first half of the twentieth century, Cagayan Valley had the Philippines' second largest German community (Salazar 1997a)

<sup>15</sup> Manuel Nieto Sr. was also the political godfather of Delfin Albano, the first member of the Albano family to enter the House of Representatives (see 5.3.2). The Nietos still owned hacienda Sta Isabel during the 1950s (pers. com. Engr. Masigan, March 1996)

<sup>16</sup> John W. Burton, in an interesting paper on *"British interests in the Philippine American War"*, points towards the rapid expansion of German economic interests in the Asia Pacific Region by the end of the 19th century. He hypothesises that this development was one of the reasons for British support for the American intervention in the Philippine War of Independence (Burton 1996).

Out of all these, plus the other tobacco estates developed by the Dominicans in Cagayan and northern Isabela, together comprising up to 52,800 hectares of tobacco land (as we saw in section 8.3.1), only Hacienda Santa Isabel, with its 60 hectares of cultivated land, were included in the Friar Lands purchase. With labour still scarce, especially here, the Friars prevented the sale of their productive, tenanted tobacco lands, causing the operation to entirely miss its mark in Cagayan Valley<sup>17</sup>. The Philippine Commission was well aware of the limited gain of their Friar lands purchase:

*"The transaction was in the nature of a bargain. We had no right to compel the friars to sell. We did not get all we wanted from them and we had to take some things that we did not want, and among the things we did not wish for were these vacant estates, but in order to complete the transaction it was necessary that these estates should be included".* (Worcester in Phil.com. 1910:434).

The Orders also created new management configurations that would make it appear as if they were no longer the owners. In this manner, the lands would not be recognizable as former Friar properties, but would still provide the Catholic Church with a source of income:

*"Nearly all the immense agricultural holdings have been transferred by the three orders - by the Dominicans to a gentleman named Andrews, by the Recoletos to an English corporation and by the Augustinians to another corporation; but these transfers do not seem to have been out-and-out sales, but only a means for managing the estates without direct interventions of the friars, or for selling the same when a proper price can be secured. The friars seem to remain the real owners"* (Philippine Commission 1904:48).

As we know, most of Cagayan Valley's old tobacco estates were located in the present province of Cagayan and had been developed by the Dominican Friars. The entire area of the estates formerly owned by the Dominicans (60,461 hectares in the Philippines as a whole) was conveyed to one of the first American teachers to settle in Cagayan:

*"the Dominicans conveyed their land holdings....to one Andrews, an Englishman living in Manila, under a promotor's contract...Andrews organized a company under the supposed existing laws of the Philippines, known as the Philippine Sugar Estates Developing Company (limited)" to which he conveyed all the Dominican Lands, with the exception of a small estate known as San Juan del Monte, containing 156 hectares, which was held under such trust conditions as to prevent its sale..."* (Phil.com. 1904:496)

The wording of this quote suggests that the Commission was not clear about the precise name and background of the family concerned. Based on my own interviews in Cagayan Valley, the person that the Commission refers to as the *Englishman Andrews* is in fact Claude Edgar Andrews, the Irish-American founder of a prominent landed family in Cagayan, which still owns considerable tracts of land there, including old floodplain farms on the banks of the Cagayan River and its tributaries, and residential land near the old town centre of Tuguegarao, including the San Juan del Monte area. According to one of his grandchildren, in his day the old Mr. Andrews was 'the Godfather of Tuguegarao', without whose blessing no business could be started there. A 1960 publication on the province of Cagayan and its well-known American and Filipino citizens features the Andrews family as *"the first family to own a car in Cagayan"*. According to this source, Andrews arrived in the Philippines in 1902, as one of the American teachers sent by the United States

<sup>17</sup> Sta Isabel and the San Jose Hacienda in Mindoro were two exceptions; the other haciendas were located in more densely populated areas. But these two empty haciendas were also the largest of the 23 estates included in the deal. Without them, the friar lands deal would have covered only 120,000 hectares instead of 164,000.

administration to set up a school system in the country<sup>18</sup>. He founded schools in Tuguegarao, Alcala, Gattaran, Baggao and Laoag, Ilokos Norte. The land holdings of the family were derived in part from his marriage to Maria Gonzaga, daughter of a landed family in Alcala (Rivera Castillet 1960:454). My conclusion that many of the church lands in Cagayan were acquired by this American teacher appears to be supported by the fact that a considerable portion of the Dominican lands were located in Cagayan which, together with Pangasinan, was the missionary territory of this order. The Irish background of Claude Andrews may have been the reason why the Manila-based members of the Commission erroneously referred to him as an Englishman.

The four church estates in Isabela ended up in the hands of the Tabacalera company, after they had initially been bought by Antonio P. Casal, a director of the company who also owned large tracts of land in other regions<sup>19</sup> (Putzel 1992b:48). After 1960, as demand for the native tobaccos produced in the region dwindled, Tabacalera put up its three Isabela estates for sale; San Luis went to the San Miguel corporation, San Antonio and Sta Isabel were offered to the government but were eventually acquired by the newly established ANCA company. This enterprise was owned by Antonio Carag Sr, a leading businessman from Cagayan who was closely associated with Eduardo Cojuangco, a Marcos crony with considerable interests in the coconut industry, and Juan Ponce Enrile, then Minister of Defence in the Marcos cabinet (see section 5.3.2). The estates were exempted from Operation Land Transfer by a special presidential decree. Although Cojuangco's plan to develop the estates into coconut plantations was halted by the concerted opposition of the tenants and their supporters in the Church (see Putzel 1992b:150-152), the estates are still intact today. The once magnificent Casa de Hacienda, now owned by a Chinese trader, still has something of the splendour witnessed by Malumbres.

Anderson views the purchase of the Friar estates by the United States, and the subsequent resale as a move which played into the cards of a newly emerging Chinese mestizo elite, falling into their hands "*like ripe mangoes*" (Anderson 1988:6). The political and economic significance of the Friar land deal was less significant for the Cagayan Valley region. Some former Church estates, such as the Tabacalera estates near Ilagan, were eventually acquired by businessmen with political connections. Because of the number of voters living in these estates, their control continued to be of decisive value in the outcome of elections in this particular district. However, in view of their limited size, in comparison with more recently developed lands, and the relatively recent ascent to power of Cagayan Valley's political and economic elite (see Chapters 5 and 6), the significance of the failed American Friar land reforms lies less in their influence on the overall land distribution pattern, and more in the example it set for land-reform policies to follow, with similar results.

<sup>18</sup> This date is probably inaccurate, as Mrs Andrews must have entered into an agreement with the Dominicans before the date on which the Friar Lands were purchased in 1903.

<sup>19</sup> According to Putzel, the sale to Mr. Casal took place in 1880, i.e., less than one year after the lands had been granted to the religious orders by Royal Decree (Putzel, 1992b:48). To confuse matters still further, the lands were acquired and developed by Tabacalera two years later, according to the same source. This would mean that even Sta Isabel, the only estate that was classified as a Friar estate was no longer Church property by the time it was classified as such and bought by the Government. In any case, the three largest Tabacalera estates have thus far not been redistributed, either as a result of the Friar Lands Act, or under the various land reform policies that succeeded it.

### 8.5.2 Indications of unequal land distribution

The task of acquiring a clear insight into how the land ownership pattern in Cagayan Valley developed after independence, when the bulk of the region's farmlands were opened, requires a separate study. Here the discussion will be limited to a number of indications that the distribution pattern is unlikely to differ substantially from the national pattern cited above.

In 1953, the Philippine Department of Finance and the United States Special Operations Mission in the Philippines conducted a survey on landed estates (defined as landholdings of 50 ha or more)<sup>20</sup> in all provinces (Sorogon 1955). The survey recorded 13,859 owners nationwide who together owned some 2.4 million hectares of agricultural lands. Only 1% of these owners were corporations, and the majority of the private owners - 85% - owned areas ranging from 50 to 200 ha.

**Table 8.6 Landed Estates in Cagayan Valley, 1955** (Source: Sorogon 1955)

	CAGAYAN	ISABELA	NUEVA VISCAYA
<b>50-200 ha</b>			
No. of owners	145	75	7
No. of parcels	1,174	481	112
Area of land holdings	13,126	6,963	538
<b>201-500 ha</b>			
No. of owners	23	10	--
No. of parcels	25	46	--
Area of land holdings	7,738	3,066	--
<b>501-1000 ha</b>			
No. of owners	8	5	--
No. of parcels	32	25	--
Area of land holdings	5,769	3,199	--
<b>&gt; 1000 ha</b>			
No. of owners	11	5	--
No. of parcels	36	21	--
Area of land holdings	44,776	20,848	--
Total no. of owners	187	95	7
Total area of landed estates	71,409	34,076*	538
Total farmland (1960)	154,524	151,931	45,403

\* In Isabela, 6 of these are corporate landholdings, with a total area of 17,191 ha

Table 8.6 shows that, in Cagayan Valley, Cagayan contained the largest area of landed estates. These data also show that the ownership of the new lands developed during the American period was not evenly distributed. The early monographs on Cagayan, Isabela and Nueva Viscaya by Malumbres (1918) confirm that migrants developing a new piece of land would often enter into new sharecropping arrangements with local people claiming ownership to these lands once they had been developed. American forester Barrington Moore saw this practice as one of the causes of the existence of large areas of uncultivated grasslands in the country:

*"all the Cogan land, though uncultivated, is claimed by some Cacique (prominent Filipino villager) or other. So that, if a man should have the energy to till it, the Cacique would come along and seize the crop, though he has no valid rights to the land and cannot cultivate it himself. The injured man is, of course, too poor to take the matter into court."* (Moore 1910:80)

<sup>20</sup> The purpose of this survey was to "obtain background information to form the basis for estimating the tax potential from a progressive national land tax" (Sorogon 1955: 1).

Facing this risk, and lacking financial reserves to overcome the initial period of getting established in the area of destination, migrating tenants saw the advantage of maintaining contact with, and support from the landlord in their place of origin. In some cases, landlords literally led their tenants from Ilokos and La Union to unoccupied lands in Central Luzon (Larkin 1982). By lending the pioneers tools and carabaos and providing cash advances, they maintained links with the cultivators which enabled them to set cropping patterns and share in the production<sup>21</sup>. Owners of idle lands in the lowlands, and pioneer forest migrants with claims to large areas of *ublag* (fallow slash-and-burn fields) still practice this system of tolerated or invited occupation of their lands on the basis of a sharecropping or leasehold agreement. After a grace period of one or two seasons, in which no *tertia* is due, the sharecropping or leasehold agreement comes into force.

Agrarian reform probably had a less significant impact in Cagayan Valley than in the neighbouring province of Nueva Ecija. In the 1960s, that province was selected by United States and Philippine government officials as a showcase, designed to demonstrate that agrarian reform was actually taking place. According to Kerkvliet (1991:32), Nueva Ecija was selected because of "its importance to the nation's rice supply, its active peasant organizations and its history of unrest". Haciendas in Central Luzon also shifted from sharecrop tenancy to personal cultivation by landlords, with the use of machines and semi-permanent labour contracts, all strategies designed to avoid redistribution (*ibid.*:33).

All over the Philippines, the major agrarian reform programmes carried out since 1972 suffered from slow implementation. Landowners first lobbied for the watering-down of the scope and coverage of agrarian reform laws and then succeeded in delaying and evading the implications of what remained of those policies (Leonen 1993; Putzel 1990, 1992a). In 1992, for example, only 140,000 ha of CARP lands covered by Notices of Acquisition had actually been valued and paid (Leonen 1993:277). Recent official records of the Department of Agrarian Reform pertaining to the performance of the CARP programme in Cagayan Valley suggest a fairly favourable situation. According to the report, 48,845 ha of private and government-owned lands were distributed to farmer beneficiaries in Cagayan Valley in 1994, equivalent to 198% of the target set for that year (DAR 1995:5). As the following section illustrates, however, cultivators may still be tied up with the original owners, and use a considerable part of their harvest to pay rent for lands registered in their name.

### 8.5.3 Landowner strategies to consolidate holdings through semi-compliance

*"On our way to the landowner's house, we drive through a seemingly endless, rolling landscape of grasslands and cornfields. We see a large herd of cows, grazing eroded pasture lands; a little further, young fresh-green corn plants mingled with the dark brown colour of newly ploughed land. Turning left, we pass some 20 simple bamboo houses with cogon roofs, built alongside the access road of the large, concrete house of the landowner that towers on the hilltop. The house has none of the class of the 19-century casa Hacienda in San Antonio. It appears to have been built recently, is not painted yet. Its location, square shapes and the barbed wire fence surrounding it rather turn it into a something of a fortress. The owner greets us cordially when we enter the compound. Behind him, three men armed with automatic rifles scan the surroundings through binoculars. The owner calls them 'alalai', or helpers, and says they are*

<sup>21</sup> For these early migrants, migration did not mean a step forward in the direction of self-reliance. "Peasants never controlled the marketing of their own crops, for this activity remained in the hands of native landlords and entrepreneurs and foreign businessmen; hence the move of settlers onto the frontier only perpetuated their dependency" (Larkin 1982:617)

administration to set up a school system in the country<sup>18</sup>. He founded schools in Tuguegarao, Alcala, Gattaran, Baggao and Laoag, Ilokos Norte. The land holdings of the family were derived in part from his marriage to Maria Gonzaga, daughter of a landed family in Alcala (Rivera Castillet 1960:454). My conclusion that many of the church lands in Cagayan were acquired by this American teacher appears to be supported by the fact that a considerable portion of the Dominican lands were located in Cagayan which, together with Pangasinan, was the missionary territory of this order. The Irish background of Claude Andrews may have been the reason why the Manila-based members of the Commission erroneously referred to him as an Englishman.

The four church estates in Isabela ended up in the hands of the Tabacalera company, after they had initially been bought by Antonio P. Casal, a director of the company who also owned large tracts of land in other regions<sup>19</sup> (Putzel 1992b:48). After 1960, as demand for the native tobaccos produced in the region dwindled, Tabacalera put up its three Isabela estates for sale; San Luis went to the San Miguel corporation, San Antonio and Sta Isabel were offered to the government but were eventually acquired by the newly established ANCA company. This enterprise was owned by Antonio Carag Sr, a leading businessman from Cagayan who was closely associated with Eduardo Cojuangco, a Marcos crony with considerable interests in the coconut industry, and Juan Ponce Enrile, then Minister of Defence in the Marcos cabinet (see section 5.3.2). The estates were exempted from Operation Land Transfer by a special presidential decree. Although Cojuangco's plan to develop the estates into coconut plantations was halted by the concerted opposition of the tenants and their supporters in the Church (see Putzel 1992b:150-152), the estates are still intact today. The once magnificent Casa de Hacienda, now owned by a Chinese trader, still has something of the splendour witnessed by Malumbres.

Anderson views the purchase of the Friar estates by the United States, and the subsequent resale as a move which played into the cards of a newly emerging Chinese mestizo elite, falling into their hands "*like ripe mangoes*" (Anderson 1988:6). The political and economic significance of the Friar land deal was less significant for the Cagayan Valley region. Some former Church estates, such as the Tabacalera estates near Ilagan, were eventually acquired by businessmen with political connections. Because of the number of voters living in these estates, their control continued to be of decisive value in the outcome of elections in this particular district. However, in view of their limited size, in comparison with more recently developed lands, and the relatively recent ascent to power of Cagayan Valley's political and economic elite (see Chapters 5 and 6), the significance of the failed American Friar land reforms lies less in their influence on the overall land distribution pattern, and more in the example it set for land-reform policies to follow, with similar results.

<sup>18</sup> This date is probably inaccurate, as Mr. Andrews must have entered into an agreement with the Dominicans before the date on which the Friar Lands were purchased in 1903.

<sup>19</sup> According to Putzel, the sale to Mr. Casal took place in 1880, *i.e.*, less than one year after the lands had been granted to the religious orders by Royal Decree (Putzel, 1992b:48). To confuse matters still further, the lands were acquired and developed by Tabacalera two years later, according to the same source. This would mean that even Sta Isabel, the only estate that was classified as a Friar estate was no longer Church property by the time it was classified as such and bought by the Government. In any case, the three largest Tabacalera estates have thus far not been redistributed, either as a result of the Friar Lands Act, or under the various land reform policies that succeeded it.

Another successful strategy by which landowners were able to delay or obstruct the redistribution of their land was through the Voluntary Offer to Sell (VOS) scheme. The CARP law mandates the Government to buy the land following a Compulsory Acquisition procedure. This entails a fixed value for irrigated land (39,000 Pesos/ha), while rainfed land is valued according to a standard formula of 2.5 times the average annual yield of all crops harvested on the land. By entering into a VOS procedure, Government and landowners are supposed to reach agreement on the price of the land. Putzel (1992) cites numerous examples, including one from Isabela, in which landowners take advantage of a provision in the 1988 CARP law which states that the landowner's compensation should no longer be based on the value on which previous tax declarations had been based - obviously the cheapest deal for the Government, as landowners undervalued their lands to reduce their tax payments - but rather on the fair market value of the land. This value was the average of the Assessed Market Value (derived from a recent tax declaration), the market value (based on sales of comparable land in the vicinity), and the owner's Declared Market Value (Putzel 1992b:238-240). The scheme did indeed encourage landowners to offer land for sale, but as Putzel demonstrates, it is highly susceptible to abuse. Attorney Leon Baua, an influential trader and political power broker in Isabela, told me about a case in which he was personally involved:

*"There was this very enterprising man at the Department of Agriculture who was able to get certificates from the files of the municipality, providing evidence of the sale of small parcels of land which should set the value of one hectare at something like 60,000 to 80,000 pesos. Xerox copies of such evidence were required for the assessment of the land he was going to sell, so everything was forwarded to the Central Office in Manila. Before proceeding there himself, he came to me and asked for a little money to pay his bribes and so I gave him 15,000 but also warned him that this might get exposed. All went smoothly until it arrived at the Secretary's desk; and so a Congressman called up poor Juico<sup>22</sup> who could not do anything but to issue the cheque. The mistake the guy made was to be very talkative about it. He could have made a lot of money just selling xerox copies of those Deeds of Sale he was able to get and all other lands could have been valued in the same manner. Our mayor approached him, saying that everything over 35,000 pesos per hectare would be for him if he would help him. Manang Lilia also wanted the value of her lands upgraded so that she could get a good selling price. So we talked to the Register of Deeds (ROD), and they were able to produce all the documents. But then when the case came out, she was not able to sell her land, and here comes the BIR (Bureau of Internal Revenue, GT) asking her to pay the taxes according to the new value...She was able to arrange for these taxes to be paid from the proceeds once these lands were sold, but later on she requested the ROD to adjust the value of the land back to the original lower value" (research diary, March 1996)*

The possibility of making substantial financial gains from land sales through the Voluntary Offer to Sell scheme was eliminated after it was reported in the press. Nevertheless, the VOS scheme still offered the option of postponing the date of actual land transfer by continuing negotiations on the value of the land. Pending such an agreement, the Department of Agrarian Reform advises farmers to continue paying their share to the landowner until such time as his compensation has been paid by the Land Bank.

Other strategies to prevent the disintegration of family property included the re-titling of lands among family members and the development of family corporations to manage the

<sup>22</sup> In 1988, Philip E. Juico became the first Secretary of Agrarian Reform under the Aquino Administration. One year later, media reports about abuse of the VOS procedure forced him to resign.

property. Corporate landholdings were exempted from redistribution "provided it is not economically feasible and sound to divide the land" (Section 29, RA 6657). The CARP law prescribes that in such a case, the corporation either has to be collectively owned by the worker-beneficiaries, or must voluntarily divest itself of a proportion of its stock and share it among them. Landowners in Central Luzon were also employing these tactics to avoid losing ancestral property, distributing lands among their kin until they "ran out of relatives" (Kerkvliet 1991:38). A landowner in Isabela described how little bureaucratic obstacles are encountered when land registration records are 'doctored':

*"The Register of Deeds (ROD) is a place where anything is possible. All the big families here have distributed their land over so many of their children, I was surprised to see some of these lands are still in the name of their ancestors who are already dead!"*

(research diary, March 1996)

Agrarian Reform officials at the local level cannot fully distance themselves from the influence of landowners, agribusiness entrepreneurs and their political allies, who want to retain properties that either they themselves or their ancestors have built up. Personal relationships naturally develop between local officials and land owners, who travel in the same social circles, meeting at the annual town fiesta, during birthday celebrations for political and municipal leaders, in church on Sunday and afterwards at 'Sunday school' (the cockpit arena). There are not many poor or landless people who are on such friendly terms with politicians or members of the bureaucracy, and this is a disadvantage in a government context where personal relationships play a role in the interpretation of policy.

#### 8.5.4 Land reform and informal credit

Up to now, I have discussed the local impact of agrarian reform in the light of the fundamental goal of turning farm tenants and labourers into owners - or, in the ISF component, steward - of agricultural land. An underlying element of this goal, i.e., how smallholders raise the capital to buy their land, requires separate attention. Rural credit, which was already gaining in importance following the introduction of high-yielding rice varieties in the late 1960s, became an even more crucial factor in lowland agriculture as a result of Land Reform. Farming families, who generally borrowed the agricultural inputs required for the new rice varieties, as well as for basic consumption items during the growing season, now needed to generate cash as well, to cover the annual amortization payments<sup>23</sup> to the Land Bank or the original landowner. Those who were unable to pay this amount at the beginning of the season were compelled to search for a financier for their newly acquired land. In some cases the landlord was willing to take on that role. In other cases a moneylender, with whom a stable informal credit relationship had been established, might also handle the amortization. Such informal loans to service land amortization are expensive - interest rates often exceed 100% per annum - especially considering they were used to finance downpayments on agrarian reform loans with an annual interest rate of six percent. A landowner who transformed his old sharecropping relationship with his tenants into a new corporate leasehold system justified this move by saying he had helped them to stay out of the hands of usurers, by financing their shift to leasehold tenure himself:

*"We consider our tenants as our relatives. They inherited these lands from their fathers just like us. When they were offered the possibility to acquire the lands in leasehold, they urged me to*

<sup>23</sup> Rural households with a regular cash income due to remittances by members with urban or overseas employment have probably adjusted more easily to these changes.

*borrow money to finance them, because the Chinese ask so much! Of course there are some recipients of agrarian reform who can manage on their own, but so many others have now become dependent on a trader. That is why my uncle was able to enter into an agreement with the Operation Land Transfer in 1988, just before the CARP law was signed. Before, all our 151 ha were in the name of my grandfather. Through our agreement with the OLT, we subdivided the land in principle, but we manage it through a family trust in which my uncles, and my two brothers and two sisters participate. Since my uncle went to the U.S. two years ago, I have been the administrator. And the farmers are happy! We only get a one-quarter share of their net harvest, that is, after they have deducted their inputs. And when they bring our share, we pay for their fare."* (manager of a small agricultural estate in Isabela, in research diary December 1994)

This form of informal financing of the purchase and annual amortization of land transfer perpetuates - indeed intensifies - the economic relationship between cultivators and landowners *cum* moneylenders. The debt exposure of the farmer is raised, as rent payments are no longer paid only for access to land, production loans and consumptive credit, but also for the annual mortgage on the land. For moneylenders, on the other hand, the informal financing of Land Reform amplifies the amount of capital they have tied up in agriculture and complicates their chances of recovering loans from defaulting farmers. If a moneylender takes care of the annual mortgage payments to the Land Bank, the farmer loses the *de facto*, but not the *de jure* ownership of the land, since the land must remain registered in his or her name.

The informal, semi-legal nature of this arrangement makes it harder for financiers to recover consumptive and production loans from farmers with mortgaged lands. Before, landowners had the ultimate option to deny tenants tilling rights on the land. Nowadays, evicting a farmer in irrecoverable default from land which is still his *de jure* property (though the title may be under mortgage) is more difficult, as the farmers may bring their case to the Department of Agrarian Reform. On one occasion, I entered a municipal Agrarian Reform office and encountered a group of three farmers dressed in rags and accompanied by their wives and children (usually a sign of how vital the outcome of the discussion is for the household), who were engaged in serious conversation with an official. A landowner from a nearby hacienda was also present, and he was loudly expressing his dissatisfaction with the protection that the Department allegedly gave to tenants, especially after the DAR official decided that the case would have to be settled in court. With barely concealed anger he told the official:

*"Why is that? I don't think we still need to go to court. If there is really a fellow who is so hardheaded that he does not want to go along with the landowner, we should be able to kick him out! It is only because of this Land Reform that these people are now even harder to deal with. And how can we control them if we cannot even evict them from our land? It's clear that you are really prejudiced; you only look at the interests of these people, but how about us, the landowners?"* (Research diary, Dec 1994)

A financier (either the former landowner, or a trader) who finds that one of his tenants is no longer creditworthy has the option to deny the farmer further credit, but allow him to continue cultivating the land, and get a share of whatever it produces. This is an unattractive proposition for the farming household, who will find it very difficult to live in the lowlands without access to credit, but also for the trader/financier, who has to accept a lower productivity level of land which he informally owns, and sees a smaller area produce his preferred cash crops. Decisions are not taken overnight; if the farmer is an elderly person, for example, whom the trader has known for many years, he may be allowed to

cultivate the land using a crop that requires less in the way of external inputs (such as white corn or peanuts), and with a correspondingly lower credit ceiling. With nothing else but his labour to offer in return for his irrecoverable debt, he may be asked to do casual labour for the trader as well:

"You know this Hacienda has not really been a good thing for me. Now I am thinking of moving out and all I want is my money back. You will be surprised to see my books! Some farmers have balances of 40 to 50 thousand pesos owed to me! And then we still have to pay for their needs. Sometimes they spend 4000 Pesos on medicines alone. Every year they add another 2000 to their balance until it reaches 20,000 and then I tell them you can now cultivate anything, just share with me whatever you produce there, but I cannot lend you any more money". (Research diary, Dec. 1994)

This situation, in which leaseholders build up such debt arrears that they are forced to cultivate their land without inputs and are confronted with the steadily declining productivity of that land, underscores the criticism of land reform formulated by Hayami *et al.*, who contest the assumption underlying traditional land reform programmes that resource allocation under sharecropping is less efficient than fixed-rent leasehold or owner cultivatorship, because sharecroppers supposedly have less incentive to apply optimal levels of labour and other inputs (Hayami *et al.*, 1990:8). The authors, citing an overview of empirical and theoretical studies (Otsuka and Hayami 1988), show that the shift to leasehold tenancy, in fact, had a negative impact not only on land productivity but also on socioeconomic equity, as tenants no longer shared the risk of crop failure with their landlord, and lost their traditional access to the credit they needed for the supply of agricultural inputs and daily needs.

A defaulting farm household that finds itself unable to live off the small income produced by a lowland farm without the use of capital inputs, must consider other options, if it is to escape indebtedness. In all options, the important thing is for the household to increase its cash income; one way to achieve this is for the trader to offer urban or overseas employment to one of the farmer's daughters through his recruitment agency<sup>24</sup>. The salary goes to the agency and, after the necessary deductions, is channelled to the household. Another option is to propose that the farmer or one of his sons move elsewhere, to the nearby forest lands, say, and cultivate cash crops there.

The chances of finding a new source of credit are remote. Local traders exchange information about each other's clients and respect the mutual exclusivity of dealing with them. Should a borrower nevertheless succeed in tapping another source of credit, perhaps because of conflicting lender interests, there is a possibility of retaliatory violence, if only as a warning to other borrowers.

Another element which reduces the likelihood of a borrower running away from his or her financier is that, like in the former tenant-landlord ties, trust, and a mutual sense of obligation regulate the relationship between financier and borrower to some extent as well. Richer families are anxious to maintain their social image as people who are sensitive to the needs of their tenants and borrowers, not least because of their role as political brokers (Chapters 5 and 6) (J.C. Scott 1986; Kerkvliet 1991). The following quote from a trader/moneylender 'taking care' of more than 600 families shows how he creates a physical distance between himself and his lenders, in order to avoid direct confrontations with clients

<sup>24</sup> If overseas employment is offered by a financier, this automatically increases the family's debt exposure by the recruitment fee generally charged by recruitment agencies: approximately 20,000 pesos per position. Young daughters run a serious risk of ending up in the entertainment industry.

requesting help:

*"I am really too softhearted, I can never refuse people when they come to the house. I stay away from the store now, because I want my son to start running our little business. I have installed a payphone at the store, and my clients can just call me from there. I do not want to see these people all the time. They can call me at the house and I will give instructions to my son on whether or not to give them money. You see, my children are already blaming me, they tell me, 'Daddy, that is our money you are wasting'"* (Research diary, March 1996)

On another occasion, the same trader told me that despite his patience, he sometimes has to take charge himself and draw the line in front of his clients, to make sure they stand by their obligations:

*"When I was young we used to make sure every peso I was lending would make at least 60 pesos a year. Now, we're happy if our peso earns twenty pesos! You know, I am not trying to make money out of the sweat of my tenants, I don't mind if they can't pay me immediately. I have a certain income in mind every year. But last year, I saw that there was no positive development and so I called them and said 'I know you always pray for me that I will have a little income, but I must tell you that this year your prayers have not been heard, so you better start paying some of the money you owe me!' And now, the money is coming in, hahahaha! It's just a psychological war, you know..."* (Research diary, March 1996)

In his study of East Asian land reform in Japan, Taiwan and South Korea, Hayami notes that the success of these early programmes was due not only to the existence of a reliable database on land ownership and tenure relations, but also to the unified, well-organized tenant force, with a long history of cooperativism and unionization (Hayami 1991:158-159, cited in Srinivasan 1993; Hayami *et al.* 1990:2) In Cagayan Valley the institutional and political context in which farmers establish credit relationships is more problematic, particularly when it comes to managing cooperatives and community leadership. Recognizing this problem, the 1988 agrarian reform programme included a Beneficiaries Development component. This component provides for special-assistance funds to be granted to so-called Agrarian Reform Communities, covering such activities as agricultural extension, training in cooperative development, infrastructure development, and agricultural credit. The institutional component is aimed at stimulating cooperative links between farming households, who are often managing their farms on the basis of a single, individual 'lifeline' running between them and a landlord or informal moneylender. A recent progress report published by the Department of Agrarian Reform acknowledges the difficulties encountered in this area, noting that since 1988 a total of 25,213 Barangay Agrarian Reform Committees have been established, but that *"most of these do not work as an organization"* (DAR 1995:22).

Successive agrarian reform programmes in the Philippines appear to have had only a limited impact in this realm. I am referring to the fact that sharecroppers locked into vertical relationship with their landlord or moneylender, and with religious and political leaders, continue to have difficulty in establishing the horizontal social and economic ties with each other which they need to reduce their dependence on those vertical ties. As a result, they remain individual indebted smallholders who cannot build up the financial buffers they need for modern, investment-based agriculture. This individual exposure to the financial risks of capital-intensive farming has intensified, and became more structural in nature, with the growing need to gear farm production not only to the repayment of informal credit, but also to amortization payments to the landowner or the Land Bank. Credit exposure increases the economic risks of normal fluctuations in climatic conditions,

crop health, and personal circumstances. For reasons which I will elaborate in the next chapter, land ownership is in effect losing significance as a basis for informal credit.

#### 8.5.5 Conclusions with regard to access to farmland in the lowlands

On the basis of the findings presented above, the following conclusions may be drawn regarding access to farmland in the Cagayan Valley lowlands:

- 1) Overall, the land distribution pattern in Cagayan Valley is probably less skewed than the national average, due to the relatively recent origin of the majority of the region's farmlands. Former church lands, transformed into corporate tobacco estates and the region's lone sugar estate in Cagayan make up a smaller percentage of the region's total farmland area than the national average of 30%<sup>25</sup>.
- 2) Nevertheless, the majority of farming households have access to a smaller patch of farmland than suggested by the per capita average of 0.3 ha. Moreover, many farmers do not own the lands they cultivate, but continue to produce under sharecropping or leasehold arrangements, either with the original landowner, the Land Bank, or an informal moneylender financing their purchase of redistributed lands. The payment made in exchange for the right to cultivate the land further reduces the area each farm household actually has on which to make a living.
- 3) The introduction of high yielding grain varieties, the ensuing intensification of lowland agriculture, and the capital required to finance the acquisition of redistributed farmlands by smallholders have all contributed to an increasing role of credit, or capital, as the key-factor determining access to farmland. The added economic risks of lowland farming brought about by these developments increase the likelihood that the poorest farmers will no longer be able to earn a living in the lowlands. This not only acts as a positive source motive in forest migration, but may also hasten forest conversion in the Sierra Madre, due to changing land-use practices there. The initial indications of the increasing role of informal credit in upland farming are discussed in Chapter 9.

#### 8.6 Forest migration-in-context

After establishing, on the basis of the settlement history of Cagayan Valley, that forest migration to the Sierra Madre is a predominantly *intraregional* process, this chapter examined the distribution of farmlands in the region and assessed the impact of agrarian reform on access to these lands. Answers to these questions are conducive for a better understanding of the driving forces behind forest migration in northeastern Luzon. Fig. 8.7 presents the insights gained here, and combines these with relevant findings of earlier Chapters, thus composing an actors' field of forest migration to the Sierra Madre.

People only become forest migrants when the possibilities to make a living become seriously constrained in their place of origin. Other considerations, such as a desire to remain near services such as hospitals, schools, markets and roads, carry greater or lesser weight with individual people, but they lose significance if the primary goal of securing a satisfactory income is no longer realized. Access to credit is an increasingly crucial condition for agricultural production in the lowlands. If a moneylender closes the credit line, or a farmer's son has no place to farm, alternative options must be considered, such as moving to Manila in search of employment, seeking overseas contract work, or finding off-

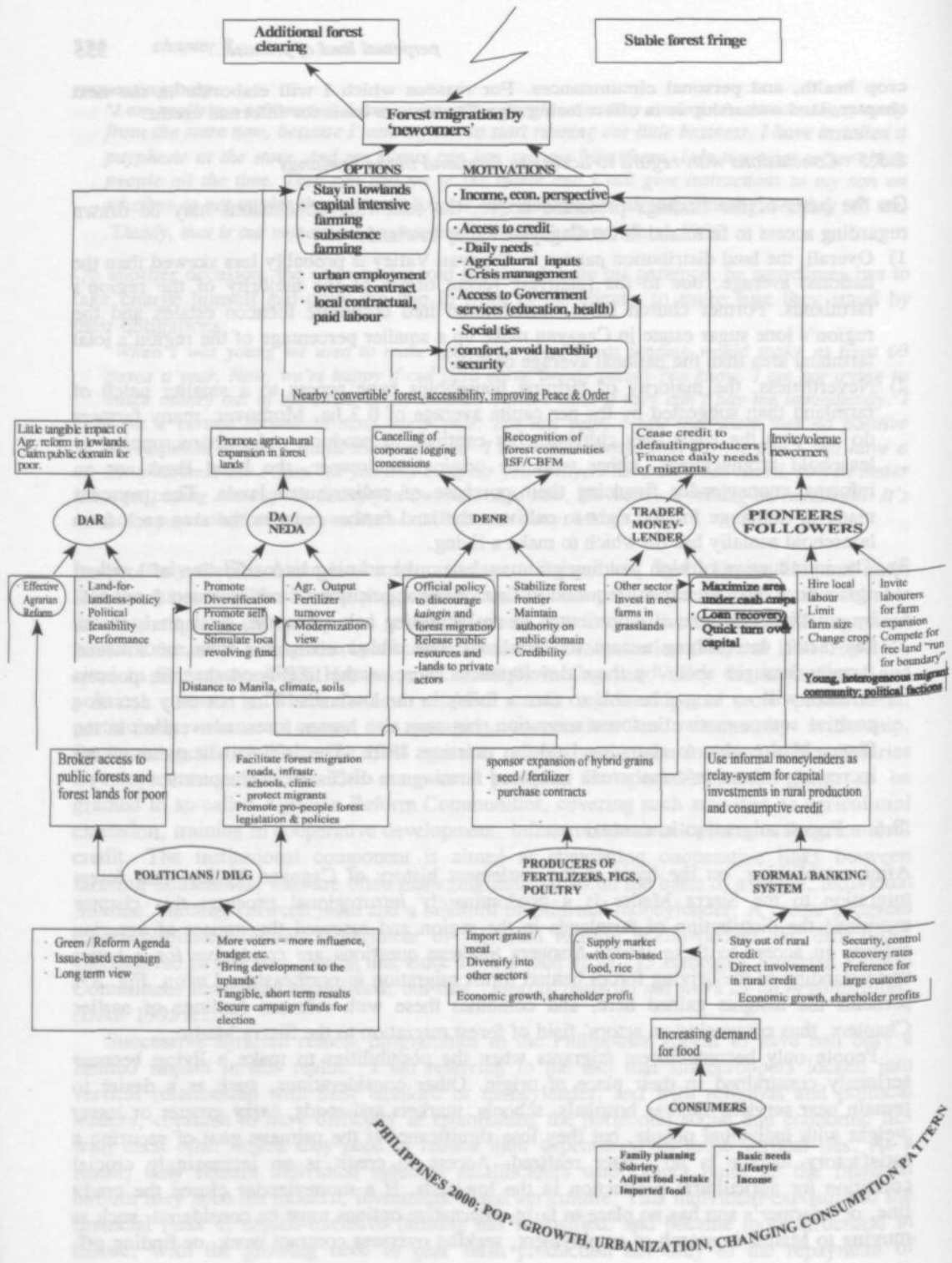


Fig. 8.7: Action-in-Context explanation of forest migration by newcomers, Northern Sierre Madre, Philippines

farm employment in the region. Until the late 1980s, the prospect of settling in the Sierra Madre was relatively unattractive: logging companies were still posting forest guards in their concessions, the New People's Army was thriving thanks to 'revolutionary taxes' levied on the logging industry, and there were regular armed encounters with the army. Nevertheless, a number of pioneers and followers established small settlements there and succeeded in making a living.

By the early 1990s, when the DENR began to cancel corporate logging concessions, the security situation improved. Around this time, the Department began developing a series of policies to deal with forest migration in a more people-oriented way. They were seeking more participatory methods of managing the logged-over forests of the Sierra Madre and stabilizing the forest frontier. With logging employment cut off, and slash-and-burn (*kaingin*) farming prohibited, the DENR had to offer alternative livelihood opportunities to migrant communities. Tenure instruments such as the Stewardship Certificates were developed, agricultural extension programmes offered, and free seeds and fertilizers distributed, in order to encourage upland farmers to switch to permanent farming. This kind of support for forest migrants compares favourably with the forms of government assistance enjoyed by farmers in the lowlands, where consecutive land-reform policies fell short of implementation and failed to bring tangible economic progress to cultivators. The rising cost of living in the lowlands, stagnating or decreasing yields on the monocropped lands, progressive indebtedness and, in some cases, invitations from pioneers or moneylenders to make a new start inside the forest lands combine to form a set of positive source motives which stimulate migration to the Sierra Madre.

DENR policies to discourage further forest migration are counteracted by the initiatives of local politicians, by whom the growth of the constituency, the 'normalization' of conditions in the forest lands (*i.e.*, accessibility, services, Peace and Order) are perceived as favourable for the economic progress of those they represent, for the government budget allotted to their area and, therewith, their own political future. Another reason why forest migration is encouraged by local elected officials is that it is the least controversial way of granting lands and a livelihood to the poor, without having to redistribute the lands of local elites, whose support is essential for a good election campaign. Local elected officials prefer to see the DAR achieve its land distribution goals inside the public domain.

The Department of Agriculture, in close cooperation with the agribusiness sector, is a leading actor behind the region's preoccupation with the production of rice and corn. Servicing the demand of consumers and food production industries in the country, its mission is to stimulate cereal output. There are various ways of achieving this, but none appears as cheap as expanding the area under the crop into the public forest lands. The DA's reliance on cereal production is in turn due to strong demand in the rapidly growing urban economy of Metro Manila and other areas. The Government's Philippine 2000 programme, aimed at turning the country into a 'tiger economy' by the next century, is bearing fruit, resulting in increased buying power for urban consumers.

This overview of the actors' field of forest migration sketches the situation as it is at the moment. If we compare this motivational model with the initial overview of source and destination motives presented in Box 4.5 (Section 4.3.3), we see that in the late eighties and early nineties, several considerations were transformed from negative motives (discouraging migration) into positive ones (stimulating migration). This helps to explain why up until 1990 the number of pioneers and forest migrants who entered the Sierra Madre was limited, even though a dense network of access roads had been created by logging companies in the preceding twenty years. The construction of access roads into previously inaccessible forest

areas is a widely recognized deforestation facilitator, almost irrespective of local population densities. Kummer (1992) found that overall road density accounted for 75% of nationwide variations in the 1957 forest cover of the Philippines.

Empirical evidence suggests roads played a role in setting the deforestation pattern in the Sierra Madre, too. Timber concessions on the western slopes of the Sierra Madre encountered more problems related to illegal extraction and spontaneous in-migration than those on the Pacific slopes, which contained the majority of the region's old-growth and well-recovered residual forests. The absence of a road traversing the Sierra Madre from the population centres in Cagayan Valley to the sparsely inhabited Pacific coast also prevented an influx of forest migrants to these eastern slopes. Another factor that discouraged forest migration during the corporate logging boom in Cagayan Valley was the robust economic growth of the Philippine economy in general and that of Metro Manila in particular, creating realistic livelihood alternatives to forest migration during the period 1965-1980.

One major explanation for the moderate numbers of forest migrants up until 1990 lies in the region's traditional divide between the settled, and later Christianized and educated river people, on the one hand, and the free, uneducated and untaxed forest people on the other. Forests were perceived the home of ghosts and spirits, cattle rustlers, anti-Spanish *infielos* ('heathens') and, after the Spanish occupation, renegade soldiers. During the decade of corporate logging, the Sierra Madre became a stronghold of the New People's Army, which marked it as a critical area that could not be visited without serious risk to life and limb. Upland settlements experienced regular raids by the Philippine army, modern-day versions of the *entradas* which used to be undertaken by the Spanish authorities against uncaptured upland residents. The unstable security conditions in the uplands go a long way towards explaining why Cagayan Valley did not follow the national deforestation trend between 1970 and 1990. If the implementation of government policies was hampered by the fear of forest guards and other government personnel to be "taken for an interview" while on duty inside the forest lands, the unstable Peace and Order situation did to some extent compensate for these constraints on policy implementation. It is probably no coincidence that one of the folk explanations for the NPA acronym was 'National Park Administrators'.

The imposition of martial law and the start of the large-scale corporate logging boom took place during roughly the same period in Cagayan Valley. The end of Marcos' rule in 1986 also meant the end of corporate logging, weakening the ideological and financial basis of the NPA in the Sierra Madre, and forcing NPA bands to rely more on upland residents for their sustenance. Intensified army raids, infiltration, divisions in the ranks, and a communication campaign to encourage rebels to return to the fold drained the strength and popularity of the movement.

In the lowlands, one negative source motive that deterred people from forest migration probably lay in the expectations initially raised by the two land-reform policies legislated after 1970, Operation Land Transfer and the Comprehensive Agrarian Reform Law. Lowland farmers were presented with the prospect of becoming the owners of the lands they tilled, or at least upgrading their tenure from sharecropping to leasehold tenancy. For a time, this prospect may have meant that fewer people were inclined to leave the lowlands. By the mid-1990s, however, it became clear that agrarian reform had only a limited impact in terms of creating a more independent middle class of farmer-entrepreneurs. Some of the intended beneficiaries of these programmes never received their title, others were compelled to take out additional loans to finance their downpayments to the first landlord or the Land Bank, and some lost their newly acquired title after defaulting on loans taken out against a land collateral.

The government's ineffective efforts to bring about tangible changes in the livelihood of poor farmers in the lowlands coincided with new and more constructive policies for upland communities. Illegal forest occupants became the stewards of denuded forest lands, carabao logging went from an illegal activity to a sanctioned one, and forest communities became the focal actors in natural resource management within the public domain. The influence that these, and other area-specific projects for the benefit of forest communities, will have on the overall balance of source and destination motives for newcomers' decision whether or not to follow the example of pioneers and logging labourers cannot be accurately gauged yet. Inadvertently, however, these initiatives may well contribute to the problems they were intended to solve, by attracting additional migrants into the forest lands, and away from the areas where government policies are no longer believed to offer poor people and their offspring real prospects for a better future.

The process of migration was not accidental and conditioned by society, culturally and later politically motivated rivalry between the forest tribes and the Valley's indigenous river people. During the second phase, which began during the colonial period, lowland-based entrepreneurs and their followers began to enter the Sierra Madre in search of forest products, culminating in the crosswise logging boom between 1965 and 1985. This period also saw the arrival of land-seekers in the Sierra Madre. In the third phase, the initial contours of which are described in this chapter, forest migrants and traders are the leading actors, and upland agriculture the key activity.

This chapter is of an exploratory nature, dealing with the potential implications for forest cover of one specific option through which forest migrants seek to increase their agricultural income. Having consolidated a number of reports and field observations made during the period 1990-1998, I will focus on the increase in the cropping of hybrid corn on upland farms, and on a possible relationship between the production of this crop and credit relations between forest migrants and informal moneylenders in the lowlands. The argument pursued here is that the potential environmental implications of this mode of integration of upland farming into lowland markets, are such that further research is warranted into the underlying mechanisms. First, to more precisely define where and under what conditions it occurs, and second, to identify feasible alternatives aimed at a more sustainable use of the uplands.

This exploration begins with a brief introduction devoted to hybrid corn, the crop that I have selected as the indicative of the process examined here. Section 9.2 presents the findings on which I base the argument pursued in this chapter, and identifies factors conducive to the production of hybrid corn on upland farms. Many corn cultivators on both upland and lowland farms noted that they had credit relations with lowland-based informal money-lenders or with their relay stations in the uplands, and that these loans had to be repaid in grain, rather than money. Section 9.4.1 examines the possible link between credit and crop choice, by describing the informal moneylending business, and identifying the arrangements through which informal moneylenders, mainly grain traders, manage credit relations with forest migrants.

The adoption of a high-risk, investment-based crop such as hybrid corn by forest migrants seems to contradict the commonly accepted view that marginal households opt for a risk-avoidance rather than a profit-maximizing farming strategy. Section 9.5 places this apparent contradiction in the perspective of the increasing importance of access to credit, in agriculture and personal finance for farming households in the market economy. Section 9.6 then synthesizes the insights gained in the previous sections into an encompassing actors' field in an attempt to explain the production of hybrid corn by forest migrants. Having assessed the potential environmental implications of this development in Sections 9.7 and 9.8, the conclusion of this chapter draws attention to the key role of capital formation at the household level in bringing about alternative and more sustained land uses in the Sierra Madre.

## Hybrid corn, rural credit, and the future of the Sierra Madre

### 9.1 Introduction

The history of relations between the Sierra Madre and the lowlands may be subdivided into three phases. During the first phase, indigenous forest people were engaged in occasional barter trade with lowland villages. Contacts were incidental and conditioned by socially, culturally and later politically motivated enmity between the forest tribes and the Valley's indigenous river people. During the second phase, which began during the colonial period, lowland-based entrepreneurs and their followers began to enter the Sierra Madre in search of forest products, culminating in the corporate logging boom between 1965 and 1985. This period also saw the arrival of land-seekers in the Sierra Madre. In the third phase, the initial contours of which are described in this chapter, forest migrants and traders are the leading actors, and upland agriculture the key activity.

This chapter is of an exploratory nature, dealing with the potential implications for forest cover of one specific option through which forest migrants seek to increase their agricultural income. Having consolidated a number of reports and field observations made during the period 1990-1998, I will focus on the increase in the cropping of hybrid corn on upland farms, and on a possible relationship between the production of this crop and credit relations between forest migrants and informal moneylenders in the lowlands. The argument pursued here is that the potential environmental implications of this mode of integration of upland farming into lowland markets, are such that further research is warranted into the underlying mechanisms. First, to more precisely define where and under what conditions it occurs, and second, to identify feasible alternatives aimed at a more sustainable ways of integration.

This exploration begins with a brief introduction devoted to hybrid corn, the crop that I have selected as the indicator of the process examined here. Section 9.3 presents the findings on which I base the argument pursued in this chapter, and identifies factors conducive to the production of hybrid corn on upland farms. Many corn cultivators on both upland and lowland farms stated that they had credit relations with lowland-based informal moneylenders or with their relay stations in the uplands, and that these loans had to be repaid in grain, rather than money. Section 9.4.1 examines the possible link between credit and crop choice, by describing the informal moneylending business, and identifying the arrangements through which informal moneylenders, mainly grain traders, manage credit relations with forest migrants.

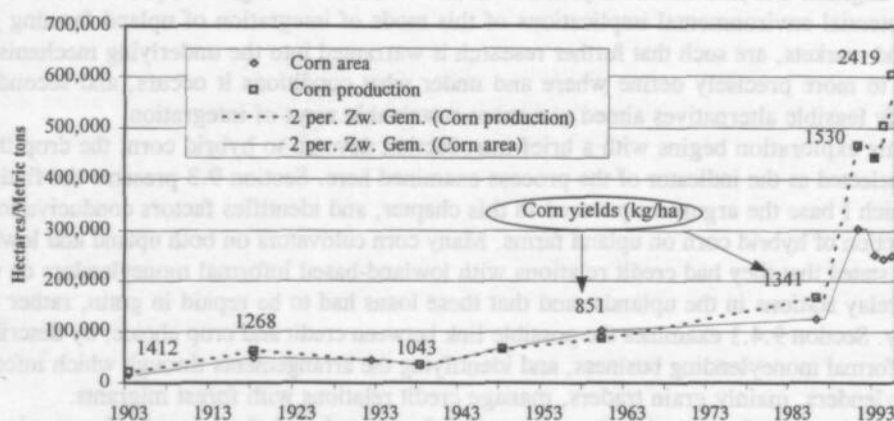
The adoption of a high-risk, investment-based crop such as hybrid corn by forest migrants seems to contradict the commonly accepted view that marginal smallholders opt for a risk-avoidance rather than a profit-maximizing farming strategy. Section 9.5 places this apparent contradiction in the perspective of the increasing importance of access to credit, in agriculture and personal finance for farming households in the market economy. Section 9.6 then synthesizes the insights gained in the previous sections into an encompassing actors' field in an attempt to explain the production of hybrid corn by forest migrants. Having assessed the potential environmental implications of this development in Sections 9.7 and 9.8, the conclusion of this chapter draws attention to the key role of capital formation at the household level in bringing about alternative and more sustainable land uses in the Sierra Madre.

## 9.2 Corn: from staple to corporate cash crop

"The province of Isabela is said to be the only one in the Islands where the people have adapted themselves to the use of corn as a substitute for rice. This condition appears to have been brought about by the conflict in the time of harvest between rice and tobacco ... now by the use of corn, they are able to give all their time to transplanting tobacco when the season comes around." (Director of the Department of Agriculture, cited in Philippines Free Press 1908:16)

As this quote shows, corn is a traditional staple of the northern provinces of Cagayan Valley. The sequential cropping of tobacco and corn dates back to the early colonial history of Cagayan, before its native tobaccos became one of the Philippines' leading export commodities<sup>1</sup>. Although rain-fed rice was grown near some northern towns, labour-intensive, wet-rice cultivation was not yet practised in the lower reaches of the Cagayan river. During the second half of the nineteenth century, when revenues from the tobacco trade enabled some farmers to buy, rather than produce, their own food, rice imports from Ilokos Norte and Nueva Viscaya satisfied local demands (De Jesus 1980:181). Although the loads brought in on horseback from Nueva Viscaya<sup>2</sup> represented only a small portion of these imports, the province was plunged into a depression when Isabela could no longer afford to buy rice, because the government tobacco monopoly had stopped paying for its purchases in cash (*ibid.*:182). The total area of farmland producing corn increased steadily with the expansion of cultivated farmlands during the twentieth century, rising sharply after 1985, when the new corn varieties were introduced (see fig. 9.1).

Fig. 9.1 Corn area & production, Cagayan Valley (1903-1995)



Sources: Philippine Commission Reports 1903-1938, Census of Agriculture 1948, 1960, National Statistics Office, Bureau of Agricultural Statistics, Department of Agriculture, Region 2

<sup>1</sup> Spain introduced tobacco, coffee and cacao in the Philippines (De Jesus 1980:2; Benitez 1969)

<sup>2</sup> Until 1905, this province included Mountain Province and Ifugao (Census Office, 1918:214).

By 1995, some 200,000 of Cagayan Valley's 244,000 ha of corn lands were planted with yellow hybrid varieties (BAS-Region 2, 1996)<sup>3</sup>. A mission statement by the then president of San Miguel Corporation, one of the largest agro-industrial conglomerates in the Philippines, illustrates the industrial origins of the new corn varieties:

*"It is not easy to convince farmers to take the risk involved in breaking with tried and true practices that have fed his family, however meagerly, for generations...When the new hybrid rice was developed, with all its evident advantages, it took about twelve years for the farmers in the Philippines to accept the new hybrid and feel at home with it. I believe it will take considerably less time for corn. My estimate is that it will take about four years. The momentum is already there"* Karen (1985:150, quoted in Vellema 1994:14)

A major difference between this mission and the earlier introduction of high-yielding rice in rural farming areas is that in the case of rice, there was no change in the orientation of production. As in the traditional varieties, hybrid rice was a food crop that gave producers the freedom to sell either the entire harvest or only that portion necessary to repay production loans or, alternatively, to finance all the inputs from other sources, and store the rice for the use of the household (Diemer 1990:81). By contrast, yellow hybrid corn, the most common variety, is used almost exclusively as a raw material in the production of stockfeed. Roasted or boiled, it is eaten as a snack, but unlike the traditional white varieties, yellow corn is not suitable as a staple for human beings. Thus the replacement of white corn by yellow makes the household less self-sufficient in its food supply. Storing the crop, rather than selling it directly after harvest, only makes sense if this is done in order to benefit from future changes in market prices.

A second characteristic of the new varieties further discourages farmers from storing the harvest for future sales: hybrid corn is sensitive to decay, due to moisture and rodents. Without modern, dry-storage facilities, the risk of post-harvest losses outweigh the potential economic gains to be made by storing the crop until market prices recover. These first two characteristics make hybrid corn, and especially the yellow varieties, a pure cash crop, just like sugar, cotton or soybeans, and result in a third quality: poor price stability. In the socioeconomic setting of Cagayan Valley, most small farmers do not have storage space of the quality required by this crop. They have no alternative but to immediately sell their harvest to traders, who have the necessary transport facilities and warehouses. As a result, price slumps occur during the harvesting months of September and March. There is very little that farmers can do about poor price stability, as they lack the capital to invest in high-quality post-harvest facilities; in addition, it provides economic opportunities to entrepreneurs engaged in the business of trading, storing and transporting bulk grains. By investing in warehouses and trucks and by purchasing large volumes, they can always get the crop for the lowest price. Returns on investment are earned in the months to follow, when the constant demand for yellow corn by the Philippine stockfeed industry drives up prices.

A fourth aspect of hybrid corn production is the fact that the higher yield potential of the new yellow corn varieties is only achieved if producers make use of agrochemicals; investments in the form of certified seeds, fertilizers and pesticides are financed through production loans. At the end of the season, these investments are paid back with cash earned from the sale of the harvest or in grain. If yields are increased, and labour requirements for

<sup>3</sup> DA reports, like most other sources cited in this chapter, do not specify whether hybrid or traditional corn varieties were used. Hybrids cannot be distinguished from traditional varieties by color. By the mid-nineties, however, the traditional varieties still cultivated in the region were almost exclusively white. Although hybrid white corn varieties are also produced already, in my inventory I always assume that where sources refer to 'yellow corn', they mean hybrids, and 'white corn' to be the traditional varieties, unless specified otherwise..

crop maintenance slightly<sup>4</sup> reduced, these inputs will generate higher potential returns on labour for producers adopting the new varieties (see Annex C)

The introduction of hybrid corn links farm production to an integrated industrial manufacturing chain, which encompasses the development and production of new seeds, the agrochemicals they require, stockfeed, livestock and the high-value end products supplied to consumer markets: meat, eggs, dairy products and related food products. This high degree of integration enables companies to achieve a certain level of standardization, quality control and efficiency. A small number of *integrators*, including Cargill, Ayala Corporation and the San Miguel Corporation, control the entire trading and marketing of corn in the Philippines (PPI 1991:9, cited in Velema 1994:13). These companies must have a certain degree of influence on farm production conditions, output level and quality. This is especially important in the case of certified seeds, as Velema noted in the case of the Pioneer Seed Company in General Santos, South Cotabato. To obtain a greater degree of supervision and standardization of the production process, the company enters into direct production contracts with selected farmers. Qualified growers are contracted to produce certified seeds, using the exact farming practices and inputs stipulated by the company. In the production of hybrid corn, large processing corporations enter into exclusive contracts with grain traders who can produce a certain quantity and quality of corn by a certain date. A grain trader who is interested in becoming a registered supplier of the San Miguel corporation, for example, must supply a minimum bulk of 200,000 bags of corn, roughly the crop produced by 5,000 hectares of cornland, by a specified date. This means that they must also get prior supply and quality assurances from producers. In other words, hybrid corn makes farm production less flexible because it requires the use of certified seeds and inputs, and reduces the mutual freedom of farmers and traders in the marketplace. Section 9.4.2 discusses this point in greater detail.

Unlike industrial cash crops such as sugar, hybrid corn does not require the use of heavy equipment, and is therefore quite suitable for production on smallholder farms. Large-scale, mechanized corn production offers the economic advantages of scale and quality control, but is obstructed by the Philippines' agrarian reform laws, which prioritize rice and corn lands for redistribution. Due to this legal obstacle, hybrid corn is produced in a hybrid production mode, which has plantation-advantages of scale and control under the boundary condition of the Philippine policy to preserve the smallhold mode of farm production. Delivery contracts between traders and processing industries in Central Luzon and Southern Tagalog are replicated at the local level.

### 9.3 Hybrid corn: the coming crop in upland farming

Several CVPED students report the production of corn on upland farms, in a few cases specifying whether the variety used was yellow or white, traditional or hybrid (Polet 1990; Doedens 1992; Veth 1992; De Frel 1993; Bakker 1995; Dros 1995; Dirkx 1995). Polet, for example, mentions that yellow corn has all but replaced white corn in the "*flat lands along the rivers and creeks*", and that farmers experienced difficulties in paying back loans they took out to get the capital inputs the crop requires, because of a 50% drop in prices during the harvesting season (Polet 1990:70). Aquino, who worked in the same area as Polet in 1990, confirms the cultivation of yellow corn in low-lying and accessible areas near rivers and streams (Aquino 1991:82), and notes that only migrants who had access to such areas used

<sup>4</sup> With or without the use of agrochemicals, corn is an easy crop, which does not require much maintenance during the growing season; its large leaf surface area and well developed root system enables the crop to compete effectively for both light and nutrients.

the capital inputs required in the production of this crop. Dirkx (1995) reports that migrants sometimes finance these inputs in part with money earned by a member of the family who has alternative sources of cash income, such as carabao logging or remittances from relatives with urban or overseas employment. Doedens (1992), Veth (1992), De Frel (1993), and CVPED Team IV (1994) mention the production of hybrid corn in migrant settlements, noting that these households acquire the greater part of their staple from the lowland market, where they buy white corn and rice with money earned in the cultivation of cash crops. De Frel specifically addresses the role of credit in the choice of crops. His case study describes a community of lowland farmers who illegally occupy a 4000-ha reforestation project near the Maharlika highway. With great difficulty, due to repeated fires and poor management since its inception in 1949, the project had managed to establish more than 3000 ha of plantation forest, some of which developed into mature stands of pine. From the early 1980s on, migrants began to encroach upon the area with a view to developing new farmlands there, and by 1988 only a little over 500 ha of plantation remained. Because these farmers were illegal occupants of a reforestation area, they had no land collateral, so they cultivated hybrid corn to get the collateral for informal loans from grain traders (De Frel 1993:83). All the above references dealt with corn cultivation in ploughed *bangkag* lands, including the use of fertilizers and occasionally other agrochemicals.

In a study among newly established forest migrants who came from a nearby barangay in the lowlands, Romero observed the cultivation of hybrid corn in recent forest clearings. This practice enabled these migrants to grow hybrid corn without the use of agrochemicals, reportedly because "according to them, newly cleared areas have high fertility and low incidence of pests and diseases" (Romero 1991:65). Soil degradation and increasing competition from weeds necessitated the constant clearing of new forest areas, speeding up the conversion of farmlands into *Imperata* grasslands. Cash income from the dry-season crop enabled these farmers to hire a chainsaw for the clearing of areas to be cultivated for the first time during the coming wet season.

Two CVPED student reports make mention of an active government role in the introduction of hybrid corn on upland farms. In De Frel's case, despite the fact that they were living on a government reforestation project, migrants had already been visited by extension workers from commercial companies and the Department of Agriculture. In so-called 'advertising deals' interested migrants were given free seeds, provided they bought fertilizers and sold their harvest to the seed company (*ibid.*:34, 50). Kusters (1991) reports on a case in Cagayan where native varieties of white and red corn (subsistence crops like upland rice) used to be the predominant *uma* crops. Extension workers of the Department of Agriculture regularly visited this area to assist farmers in the adoption of new hybrid corn varieties, both white and yellow. Potentially higher yields and revenues persuaded farmers to switch to these crops, particularly against the background of a dwindling income from carabao logging. Free certified seeds and agrochemicals were also provided in the forest settlements I visited in 1996, and these were cited by several respondents as the reason they had switched to the new crop. The Department of Agriculture acknowledges that it is actively promoting the adoption of hybrid corn by forest migrants<sup>5</sup>.

In 1992, a survey among five migrant communities located at a greater distance from the

<sup>5</sup> In an interview with the regional director of the DA about the distribution of free seeds and agrochemicals, and the role of his department in the increasing production of hybrid corn in the forest lands, officially under of the technical mandate of the DENR, he smiled and said: "I guess we are one of the culprits there" (Research diary, March 1996)

national highway<sup>6</sup> found that migrants in the most remote sites devoted their *uma* lands to the production of annual staple grains, followed by fallow periods with cash perennials like bananas and coffee. Of the 37 farming households interviewed in this survey, only 8 planted corn and only 3 sold a portion of the grain they produced. In the few cases where farmers were producing hybrid corn, in *uma* or *bangkag* fields, the sites were the most accessible in this survey, Puerta and Pinotulan<sup>7</sup>. The author concluded that when certified seeds and inputs were used, the income earned by farmers was spent almost entirely on paying back the loans taken out to cover these investments (Dirkx 1995).

My own 1996 appraisal of six upland settlements, three of which had also been included in earlier surveys, was intended to establish whether upland farmers on these sites were switching to the production of hybrid corn, and to determine which motives and factors led them to make that decision. On my way to and from these sites, I saw large new tractors ploughing lands that had always been part of abandoned ranches; closer to the forest fringe, banana plantations were being converted into cornfields, and as we entered deeper into the Sierra Madre, corn continued to dominate the scenery of rolling *bangkag* fields surrounding the older, more accessible settlements. Table 9.1 summarizes the results of this study.

**Table 9.1 Cultivation of hybrid corn in relation to other variables**

Sito/brgy	Malayo	Amistad	Minanga/Ibon	Laginday	Musinga	Dimatan
Descr. in Box No	1	F1*	2	F2*	3	F3*
N° of households	13	117	40	20	13	60
Mode of access	1	1	1	1	2	2
Date of first settlement.	1965	1957	1988	1980	1965	1957
Corp. logging start	1965	1972	1975	1975	1965	1972
Corp. logging end	1989	1992	1989	1985	1992	1991
Distance to forest	3	3	0	5	10	10
Distance to road	10	7	12	5	0	0
Distance to highway	45	50	20	45	35	12
Distance to market	45	25	25	45	35	12
Hybrid corn	1	1	2	2	3	3

\* See Annex E

Hybrid corn answer categories	Access answer categories
1 no hybrid corn	1 foot trail
2 hybrid corn in <i>uma</i> , no inputs	2 logging road
3 hybrid corn in <i>bangkag</i> , incl. inputs	3 all-weather road

To provide a better insight into conditions which, on the basis of rapid assessments in these six migrant settlements, appear to influence the decision to grow the crop, the description includes three boxes in which a brief profile is given of settlements where 1) no hybrid corn was yet being produced; 2) the crop was grown in *uma* fields; and 3) the forest migrants devoted their entire *bagkag* farm to the production of hybrid corn, using agrochemicals.

<sup>6</sup> Amistad, Pinotulan (Gattaran), Puerta, Malayo, Musinga

<sup>7</sup> In Pinotulan, hybrid corn was cultivated in only 3 of the 12 farms included in the survey. About half of the residents here cultivate not only upland farms, but also irrigated ricefields in the lowlands, mainly as tenants. At the time of the survey, the upland farms had only recently been reopened after a long period of disuse due to the insurgency.

## 1) MALAYO AND AMISTAD: NO PRODUCTION OF HYBRID CORN

**Box 9.1 The frontier sitio of Malayo, Musinga, San Mariano, Isabela**

N° of households	: 13 (1992 pop = appr 80)
Mode of access	: foot trail
Year of arrival of first migrants	: 1965
Corporate logging period	: 1965 - 1989
Distance to residual forest	: 3 km
Distance to road	: 10 km
Distance to nat'l highway	: 45 km
Distance to market	: 45 km
Hybrid corn production	: none

**Context:**

The *sitio* of Malayo is located at the tip of the last logging road constructed in this part of the Sierra Madre by logging companies in 1989. The first migrant to settle here, in 1965, was an Ybanag farmer from Tumauni, Isabela. By 1996, thirteen households were still in the *sitio*, now isolated as a result of the end of commercial logging in 1989 and a powerful typhoon in 1993. **The logging road that used to connect Malayo with Musinga has become a narrow, winding foot trail** along landslides and deep erosion gullies, running through a landscape made up largely of 7-foot cogon grasses and burnt tree stumps. Up until 1993 this trail was surrounded by residual forest, the leftovers of repeated logging operations by TLA and *salabadiok* contractors in the area. In that year, a typhoon turned large forest areas into a highly combustible rubble of fallen trees and dried leaves. The fire that raged here shortly after the typhoon turned nearby residual forest into open grasslands. Economic activities in Malayo revolve around **water logging, rattan extraction and the production of staple food**; during the dry season, the males bring logs, lumber flitches and rattan poles down to the lowland town of San Mariano via the shallow river which runs along the *sitio*. During the dry season, women produce **subsistence crops like peanuts and root crops** on *ublag* lands in the direct vicinity of the *sitio*. The men have time for only **one crop per year**; they prepare their fields and do their planting in October and November, when the rains of the wet season make rivers too dangerous for log transports. Only a few new clearings are made every year; **newcomers have arrived sporadically** since the logging company pulled out in 1989. White corn and upland rice, intercropped with beans, vegetables and bananas, are the main crops produced in both *bangkag* and *uma* during this period. Despite the loss of its banana plantations in 1993, and the necessity to walk for two hours to get to the nearest school, *sari-sari* store or midwife, in the absence of reliable public transportation, the households say they are happy here and have no intention of going back or moving closer to service centres.

These cases concern two *sitios* located in the proximity of residual forest. Features common to the *sitios* Malayo and Amistad are their limited accessibility and the important role of unmechanized timber extraction in the livelihood of the migrants residing there<sup>8</sup>. Malayo is inaccessible to trucks throughout the year, while the trail leading to Amistad can only be used by six wheel drive vehicles during the dry season. The reason that hybrid corn is not cultivated in Amistad, despite its relative proximity to the lowlands and its accessibility during summer, is the relative affluence of these migrants, mostly pioneers and followers; the production of vegetables and timber generates a basic cash income, so that there is no need for a new cash crop. In both these *sitios* there is a relative abundance of 'convertible lands' in the vicinity, as well as a minimal in-migration by newcomers. This makes it possible for residents to maintain long fire-and-fallow cycles, a precondition for the cultivation of upland rice. On foot, it takes an hour and a half to hike from Malayo to Musinga, the nearest barangay, where one or two passenger trucks a day pass by on their way to the lowland market of San Mariano.

<sup>8</sup> Two similar cases, one from Cagayan and one from Isabela, are reported by Dirkx (1995) and Bakker (1995).

2) CASES WHERE HYBRID CORN IS GROWN IN *UMA* LANDS, INTERCROPPED, WITHOUT INPUTS**Box 9.2** *Sitios* Minanga and Ibon, Baliuag, Peñablanca, Cagayan

N° of households	: approximately 40
Year of arrival of first migrants	: 1988
Corporate logging period	: 1975 -1989
Distance to residual forest	: 0 km
Mode of access	: foottrail
Distance to road	: 12 km
Distance to nat'l highway	: 20 km
Distance to market	: 25 km
Hybrid corn production	: in <i>uma</i>

**Context:**

The residents are newcomers, mainly tenants and landless labourers from the vicinity. It is a four-hour climb along a foot trail to the frontier *sitio* of Ibon; for the first two hours the trail runs through the Rodriguez ranch, and then through residual forest and bamboo groves. The residual forest in Minanga is almost a monoculture of bamboo; there is apparently no interest in developing these stands for commercial purposes, and recent migrants who clear these forests simply burn them. Ibon, the last barangay of Baliuag, is bordered by secondary forests of excellent quality, and old-growth forest is within half a day's hike from Ibon. This old-growth forest is closest to the National Highway on the western slopes of the Sierra Madre. The residents of Ibon attribute the stability of their forest to the absence of a road link with Baliuag, and the pioneer migrants say that if a road were opened, this would result in a 'golpe' or wave of migrants coming up the mountain. A total of 83 Stewardship Certificates have been issued to the pioneers and followers in the two *sitios*. Since 1993, new migrants have been arriving in both *sitios*. One group of six families, all relatives from adjacent lowland barangay, have settled in the residual forests adjacent to the pioneer's land. Logging is not important as a source of cash income; they clear more land each year and grow a variety of food and cash crops (upland rice, ginger, beans, bananas, coffee), using an extensive fire-and-fallow system. In 1995, hybrid corn was intercropped for the first time on their farm, thanks to free seeds distributed by the Department of Agriculture. In Minanga, located between the ranch and the *sitio* of Ibon, former tenants are clearing *ublag* land owned by a pioneer; they get the first two crops, and from the third crop on, the owner takes his share. The barangay of Baliuag lies 15 kilometres from the National Highway and 25 kilometres from the Regional Capital of Tuguegarao. Part of the town's firewood requirements are supplied by Baliuag, which is one reason why the road between the highway and the barangay is well-maintained and there are regular public transport services. The captain of Baliuag estimates that half the farmers have switched from white corn and tobacco to hybrid corn, using inputs acquired on credit, and sell to traders in Tuguegarao.

As a result of the forest migration process described in Chapter 4, the population of frontier *sitios* is composed mainly of migrants of the *newcomer* category, who entered the forest lands under harsher economic conditions than former logging workers (the dominant group in cases 1 and 2). In these cases, corn production occurs on both newly opened and older *uma* lands. In contrast to other areas, where the adoption of corn in fire-and-fallow farming has been interpreted as an adaptation to the shortening of fallow periods and accompanying declines in soil fertility (Rotmensen 1988:11), here yellow corn is planted on newly opened *uma* soil, enabling migrants to produce a crop without using fertilizers. The relatively high fertility of freshly opened forest soils makes it possible to incorporate the crop into the rotations of the other *uma* crops, such as upland rice or bananas in the seedling stage.

The newcomers of *sitio* Ibon had planted hybrid corn in an old *uma*, after receiving seeds for free from the Department of Agriculture; before risking their most fertile, newly opened lands to a new crop, they first experimented its cultivation to see how it would do. Traditional corn varieties are more commonly produced on older *uma* lands, where they compete fairly

effectively with weeds and *cogon*, which sprout as soon as fertility levels decline. If corn is intercropped, the following combinations are common (see Section 4.6 for a more detailed look at upland farming practices and crops):

- *Corn or upland rice, monocropped*  
While upland rice is almost invariably the first crop sown in the *uma* after clearing, corn can still be cultivated in the following seasons because it is better able to suppress weeds and compete for nutrients. Without the use of agrochemicals, hybrid corn produces better yields in newly developed *umas*. In that case, the farmer can produce a cash crop without investing in fertilizers and agrochemicals, using the natural fertility of the soil.
- *Corn or upland rice, mungbeans and peanuts, intercropped or in blocks*  
This is a low investment mix of subsistence-oriented and cash crops, which often follows the wet season crop of upland rice; it is less suitable for the first cropping period, when the rains and winds of the monsoon cause a higher risk of yield losses due to moulds, rot, erosion or landslides.
- *Upland rice or hybrid corn, intercropped with bananas or other fruit trees*  
Seen in young *umas* in less fertile areas or in areas between *uma* and *ublag* stage. A strong and reliable demand, such as the market for bananas, stimulates the early intercropping of fruit trees in *uma* areas. In agricultural expansion areas, where long-fallow systems prevail, fruit-bearing trees, such as bananas and coffee are already interplanted in the first or second *uma* crop.

The case reported by Veth (1991) also concerned newly arrived forest migrants, who were used to growing hybrid yellow corn in their place of origin, in Cauayan, Isabela. Doedens (1992) and Bakker (1995) report three cases of older, relatively inaccessible settlements on the forest frontier in Isabela and Quirino where hybrid<sup>9</sup> corn was cultivated on *uma* farms by migrants who did not own a carabao or whose lands were not suitable for plough-agriculture in an upland community that was adjusting to the decline in logging income. Of the 23 farmers in my 1995 survey who were growing yellow corn in *uma* land, 8 used this strategy. Forest migrants who do not own or use a carabao, or whose lands have been opened too recently to allow ploughing, or are too far away to be accessible to logging trucks cannot shift to the cultivation of yellow corn in its most intensive form. The above methods of incorporating the crop into their fire-and-fallow farms do not require the use of fertilizer or other agrochemicals in any quantity. All the fallow crops are expected to do is to generate a little supplemental cash income; a horse or a carabao sledge can be used to bring these modest quantities to relay stations near the logging road and from there to the lowlands.

### 3) HYBRID CORN, INCLUDING AGROCHEMICALS, IN BANGKAG FARMS

The second case where hybrid corn was extensively cultivated (see Table 9.1 and Annex E) concerned a barangay of pioneers that had been resettled in the 1980s, because of the Peace and Order situation. The new location is relatively accessible, and not too far away from the lowland town of Tumauni, Isabela. As part of their resettlement, they were granted individual ISF Stewardship Certificates (see section 5.2.3) to lands on a government-sequestered ranch. To turn these grasslands into productive farm areas, they took the conventional option of producing two crops of corn per year, with the use of fertilizers and pesticides. Until the early

<sup>9</sup> The reports only mention 'yellow' corn, and do not indicate whether hybrid seeds were used. For the same reason mentioned in note 2, these were most likely hybrid varieties, too.

1990s, many people in this barangay were strongly involved in carabao logging; and income from this activity may have been used to finance capital inputs needed in the ISF lands. As government restrictions on timber extraction tightened, and accessible timber stocks dwindled, corn production became an increasingly important component of the income of these migrants. The relative proximity to the highway and the lowland market influenced the adoption of hybrid corn and the existence of credit relations between these farmers and lowland-based informal moneylenders. The case described in Box 9.3 concerns a much more remote migrant settlement, which until recently was equally dependent on logging income but is now increasingly keying labour and resources to agriculture.

### Box 9.3 Barangay Musinga, San Mariano, Isabela

N <sup>o</sup> of households	: 204 (1990 pop = 1000)
Year of arrival of first migrants	: 1965
Corporate logging period	: 1965 - 1992
Mode of access	: partly gravelled old logging road, accessible by 6WD truck
Distance to residual forest	: 10 km
Distance to road	: 0 km
Distance to Nat'l Highway	: 35 km
Distance to market	: 35 km
Hybrid corn production	: in <i>bangkag</i> , with external inputs

#### Context:

The Musinga floodplain and the natural stream running through it have probably long been an inhabited, open spot in the forests, which is why the logging camp and log pond were set up here. According to Mr Tuliao, part of the first group of land-seeking migrants to settle here, the name Musinga originates from the Agta word *singa*, which means dancing; this is where the Agta danced to the music of the logging company employees. Corporate logging was just starting when Mr. Tuliao arrived and was largely confined to the vicinity of San Mariano; loggers were still using two-man barrot saws and only minimal mechanical equipment. The followers, mostly Ifugao and Ilokano labourers of the logging companies, found the floodplains of "lower Musinga" occupied and settled. on a nearby hilltop, the area which is nowadays called Upper Musinga. In 1988, others moved there too, after a disastrous flood had destroyed many houses in lower Musinga. Mr. Tuliao and other early migrants say that when they came to Musinga, typhoons were not doing that much damage, as the hills around the floodplain were fully forested. Nowadays, commercial timber is far away, half a day's hike from the barangay. Nevertheless, carabao logging continues to be an important source of income here, and the three sons of Mr Tuliao are prominent leaders in the business. People from San Mariano lend chainsaws to operators in Musinga; some other migrants own chainsaws, which they were given in lieu of unpaid salaries when their logging company went bankrupt. 'Salvage' lumber (supposedly produced using stumps and abandoned logs) is transported to San Mariano via the river that passes Musinga. In 1992, all lowlands and the rolling *bangkag* lands around them were still growing white corn. A year later, a severe typhoon destroyed all Musinga's banana plantations, and in 1994 Mr. Tuliao pioneered the cultivation of hybrid corn. His harvest enabled him to buy his second *kuliglig* (small farm tractor). In the dry season of 1995, the logging road connecting Musinga with San Mariano was graded and partially gravelled. In November of that year, other pioneers, as well as more recent migrants, also planted hybrid corn in their ploughed lands, acquiring capital inputs and cash advances from a trader in San Mariano.

Both cases where hybrid corn was produced by capital-intensive methods in *bangkag* farms involved older, fairly well-established settlements; the first migrants settled here in the early years of the corporate logging period around 1965. In both cases, the introduction of hybrid corn followed a period of decreasing or less certain cash income from other sources. Forest access became more difficult, due to deforestation and stricter bureaucratic controls. In Musinga, banana plantations had recently been severely damaged by a typhoon. Another

common factor is the proximity of a road that is passable by truck during the summer months, when the main corn crop is harvested. If we compare these two cases, it appears that distance is less relevant than reliability: as long as the road could be 'negotiated' by a six-wheel-drive logging truck during the dry season, the financial risks of investing in the cultivation of this perishable crop were acceptable to cultivators and financiers.

Based on the reasons given by migrants and traders for their cropping and investment choices, there appears to be a link between the adoption of hybrid corn and informal loans. Migrants producing hybrid corn by capital-intensive methods often use the crop to service loans from a moneylender, most often a grain trader in the nearest lowland town. My own 1994/95 survey on the cropping pattern and credit relations of 88 farm households in Isabela and Cagayan (59 migrants and 29 lowland farmers)<sup>10</sup> pointed in the same direction. Table 9.2 summarizes the results of this survey.

**Table 9.2 Hybrid corn production and informal credit, survey results (1995)**

	Lowland Farmers		Forest Migrants	
	(N=29)	%	(N=59)	%
Owning uma/ublag land	0	0	49	83
Owning bangkag/talon land	29	100	20	34
Stating tenancy	9	31	3	5
<b>Producing (upland) rice</b>	23	79	52	88
- with credit, using inputs	16	55	4	7
- with credit, not using inputs	4	14	5	8
- no credit, using inputs	3	10	0	0
- no credit, not using inputs	0	0	43	73
<b>Producing white corn</b>	5	17	18	31
- with credit	4	14	16	27
- without credit	1	3	2	3
<b>Producing hybrid corn</b>	15	52	24	41
- with credit, using inputs	10	34	5	8
- with credit, not using inputs	1	3	10	17
- without credit, using inputs	4	14	1	2
- without credit, not using inputs	0	0	8	14
Total n°. using inputs	25	86	10	17
Total n°. not using inputs	4	14	49	83
Total n°. stating production loans	10	34	5	8
Total n°. stating consumptive loans	10	34	16	27
Total n°. stating minor loans (from relatives)	2	7	29	49
Total n°. stating no debts	7	24	9	15

\* The total number of respondents stating that they had consumptive and production loans is lower than cumulative score for rice and corn cultivation with credit. This is due to the fact that some farmers produce both rice and corn on credit.

Before discussing the results, a word of caution is in order regarding the conclusions to be drawn from this survey. It was not conducted on the basis of a representative sample of lowland and migrant settlements in Cagayan Valley. Of the 59 upland farmers interviewed in

<sup>10</sup> The original number of respondents interviewed in this survey was 109; 21 interviews were either incomplete or contained internally contradictory answers, and were therefore not included in the analysis.

this survey, 12 lived in the accessible upland barangay of Dimatan. This survey did not cover any of the other settlements included in table 9.1, and covers settlements located within a 35-kilometre radius of Cabagan, Isabela, where the CVPED staff who conducted the survey, reside. Related to the same 'constraint' is the fact that all households interviewed by means of this questionnaire lived in relatively accessible areas, which helps to explain the high degree of market integration reflected in the results. As noted above, the purpose of this survey, and of the chapter as a whole, is to draw attention to a relatively new development, the contours of which only began to emerge towards the end of the period covered in this research. Further studies will be necessary to determine more precisely the extent of this development and the mechanism propelling it.

The following conclusions may be drawn on the basis of the results shown in Table 9.2:

1) *Cultivation of hybrid corn*

Half of the lowland farmers and 40% of the forest migrants interviewed produced hybrid corn. I must qualify this result by adding that 20 of the 24 forest migrants producing hybrid corn were from Pauikan and Dimatan, both pioneer settlements located approximately 10 km from the National Highway. Furthermore, the survey highlights the importance which the forest migrants continued to attach to producing at least a part of their own rice staple: of the 24 farmers cultivating hybrid corn, 22 cultivated upland rice as well. Only 7 of the 59 upland respondents did not cultivate upland rice or irrigated rice. As expected, the vast majority of forest migrants cultivated rice on *uma* land, without applying fertilizer or other agrochemicals. The reverse was true of lowland respondents, 70% of whom used capital inputs in the production of rice.

2) *Use of capital inputs*

In line with the previous results, the use of capital inputs is still more common among lowland farmers than among their colleagues in the forest lands; 86% of the lowland respondents produced rice and corn using capital-intensive methods. Conversely, 83% of upland households used no external inputs. The minority of 10 forest migrants who used fertilizers and pesticides had access to ploughed and - in 4 cases - irrigated lands (*talon*).

3) *Informal credit*

The majority of all respondents stated that they were engaged in informal credit relations, ranging from minor loans from relatives to several thousands of pesos borrowed for medical treatment, tuition fees, or the purchase of a farm tractor. The seven lowland farmers, who stated that they did not have any debts emphasized that they were consciously avoiding loans, because of the high cost. With one sole exception, these households had access to substantial land holdings or to other sources of cash income, such as carabao logging or a remittances from a family member with urban or overseas employment. The majority of lowland farmers had gotten substantial loans from informal sources, usually grain traders. These loans served both production and consumptive purposes.

Nearly all forest migrants responded that they had occasionally received minor assistance from "*relatives*", "*neighbours*" and "*people we know*", borrowed without interest and only in an emergency. Of the 21 upland households, who said their loans were due for repayment by the end of the season, 15 were cultivating hybrid corn in *bangkag* land. However, only five of these corn-growers indicated that all or part of the loan was used to acquire capital inputs. Six of the ten who did not use capital inputs produced corn in order to pay off consumptive loans, and the four others said they had no debts. Another eight upland farmers grew hybrid corn on *uma* lands; four of these had also borrowed from outsiders, while the other four owed nothing or only small amounts to neighbours and

relatives. Of the 18 forest migrants in this sample who cultivated traditional corn varieties, only two had debts to be settled with outsiders.

In the previous Chapter, debt failure emerged as a possible factor behind the migration of newcomers into the forest land. This survey shows that similar informal credit relationships, both among farmers and between farmers and outsiders, occur in migrant settlements in the Sierra Madre. The overall pattern that evolves from these results confirms earlier reports and the observations made in my 1996 field appraisal: upland farming is gradually being transformed from a capital-extensive, subsistence-oriented activity into the conventional pattern in the lowlands, whereby farmers borrow capital to cultivate, and cultivate - at least in part - in order to pay off loans. Neither in the uplands nor in the lowlands are these informal loans used exclusively to purchase capital inputs; more often, in fact, consumptive purposes are served.

The adoption of hybrid corn varieties and informal credit relations seem to go hand in hand. Whether the choice for hybrid corn flows from the need to generate more income in order to pay back loans, or is a means of gaining access to credit remains unclear. To examine the possibility of a link between crop choice and credit in more detail, I will now take a brief look at the informal money-lending sector in the Philippines, and the changes it has undergone as a result of the Green Revolution and agrarian reform.

#### 9.4 Crop choice and informal credit

##### 9.4.1 The importance of the informal sector in rural credit

For many years already, informal moneylenders have played an important role in the rural credit market of the Philippines. In 1961, a nationwide survey on the borrowing practices of farm households, found that 1.1 million of the 2.4 million farmers interviewed had taken out cash loans that year, 88% with informal sources (BCS 1961, cited in Sacay *et al.* 1985:80). Twenty years later, 60% of a sample of 870,900 small farmers stated loans with informal lenders (TBAC 1981 in *ibid.*). In Cagayan and Isabela, where smaller surveys were carried out in 1976 and 1978, more than 80% of rural loans came from informal sources (TBAC 1981, in *ibid.*:81; PCAC 1981:56, table 24).

In line with the growing need for production loans in an intensifying agricultural sector, the role of input dealers, grain traders, and farmer-moneylenders increased in the informal credit markets, at the expense of the traditional providers of informal credit: landowners and *sari-sari* store operators. Before 1960, landlords provided 61% of the total amount of loans in the informal sector within Philippine rice areas (Esguerra 1993:11). Due in part to agrarian reform, this proportion has since declined, as confirmed by Mangahas *et al.* (1976); in their 1976 survey involving 538 share tenants and leaseholding farm households in Nueva Ecija, only 2-3 of every 10 leaseholders were still borrowing from their former landlord, compared to 7-8 of every 10 sharecroppers. As noted by Fegan (1981), Sacay *et al.* (1985), Kerkvliet (1991) and others, traders, grain-millers, dealers in farm inputs, and rich farmers have taken the place of the landlords by financing the increased capital requirements of lowland farmers growing high-yielding rice varieties. Between 1968 and 1978 the number of entrepreneurs engaged in informal moneylending in Isabela, Bulacan and Camarines Sur increased by over 400%. All of the 168 entrepreneurs interviewed in this survey were engaged in informal moneylending (PCAC 1981).

Government-owned financial institutions repeatedly found themselves unable to participate effectively in the high-risk market of small-scale agricultural credit. Subsidized credit

programmes often resulted in low recovery, despite favourable interest rates. A major government attempt to enter into no-collateral credit with rural smallholders was the 'Masagana 99' credit scheme (Tolentino 1987). In its peak year 1974-1975, Masagana financed 800,000 farmers, collapsing soon afterwards under widespread loan default (PCAC 1981). The latest comprehensive agrarian reform programme also included a credit component, in which the Land Bank intervened on behalf of tenants and landless farmers by buying lands from estate owners and offering gradual repayment schemes on soft terms. However, many beneficiaries entered into informal loans to finance their mortgage, effectively losing their title soon after the land was registered in their name (see 8.5.4).

Acquaintance, trust, and social control mechanisms are critical in rural finance (Yotopoulos and Floro 1991:144), especially when the borrower is a poor farm household with few assets that could serve as a collateral. The size of many formal lending institutions means that they are under bureaucratic control, making them less attractive for these small-scale lending activities. For this reason, formal banks 'contract out' such labour-intensive and personalized rural lending operations to informal moneylenders. Credit-worthy borrowers with access to formal banks borrow capital there to finance agricultural and consumptive loans to small farmers (Agabin 1988; Geron 1988 cited in Esguerra 1993:31; Larson 1988). The practice of financing a combination of production inputs and day-to-day needs during the crop establishment period is an advantage which the informal sector has over formal banks. By offering a mechanism which caters to needs which are beyond the management capability of these banks, the informal financial sector "...performs a useful function in providing asset-poor households with a way to gain access to credit. In particular, credit-tying as a collateral substitute makes borrowing possible for rural households who would otherwise go without credit" (Esguerra 1993:35)

#### 9.4.2 *The crop collateral*

In the eyes of professional traders, land titles and cultivation rights are an unpopular form of collateral. First, because few farmers own the land they till, and even if they are the owners 'on paper' as a result of land reform, the remaining mortgage on the land limits its collateral value. And second, because land is not a free trade commodity. The land market is artificially constrained by agrarian reform laws, which increase the tenurial protection of cultivators and place limits on the area of farmland one may own, thus pushing land prices down below their free-market value. The last resort in the case of loan default, to take up farm production themselves, is not attractive to traders either. Thus "so long as money lenders had no security for the loan aside from taking over part of the farm in case of default at the harvest, rural capitalists were unwilling to lend except to neighbours on whom lenders had adequate credit ratings...in practice, lenders left the defaulting farmer as a kind of tenant, taking 50% of the net crop like old landlords" (Fegan 1986:168). Substitutes for land as collateral are third-party guarantees and the threat of losing borrowing opportunities in the future. Another effective security is to ensure that one is the first to be paid at the end of the cropping season. Fegan describes how traders in Nueva Ecija developed integrated agribusinesses, entering into contracts which encompassed the supply of certified seeds, agrochemicals and threshing services to rice growers. This last component was vital:

"By operating across linked markets for several inputs, and with an inescapable collection mechanism in the thresher, Vito made higher profit than in single markets, because of his contractual monopsony. At harvest Vito's thresher, run by a son, collected debts plus interest and its own 6% of the gross, with priority over any other charge on the harvest, allowing him to lend without risk" (Fegan 1986:164)

Several other authors (Esguerra 1993; Esguerra and Meyer 1992; PCAC 1981; Sacay *et al.* 1985; Yotopoulos and Floro 1991) also mention the compulsory sale of the borrower's crop to the moneylender as a common form of collateral in informal credit. A survey in Munoz, Nueva Ecija, showed that 106 out of 172 informal credit contracts were based on this condition (Esguerra *et al.* 1992: 157). Most informal credit lines encompass both production and non-production loans: whoever borrows for production also borrows for consumptive or emergency needs (Mangahas 1991:71).

Thus a crop collateral, which is often mentioned in the surveys presented above, involves the guaranteed delivery of a specified crop at the end of the season, in exchange for a loan which often comprises both production-oriented and consumptive components. The maximum amount the farmer may borrow is roughly equal to the expected yield at the expected market price during the harvesting period. If the cultivation of the crop requires the use of fertilizers and other agrochemicals, these are included in the overall credit ceiling. The remainder may be accessed through cash advances, or if applicable, purchases of consumption items in the store of the moneylender. The loan is only repayable in grain, not in cash. In some cases, the trader/moneylender demands delivery of the entire crop and, if there is any balance income left after subtracting what the farmer owes, he enters this in his accounts as the amount that the farmer can use for future purchases in his store. This system of market *interlinkage*<sup>11</sup> combines in a single agreement the purchase of agricultural inputs, the allocation of the farmer's labour, and the sale of his crop. In this way, farmers cultivate a crop that buys them a consumptive credit line in the informal moneylending market.

By interlinking markets for capital inputs, crops, consumer goods, and labour, informal moneylenders are in a better position than formal lending institutions to recover these loans. When it comes to decisions on priorities in debt payment, the informal lender who also provides daily needs on credit naturally has to be serviced first. The absence of a consumptive loan facility reduces the competitiveness of formal banks and government-sponsored credit programmes in comparison with the informal sector, even though formal banks can offer lower interest rates to farmers with a land collateral. In the 1980s, the nominal interest rates of formal banks were 10-15% per annum, while those in the informal sector ranged from 30% to 98% (Sacay *et al.* 1985)<sup>12</sup>.

The practice of tying farm labour to the production of particular commodities through informal credit has been employed in Philippine agriculture for many decades. During the 1930s, landlords reinforced their tenants' sense of obligation towards them with advances, both in kind and in money, "not only because of the high interest rates, but also to keep tenants tied to them" Peltzer (1945:94, cited in Wolters 1984). Local users made use of their political and social relations with the administrators of government-sponsored rural credit programs to borrow capital at the normal interest rates (then 8% per year), and demanded interest rates of 100-150% per year from their clients, to be repaid in grain (Wolters 1984: 118).

An example from the 1920s illustrates the force with which credit may tie farmers to a crop, despite negative incomes incurred by the cultivators. In a comment on the table presenting net farm incomes from the cultivation of tobacco in Isabela and Cagayan Valley,

<sup>11</sup> Market interlinkage refers to a transaction between two parties in relation to the exchange of two or more commodities or services, linked through the transaction in an essential way (Braverman and Srinivasan 1980)

<sup>12</sup> From the lender's point of view, real interest rates are lower because of transaction costs and the drop in market prices which generally occurs at the time of harvest. If loans are repaid in grain, as is usually the case in informal moneylending, these costs can largely be avoided through grading and price cartels between traders, or recovered by storing the grain until prices recover after the post-harvest glut.

the authors wrote:

"The title of the table should be reversed, that is, the tobacco growers' **annual net loss** from a hectare.....The average loss per hectare for the 235 farms represented in the survey in the Cagayan Valley, therefore, was P96.46..."

Loans with tobacco traders were seen as the reason that farmers nevertheless opted for the cultivation of tobacco:

"The tobacco growers as a whole are always in debt...and have one source of cash, and that is tobacco. And tobacco as a crop is wholly at the mercy of weather fickleness on the one hand and of the tobacco leaf buyers on the other...There is no question but that the farmers are veritable victims of usurers." (Paguirigan and Madamba 1927:103)

Studies on the cultivation of hybrid rice varieties in Nueva Ecija also showed farmers growing a crop in exchange for minimal or negative returns on their labour. By interlocking the markets for threshing services, agricultural inputs, and personal credit, traders could make a profit on the production of a crop that was not profitable to the cultivators (Fegan 1986, Kerkvliet 1991:46).

In the case of hybrid corn production in Cagayan Valley, interlocked markets for agricultural inputs, credit, consumer goods, and crops turned the grain market in the region from one concerned with crop prices to one concerned with crop producers. In her study of credit relations in the production and trade of highland vegetables on Cebu island, Hendriks (1997) observed competition among traders to establish *suki*, or long-term business relationships with vegetable producers, or with the middlemen representing them in the market. Here credit, although limited to the field of production loans and delayed payments for products delivered, serves as the principal means of establishing guaranteed crop delivery. People who wanted to join the vegetable trade market faced the problem that most farmers - and their products - were already tied to a trader through a *suki* relationship. To enter into the trade, others had to find their own *sukis* (*ibid.*:159). Hendriks concludes that, in addition to the personalized nature of normal *suki* relations, which are based on trust, these ties between traders and producers derive much of their stability from the credit base which underlies them.

The security of delivery of perishable vegetables may be seen as one rationale for a marketing system operating exclusively by means of *suki* relations. The vegetable traders run considerable risks: prices are established at wholesale markets in the early hours of each market day, when products must quickly find their way to the consumer. Strong variations in supply cannot be solved through storage, and may result in immediate economic loss. In a study of vegetable marketing contracts in Indonesia, the existence of crop-delivery contracts was also interpreted as a reaction to uncertainty in the market place, and therefore more likely to occur when the product being traded (in that case, chillies and cabbage) is perishable and subject to price fluctuations (Braadbaard 1994:148)<sup>13</sup>. The explanatory value of this analysis for the production of hybrid corn probably turns on the part of the farmer-producer: the crop must be taken from the farm to the market as soon as it has dried sufficiently. For traders, on the other hand, grain moving and storage is an entirely feasible and even profitable activity, because of the considerable price fluctuations between the harvesting months - when all the growers are harvesting and delivering their product, and the later months. Moreover,

<sup>13</sup> A 1981 study on informal rural financial markets by the Presidential Council on Agricultural Credit draws a similar conclusion, acknowledging the exorbitant amounts farmers pay for informal loans, but considering these as transaction costs for the high risks involved in small-farmer financing. "Private moneylenders...creatively adapt their lending techniques to local conditions and henceforth convert the substantially large expected losses into actual profits" (PCAC 1981:23)

supplying one trader exclusively has no positive price effects for the farmers, who receive the prevailing market price as it prevails during the harvesting period. Unlike the case of perishable products, part of a trader's profits from contracts tying credit to the guaranteed supply of grain are earned in the storage of the crop.

In sum, traders have three motives to tie farm labour to the production of commercial grain through credit:

- 1) high risks in this sector of the credit market, in which uncapitalized, collateral-less farmers participate, exposing themselves as well as their creditors to considerable risk of default. To enhance the chances of recovery, the trader ensures that he is the first in line to be paid in grain after the harvest.
- 2) guaranteed delivery contracts with corporate buyers in Metro Manila, Bulacan, Laguna and Nueva Ecija, whose production process requires the guaranteed delivery of specified volumes of grain at specified dates in the future. If they have no assurances of delivery themselves, it is risky for traders to enter into these lucrative and prestigious contracts.
- 3) increased profitability, because of reduced competition. The trader can unilaterally (albeit within the boundaries laid down by traders in a certain locality) define the balance between the cost of borrowed cash, consumption items and farm inputs, and the value of the crop (including the grading of its quality).

Linking personal credit to a production loan, and taking the guaranteed delivery of a specified crop as the only way of re-paying the loan, reduces farmers' freedom in the marketplace. Traders who supply farmers with commodities for household consumption, certified seeds, and agrochemicals on credit can set the prices on all these products at liberty, including the interest rates charged over these products, and the price of the crop with which the debts can be repaid. The farmer cannot choose to sell his harvest to the highest bidder and repay his loan in cash, but agrees to deliver his entire crop to the moneylender, or at least the equivalent of the amount he borrowed. A trader who allows repayments in money runs the risk that the farmer will actually borrow from more than one moneylender, and that he may therefore not be the first one to be paid after the sale of the crop. Poverty continues to prevail among the farming population of the Philippines. In 1988, 74% of the rural families making a living by agriculture were living under the poverty line, and corn farmers were among the poorest (Balisacan 1992 in Srinivasan 1993:3). Informal credit exposes poor farmers with few if any financial buffers to the risk of having to devote a growing proportion of their labour to debt service, either through paid labour or the delivery of specified farm or forest products. The trader determines the crop, but the farmer bears the risk of its cultivation. In the case of hybrid corn, the risks include not only climatic adversities and fluctuations in yield, but also the instability of prices paid for hybrid corn, which range from 5 pesos per kilo during the harvesting period to 10 to 12 pesos in the cropping season. Due to the risk of decay and the absence of adequate on-farm storage facilities (see Section 9.2), farmers have no other option but to ensure that their crop reaches the warehouse of their moneylender as soon as it has dried properly. This rationality causes a glut, which may cause the value of their crop to fall short of the amount to be repaid. In contrast to sharecrop tenancy, where the landlord's share also depended on crop yield, a disappointing yield or price results in a negative balance, which must be paid with the next crop (see 9.8)

A critical review of the role of moneylenders and debts in agriculture, such as the above, calls to mind a neo-colonial negative perception of credit as a "*kind of illness, for which a cure should be found*" or the image of moneylenders as "*unscrupulous rich people who impose*

wicked, crippling terms on their helpless mortgagers" (Hill 1986:84-85). I subscribe to the essential role of the informal credit sector in rural economies, the entrepreneurial courage of those engaged in the activity, and the rationality of discounting recovery risks in interest rates. Indeed, the poorest households may well be those who have no access to credit and are therefore left to their own devices in dealing with fluctuations in income and expenditure. However, while objections to moral undertones in critical writing about informal credit markets in developing countries are a useful warning against ideological bias, her view of informal credit as inconsequential for the formation of socioeconomic inequalities in rural societies (Hill 1986:83) borders on positivist naivety. And as I argue in this Chapter, current moneylending practices are neither entirely unproblematic from an perspective of forest protection and sustainable land use.

#### 9.4.3 *Commercial grain: the post-logging business opportunity*

Private traders handle by far the largest share of the total grain production in Cagayan Valley. The government-run National Food Authority, which offers a guaranteed price for selected crops, including rice and corn, plays only a minor role in the market; in Isabela the NFA's 62,000-ton storage capacity amounts to roughly 10% of the aggregate capacity of private warehouses (Province of Isabela 1993). Even though the NFA offers higher prices, farmers prefer to sell their crop to private traders, since it does not offer the option of buying consumption items and production inputs on credit. Moreover, the NFA only buys from farmers who can show a land title or emancipation certificate<sup>14</sup>, conditions which most forest migrants are unable to meet. For this reason, I will confine the discussion to the role of private traders and moneylenders.

Floro and Yotopoulos (1991) distinguish loans from trader-lenders and better-off farmers, which generally involved the bonded sale of output, and loans by farmer-lenders, in which a land collateral, including cultivation rights, was often required. At the time of their study, in 1984, it was already clear that land was not the preferred collateral for trader-lenders. The primary concern of non-cultivating lenders is an assured volume of trade, to reduce the marketing risk and lower the cost of borrower-monitoring and debt failure. For farmer-lenders, who are themselves directly involved in agricultural production, one purpose of lending money to other farmers is the prospect of gaining cultivation rights over additional lands. Partly because of this difference in motives, trader-lenders and farmer-lenders also target different groups: traders deal primarily with richer farmers, who have more land, higher expected output volumes, and lower default risks. Farmer-lenders may even prefer to enter into high-risk loans with poorer farmers who are willing to use the land or usufruct collateral in such a loan (Floro and Yotopoulos 1991:152-153). Box 9.4 shows that within this category of small-scale moneylenders, there are some who serve as relay stations for larger trading companies in the lowlands. Remy Castillo finances the crops and personal expenses of upland farmers, partly with her own capital, and partly on behalf of a large grain trader in the lowland town of Tumauni, Isabela.

<sup>14</sup> The emancipation patent is part of Presidential Decree no. 27, the Operation Land Transfer (the predecessor of the Comprehensive Agrarian Reform Law) and is issued to former tenants who qualified as beneficiaries, in preparation of the final issuance of land titles by the Register of Deeds (see also Chapter 8).

**Box 9.4 Remy Castillo, trader and moneylender in the uplands**

There are now nine traders in the upland barangay of Dinuman. Like Remy, many built up a business capital with earnings made elsewhere. The richest of the local households, who only recently entered into the trading and moneylending business, has four relatives working abroad, one of whom is married to a Japanese man. Remy combines the businesses of running a small *sari sari* store with grain trade and moneylending. She supplies the migrants of Pauikan and Tibunan with cash and consumption items on credit, in return for the delivery of grain. She only entered into the grain business in 1993, after having built up a starting capital as an Overseas Contract Worker in Malaysia in 1991 and 1992. Mr. Rolly (Rolando) Go, a big grain trader in the lowland town of Tumauni (and also the financier of forest migrants in Dimatan (see Box 9.3), supplies Remy with fertilizers and agrochemicals. In 1994, Go supplied more than 40,000 pesos worth of agrochemicals to upland farmers through Remy's store. Remy says she delivered "*far more than that*" in yellow corn at the end of the season. This year her *utang* [debt, GT] to Mr. Go is over 70,000 pesos, but that amount includes a cash loan of 17,000 Pesos for the recruitment fee of a niece who wants to go abroad. Remy also provides consumptive credit to the Ifugao migrants who arrived recently, but says that they have a ceiling of 1000 pesos "*since they are very slow in paying back. Others people here have debts as high as 12,000 pesos. Sometimes even the harvest is not enough to pay it back*" Officially, there is no competition between the traders here; they all offer the same prices and charge the same interest rates. But according to one of the residents, this is only the official story; in reality, competition takes place behind the scenes, through confidential deals under different conditions. Later, another informant adds that getting credit is still not that easy if you are new and you have no collateral; for these borrowers, most moneylenders here require a guarantor. (Research diary, March 1996)

Her case shows that the system of credit-bound, exclusive delivery of hybrid corn is reproduced between traders. People with a minor starting capital, accumulated from sources other than farming, start their own small trading shops. Through their contacts with traders in the lowlands, to whom they supply upland products traded in their small businesses, the option of managing a credit facility on behalf of these entrepreneurs presents itself. Social acquaintance is a core element in informal credit, and this relay mechanism is necessary to bridge the distance between the trader in the lowlands and the upland community. For the same reason, banks in the lowlands relay their rural lending schemes with smallholders through traders and other informal moneylenders in the lowland towns of Cagayan Valley. These moneylenders are much more immersed in the local context than banks, and thus better able to decide whom to finance and how to recover these risky loans. The crop collateral, and the combination of consumptive and productive components in personal loans are sufficient conditions for profitable moneylending and reduce the need for legal collateral, such as a land title. This, in turn, opens up possibilities to finance forest migrants who cultivate public lands in the Sierra Madre.

An aspect which adds to the attractiveness of the Sierra Madre as an opportunity to expand or enter into an agribusiness and moneylending scheme is the fact that competition in this market is not run entirely through price mechanisms. Farmers who have already entered into a credit-bound crop production contract with one trader cannot supply their products to another trader, as they are not allowed to pay back their loan in cash. The best way to develop or expand a position in the lucrative grain-trading market, therefore, is to link up with new borrowers *cum* crop growers, such as forest migrants.

Agribusiness and informal moneylending are profitable activities. Umali (1987, cited in Esguerra and Meyer 1992:153) reports returns to investments in *palay* trading of 100 to 257 percent, but, as Esguerra and Meyer note, it should be kept in mind that profitability is confined to a few months per year, and depends strongly on the volume handled. The variation in incomes earned by various traders can often not be discerned on the outside of their shop, or lifestyle in the rural towns where they are based. Here, many maintain an astute image of petty business, often a small hardware or *sari-sari* store, a restaurant or at the weighing scale.

A second lifestyle, in the anonymity of Metro Manila, remains outside the view of their local clients. There, their children are sent to the best schools in the country, investments are made in real estate, and a Western lifestyle is within reach<sup>15</sup>. A young tobacco trader and moneylender regularly complained to me about heavy losses, on the order of hundreds of thousands of pesos, after a weekend at the nearby casino, and showed me his carefully hidden Rolex watch, worth more than 20,000 US dollar, after returning from a trip to Hongkong. During a visit to Europe, another trader-cum-politician disclosed to me the profits he was making since he became involved in the grain trading business: delivering 10,000 cavans (450,000 kilos) of rice to a buyer in Manila every month, selling at 675 P/cavan grain that had a real cost of 500 Pesos per cavan, he and his partner were making 2 million pesos, or 80,000 dollars a month from this deal alone.

The logging industry created new wealth among logging contractors, sawmill operators, and government and company personnel. After 1990, when the industry began to contract, these investors saw an opportunity to enter into agribusiness and moneylending. In addition to new capital, the logging industry also generated a large area of potential farmlands in the Sierra Madre. The business history of the Argueza family, traders in San Mariano, who contracted the first migrants of Musinga to grow hybrid corn in 1995, shows how the trading business has always managed to seize each new opportunity that presented itself in twentieth-century Cagayan Valley:

#### 1917-1965: TOBACCO TRADE

Liza is the mestiza daughter of an Ybanag mother, Nenita Argueza and a mestizo Chinese father, Cayetano Li. Because of the uncertainties accompanying Chinese business enterprises in the Philippines, the family always used the mother's name, and Liza continues to do so. The late Mr. Li, or Argueza, was born in 1902 and migrated from Manila to Ilagan in 1917. According to the old Mrs. Argueza, her husband arrived in Ilagan "only 15 years old and without even one Peso. He started out bringing tobacco to Manila, selling it there and bringing the farmers their money afterwards. In 1942, we fled because of the war and went to San Mariano, also because there was no tobacco trader here yet. We continued to trade in tobacco until the early 1970s, and we were the ones holding the license to sell to the National Tobacco Administration. But the Government wanted to take control of the trade and they established the PTA; Delfin Albano was managing it then. So we started to sell to the PTA. The farmers could not sell straight to the PTA, because they wanted us to classify the leaves first. There was a classifier at the PTA too, but he was not good, that is why farmers preferred to sell to us. Also because we paid them cash, while the PTA gave them papeles, credit papers that the farmers couldn't cash until the PTA had money again. But tobacco went down after 1970; you see, the traders and the farmers had found something better in logging, so nobody was interested in cultivating tobacco any more"...

The beginning of large-scale mechanized logging in the Sierra Madre was not related to the declining demand for tobacco; nor was the timber industry the only possibility that traders had to deal with the tobacco crisis. As we saw in the previous chapter, agriculture was expanding rapidly during this period, which was also marked by increasing crop yields due to the introduction of modern rice varieties. In San Mariano, however, with its 200,000 hectares of forest land, logging became the number one business opportunity in the next twenty-five years:

<sup>15</sup> There appears to be a considerable difference in the lifestyles of younger and older generations of traders, particularly those of Chinese descent. Elderly Chinese often grew up as the children of poor and hardworking immigrant families and, with the exception of expenditures for schooling, are more conservative in their lifestyle than their offspring.

## 1965-1990 COMMERCIAL LOGGING, WOOD-PROCESSING, RETAIL TRADE

"In 1952, I became the first logging concessionaire here. We were the first ones to open up the road from Minanga, and all of the cutting had to be done with the barrot saw! 'Ever' sawmill also worked for my concern, but their bulldozer was really what we call 'tupac-tupac': one day it works, the next day it breaks down. Later, I was able to get two trucks from Roxas and Nueva Ecija. Our workers came from Mountain Province, because the people here in San Mariano were not interested. From 1963 onwards, more people came in. The first sawmill was set up in 1965. We were still cutting wood very near the town during those days; one truck could go up and down to the cutting area three times a day. Our concession was 1,200 hectares, so we didn't do all the logging ourselves. We simply collected the royalties from other operators. When Marcos decreed that small concessions had to be consolidated in bigger corporations, I gave our concession to my son, and it was incorporated with 14 other small concessions. But this was not a good setup, some people were hiding money and eventually the corporation broke up, and anybody could log anywhere in the concession! After the concession went, we decided to go into salabadiok and start our own sawmill. Again, big sawmills closed and small sawmills sprung up, and now it is only my son who is still doing some wood business. So tobacco went first, then logging also ended, and we went into the grocery business. We set up the biggest grocery store in San Mariano! Six years ago we closed it because I was getting too old. Right now, the farmers are asking me for tobacco inputs again; the price is very good, 3000 pesos per bale of native tobacco! But I am old now, my children make their own decisions.

One of the earliest corporate concessionaires in the Region, this family was engaged in large-scale mechanized logging throughout its boom-and-bust cycle between 1965 and 1990. The story of the old Mrs Argueza shows that the family initially had difficulty responding to the end of the logging industry; many people in the town used to be employed either by the sawmills and logging contractors themselves, or by one of the enterprises serving the industry, such as restaurants and bars, automotive repair and welding shops, and retail stores. Economic hardship in the years directly following the first logging moratorium imposed here in 1989 forced customers to opt for the cheap public market rather than for the fancy supermarket. The next generation discovered a new business opportunity in the trade with migrant communities who had settled in the hinterlands of the town:

## AFTER 1990: CREDIT AND COMMERCIAL GRAIN

The family's old wooden house still dominates the *centro* of San Mariano. It is centrally located, right next to the public market where the logging trucks used to load their supplies for the labourers, and where nowadays the same trucks deliver the hundreds of upland families coming to San Mariano every Sunday morning to hear Mass and buy necessities. The open area on the ground floor of the house holds nothing but two scales to weigh the farm products delivered here. Liza's daughter is a chubby girl with Chinese looks. Fluent in Chinese, Tagalog and English, she tells us that she goes to the Chinese high school in Cauayan. Cesar, my research partner in the field, asks how much the enrolment fee is and she answers casually, "30,000 pesos per semester". Stunned, wondering if he could possibly have understood the girl correctly, Cesar replies "*per semester?*"; at his current salary of 5000 Pesos per month, his three young daughters will clearly not be able to enjoy the same kind of schooling.

Liza takes me to her tiny old desk in the corner to explain how the corn-buying business works. She says: "*I was a plain housewife before; my brother used to run our wood business here. Before that, my parents traded here, in tobacco and peanuts. I only entered the business three years ago, and it is doing very well. I deal only in corn, and the system works like this: We get our fertilizer from Cauayan. What we do is to give the farmer fertilizer and seeds on*

*credit, and every month a little bit of cash money until harvest time. There is a ceiling to their credit, depending on the number of bags of fertilizer that they take: one bag of fertilizer is good for one hectare and their maximum credit is 10,000 Pesos, that is for everything, including the family needs. There is no guaranteed price for their product, but it should not fall under 6 pesos, otherwise the farmers cannot make anything. The price is now 6.60 to 6.80 per kilo. We normally live in Manila, but I am here for a few days because the crop is coming in. We also sell kulliglig [farm tractor, GT] and other machinery, but only those who can take 4 bags or more qualify to get one on credit. We bring our corn to the piggeries and poultry integrators in Bulacan and Bataan; that is why we do not do milling here; the integrators are too far away. My business is doing well; when I started in 1991 my turnover was 500 bags of fertilizer, in 1994 it went up to 700, and this year it was 2000 bags. And the same goes for the other traders here. Our business prospects are very bright, more lands are opened up every year!"*

The business history of the Argueza family follows the economic process of Cagayan Valley as a whole over the past century. Starting as tobacco traders, they abandoned that sector as it declined during the mid-1960s and shifted their investments to the newly developing logging industry. By the 1990s, when most of San Mariano's forests had been either repeatedly logged or converted, they shifted again, this time to retail trade and, more recently, to input dealing, credit and the grain trade. The trading history described above is not exceptional for San Mariano: of the ten entrepreneurs here who were involved in grain trade and moneylending in 1996, nine used to have substantial interests in the local timber industry.

After the lowlands, migrant settlements in the uplands present the next expansion opportunity for the lucrative moneylending and agribusiness sector. Those already involved seek new investment opportunities for earnings made in other activities; others have left behind the wood industry and are looking for new opportunities for trade with upland communities. Yet another category of new entrepreneurs invests directly in the mechanized conversion of former ranches and idle grasslands into cornfields, purchasing farm machinery and hiring labourers to manage the farm. For non-resident traders, such as the Argueza family, this last option is less attractive; the main idea behind each change of businesses has been to make short-term, quick-turnover local investments, and to use the returns on these investments in other sectors of the economy, such as national or foreign real estate, stock, manufacturing, or consumer goods. At the end of my interview with her, Liza took a piece of paper and, in a quiet confidential voice, explained one part of the background of this business strategy:

*"There are traders and financiers here, just like me, who do not stay here in San Mariano because - I do not know if you believe in these things - it is our Chinese belief that the place where San Mariano was built has no good fortune. You can see that this place looks just like a sink, a hole in the earth, and therefore this place is not good for money to prosper. To make it prosper you need to bring it out of here." (Grain trader in San Mariano, March 1996)*

Needless to say, the investment strategy pursued by this family has turned their belief about the lack of economic prospects in the town into a self-fulfilling prophecy. This family has consistently limited its economic stakes to rapid-turnover capital investments in the production and extraction of timber and cash crops, instead of making long-term investments in land improvement (such as irrigation and grassland rehabilitation) or the development of a local processing industry. Returns on capital are invested in the National Capitol Region, in foreign enterprises, real estate and imported goods. Interestingly, we saw earlier that a new trading enterprise works exactly the other way around: capital earned elsewhere, e.g. in overseas employment, is invested in the establishment of a local *sari sari* store, and eventually in the business of buying and selling farm products. An interesting difference between the small

relay-trader just starting out (Box 9.4) and this well-established agribusiness in the lowlands is that in the latter case, the owner is only a part-time local resident. By living in the National Capitol Region, she has access to information on lucrative and secure investment opportunities there, enabling her to reverse the roles of the rural and urban investment base, extracting capital from former to invest in the latter.

### 9.5 Credit as a risk-avoidance strategy

Having examined why traders accept, and even prefer the contractual delivery of a specified crop as collateral in rural lending, the question remains why forest migrants enter into these arrangements, which compel them to take the highest risks associated with credit and capital-intensive agriculture.

The process of agricultural intensification has been explained, and critically examined, from several perspectives. In her influential theory on *'the conditions of agricultural growth'*, Boserup (1965) explains the adoption of new farm technologies from a perspective of population numbers and land availability. Traditional long-fallow systems of shifting cultivation combine high labour productivity with low productivity per unit of land area. Such a land-use system is rational under conditions where land abundance and labour scarcity combine. Field studies of traditional, long-fallow swidden agriculture in Southeast Asia confirm the high labour productivity of these systems compared to, say, permanent rice fields<sup>16</sup>, and emphasize the interwovenness of indigenous cultural elements and land-use practices as characteristic of the resilience of these systems (Conklin 1957; Dove 1985; Rappaport 1979). For this reason, Boserup argues, farmers resist intensification until population pressure forces - and enables - them to adopt shorter fallow periods and, eventually, permanent cropping techniques with a higher productivity per area unit, at the expense of labour productivity. Thus it is population growth that makes intensification possible and necessary. Before raising two other criticisms of the Boserup theory, I must first point out that the low average population density of the Sierra Madre raises doubts about its explanatory value for the dual processes of market incorporation and agricultural intensification currently seen in the Sierra Madre.

Conelly argues that the losses in labour efficiency which in Boserup's view make farmers hesitant to abandon shifting cultivation can be reduced, and even converted into gains, if this transition includes the introduction of new technology, such as farm mechanization, high-yielding varieties and agrochemicals (Conelly 1992:204). The use of hybrid seeds, fertilizers and pesticides elevates the overall input-output balance, preventing soil exhaustion as a result of more intensive cropping strategies. Though based on a more positive perspective, Conelly's criticism echoes concerns about traditional slash-and-burn farming expressed by the above mentioned scholars, to the effect that agricultural intensification runs the risk of distorting the proven sustainability of the relationship between indigenous forest peoples and their ecosystem.

A second criticism that has been raised concerning explanations of agrarian transition from the perspective of people-to-land ratios is a lack of differentiation and contextualization. Dove emphasizes the *"futility of trying to explain this development [agricultural intensification, GT] as a pure exercise in agronomy, and the necessity of relating it to the broader ecological, demographic and, especially, economic and political context"* (1985:33). In areas where forest

<sup>16</sup> Dove found the returns on labour of the shifting cultivation practiced by the Kantu people in Indonesia to be between 88% and 276% higher than those achieved in irrigated agriculture (*ibid*:5,6,13, cited in Rotmensen 1988:4).

migrants start to develop a notion of land scarcity, they do not respond to it uniformly, rather each reorganizes his livelihood, and the role of agriculture in it, in a manner which he considers feasible in his own situation. Household composition and the availability of labour plainly play an important role in this response, but so do factors such as the household's sociopolitical network, its internal decision making structure, access to alternative livelihood options, and personal attributes of the members of the household, such as health, cognitive skills and personality (Eder 1984). The land-labour ratio alone does not suffice as an explanatory tool for agricultural intensification.

Many forest migrants, and especially those in the most recent category of 'newcomers' (see Section 4.3.2), resemble the subsistence-oriented *peasants* described extensively in the political-economic school of thought on agrarian change in developing countries (Friedmann 1980; Hyden 1980; J.C.Scott 1976, 1985; Wolf 1969). Peasants rely mostly on household labour for their farm production, prioritize their own land in the allocation of that labour and follow a safety first approach of securing the household's own subsistence needs, especially staple food, first. These characteristics hold true for recent forest migrants. After arriving in the forest lands, these households must first secure their own food intake, using their own labour, and giving priority to clearing and cultivating forest land that they perceive as theirs.

Peasants strive to maintain a certain degree of economic self-reliance, by limiting their degree of incorporation into the national and international market economy (Eggink and Ubels, 1984:50-54). Hyden (1980) analyzed the strategies through which Tanzanian peasants remained 'uncaptured', *i.e.*, not fully dependent on monetary exchange for basic needs. In this view, the continuous deterioration of the terms of trade between agricultural and non-agricultural products is seen as an important rationale for this conscious avoidance of a full integration of peasant production into commodity markets. To be able to buy the same amount of non-agricultural commodities, peasants would either have to produce more and more of their commodity, or adjust their labour and capital investments in their crops. The alternative is to reduce consumption, which is tantamount to impoverishment. Through this process, called the *simple commodity squeeze* (Bernstein 1979:427), heavy reliance on the market is perceived as an important cause of poverty, land degradation and, eventually, the displacement of the poorest peasants - those with little land, labour or investment capital - to marginal lands (Blaikie 1985). A vicious circle of economic marginality and exploitative environmental management practices then evolves, accelerating soil degradation, erosion and, in relevant areas, loss of forest cover:

"... socio-political and economic marginality produces eco-demographic marginality, *i.e.*, marginal people are [...] quite literally pushed into marginal places" (Wisner 1976, in Blaikie 1985:125)

While forest migration to the Sierra Madre indeed appears to relate to economic marginalization in the place of origin, particularly in the case of newcoming forest migrants, this does not necessarily mean that these migrants consciously avoid being re-connected with the market, or moneylenders. After an initial period of getting established inside the forest lands, my findings rather suggests that they seek to re-integrate into the lowland economy. Aside from basic economic motives, such as the need to generate cash to buy consumer items they cannot produce themselves, that tendency could also be understood in the perspective of the Region's longstanding tradition of patronage and strategic submission, as described in Chapters 6 and 7. Status and security are, in fact, sought through the maintenance of

economic, political or social ties with rich and influential people<sup>17</sup>.

Better-off migrants, those with good *bangkag* lands, engage in the capital-intensive mode of cash crop production, and in doing so, take on considerable loans. For this group, building up a reliable channel for personal finance and crop marketing contributes to economic consolidation. Owners of a chainsaw or a carabao may switch to hybrid corn as a way of sustaining their link to a personal financier in town, whom they used to supply with timber. Some farmers enter into credit relations involuntarily, by force majeure: a financial setback caused by illness or death in the family, a wedding or a baptism, or typhoon damage. For those who lack financial buffers or collateral that could give access to cheaper loans with formal lenders, seeking a personalized agreement with a moneylender in town is the only way to solve such a crisis. This way of entering into more risky livelihood strategies was recognized by James Scott:

*"A critical assumption of the safety-first rule is that subsistence routines are producing satisfactory results. What if they are not? Here the rationale of safety-first breaks down. To continue the same routines means to go under in any case and it once again makes sense to take risks: such risks are in the interest of subsistence. Peasants whose subsistence formulas are disintegrating due to climate, land shortage or rising rents do what they can to stay afloat - this may include switching to cash crops, taking on new debts and planting risky miracle rice...."* (J.C.Scott 1976: 26)

In my view, therefore, the opening-up of an informal credit account and the choice of a new crop that comes with it could also be interpreted as a redefinition, rather than as a breakdown of the safety-first strategy. Farmers may well consider the increased risks involved in the cultivation of hybrid grain to be an acceptable trade-off for the security of building up, or maintaining, social security in the form of a stable relationship between the household and a better-off trading family in the lowlands. With no access to formal sources of credit, becoming a *suki* of an informal moneylender is a privilege.

The temporal distribution of income from various sources of livelihood also makes it attractive for farmers to have a credit line. Since the main cropping season for hybrid corn is the dry period between December and March (when the danger of crop decay due to moulds and fungi is lower and access to the forest lands at the time of the harvest is assured), income from corn production is enjoyed before the harvest, in the form of cash advances by the moneylender to whom the farmer has committed his crop. This is favourable because during this period swollen streams and slippery roads constrain the delivery of carabao logging products to the market, and other options to earn cash are also hard to find. Thus the expected income of the corn harvest is enjoyed during a period of relative economic hardship.

While better-off farmers and forest migrants tend to cultivate hybrid corn in their *bangkag* fields in the capital-intensive manner (Box 9.3), poor migrants residing in the proximity of unclaimed residual forest land can plant corn on the *uma*, without the necessity to invest capital inputs (Box 9.2). These migrants may also have a small credit line with a local *sari-sari* store or with another farmer who is better-off. The corn crop then becomes one way of repaying the loan, in addition to providing labour on the farm of a fellow farmer-moneylender. Because of the modest harvest to be expected from the production of corn without inputs, the amounts

<sup>17</sup> A personal experience which illustrates how alive this cultural element still is in the contemporary Cagayan Valley was when a colleague approached me with a request to lend him a significant amount of money for a two-day period. He explained that his son was participating in a contest at his school. The winner of the contest was the child who could show the highest amount in cash that he had been able to mobilize from his family's social network. Since all that was needed was to be able to show the money, I was assured, my loan was going to be returned to me the day after the contest, which was clearly not about the children's own qualifications, but rather the net worth of its patrons.

involved in these credit deals are smaller, and paid labour often continues to be an important mode of repaying these.

Having illustrated the importance that farmers and forest migrants attach to access to informal credit, the question remains whether this mode of accommodating the credit needs of poor, individual farmers and forest migrants enhances the stability of the livelihood of these households. I would argue that for the majority it does not. First, the conditions under which informal credit deals are made are unduly expensive for the borrowers, because of cartel practices between traders in the same town (as we saw in the previous section). The interlinking of markets for labour, crops and credit further reduces the farmer's freedom in the marketplace, and the income he is capable of realizing from each crop. A third aspect concerns the challenge that access to credit poses to financial management capabilities within the household. The common pattern is that men receive the payment for crops, forest products and cash advances, while the women are directly responsible for the well-being of the household. Women are the first to experience the consequences of how the male head of the household manages revenues and cash advances:

*On our way to Musinga, Cesar and I rode on the roof of a weapons carrier, overloaded with goods bought by the passengers in San Mariano today. The atmosphere became more festive as we moved on. A woman bringing boxes of Ginebra, cigarettes and snacks for her sari-sari store in Del Pilar was doing a good business with the men sitting around us. Gin and cigarettes paid for in cash were passed around among the men, who were cracking jokes and pressing us to join them. By the time we arrived in Musinga, some of the men were so drunk they needed help to find their way back home. (Research diary, March 1996)*

Alcohol abuse and gambling (such as cockfights and the *jueteng* number game) are common among men in upland areas, exacerbating social and economic stress in households which are often having trouble making ends meet. Probably dating back to the commercial logging days, when teams of single males would spend weeks on end inside the forest lands, drinking sprees continue to be one of the few sources of entertainment in upland settlements. In the only survey conducted by CVPED students among forest migrants, alcohol and cigarettes accounted for approximately 10% of overall expenses (Bakker 1995, see Section 4.8). While alcohol is inexpensive (0.3 litre of San Miguel gin costs ten pesos), local brands of cigarettes cost 12 pesos a pack. These costs gain in perspective when compared with the 30-50 pesos to be earned per day by doing paid farm labour in the uplands. A local mayor emphasized the regular occurrence of drinking and gambling incidents in poor barangays as avenues for the poor to temporarily escape from the daily struggle for survival:

*"You look at the rich when they drink; they enjoy, they laugh, they crack jokes and boast about their lives. For these poor people, drinking is a 'one-day suicide', just to forget their worries for a while, the faces of the family they have to feed". (Hon. Rodolfo T. Albano, in research diary, June 1996)*

But even for households not affected by excessive spending on alcohol and gambling, it is difficult to refuse an immediate cash advance in exchange for the delivery of a future crop. A family from a quiet forest *barrio* arriving in a busy public market, after a long and uncomfortable ride through the hot grasslands of the western Sierra Madre, faces a world of products beyond its reach. A colourful variety of utensils, garments, vegetables, canned fish and fresh meat, snacks and soft drinks, music, advertisements and the bells of ice cream vendors all cry out to their unfulfilled expectations about their own quality of life, and indeed create new ones. The prospect of enjoying some of these consumption items now, simply by

accepting the invitation to "just sign here"<sup>18</sup> is one of the strongest appeals of informal credit.

In essence, therefore, the initiative to establish an informal credit relationship - and the cropping decision emanating from that relationship - seldom lies entirely with either the farmer or the trader. In some cases, existing credit accounts develop into more comprehensive production contracts, as a result of one of the above mentioned emergencies in the farmer's household. In other cases, farmers actively seek credit in order to cultivate a new crop; this helps them acquire the necessary capital inputs, or invest in farm mechanization. And finally, traders also take the initiative, offering a package of consumptive and production-oriented credit, in return for exclusive access to a specified product.

In Section 9.7, and in the conclusion of this chapter, I will return to the implications that the credit-bound production of cash crops, in particular hybrid corn, is likely to have for future land use and forest cover in the area. To that end, I will first present the actors' field that synthesizes the actors, motivations, alternatives and structural factors that together lead to the adoption of this particular livelihood option by forest migrants.

### 9.6 The actors' field of hybrid corn production in the Sierra Madre

The increasing role of upland farming in helping migrants to secure cash income is fundamental to the development under study in this chapter. Forest migrants, under the terms of stricter DENR restrictions on the extraction of forest products, rely to a greater degree on farmlands for their income. There are few alternative options. Carabao logging is no longer facilitated by the mechanized logging operations of timber concessionaires, and is therefore confined to areas within the action radius of the carabao; moreover, it continues to be illegal outside the community forestry project areas. Agricultural labour is poorly paid and is only the choice of migrants who have a small credit account with the *sari-sari* store of a local 'pioneer' or 'follower' (see Section 4.3.2). Investments in agroforestry or tree crops are unattractive due to the low level of tenurial security that migrants have over their farmlands. The Certificate of Land Ownership Agreement (CLOA) issued by the Department of Agrarian Reform does not apply to public lands, and the Certificate of Stewardship issued by the DENR grants only a temporary security of tenure. The option of converting existing upland farms to corn and opening up new forests for the production of cash crops requires relatively minor investments and produces a quick cash income.

Fig. 9.2 shows a number of secondary actors who encourage migrants to opt for this mode of agricultural change in the uplands. Catering to their need for cash and a stable credit and marketing channel, traders and other informal moneylenders require the guaranteed delivery of a specified cash crop in exchange for a loan. By opting for the crop collateral, informal moneylenders ensure that they will be the first to be paid after the harvest. It also gives them an approximate idea of the volume of grain that they can expect to have in their warehouse by the end of the season, which makes it possible for them to enter into secured delivery contracts with corporations which produce fertilizers and process corn into stockfeed.

Alternative business opportunities, such as the marketing of timber or other farm crops are less attractive, the former because of the DENR restrictions on logging, the latter in view of the limited demand and industrial processing capability in the region. For forest migrants, accessibility is a precondition for external capital investment in the production of hybrid corn;

<sup>18</sup> "the traders have their extension men in the barrio, where the people can get money. You do not need collateral, they will just tell you to sign and then you can have 1,000 pesos. Most often they only accept grain in payment" (Landowner in Isabela, in research diary, March 1996)

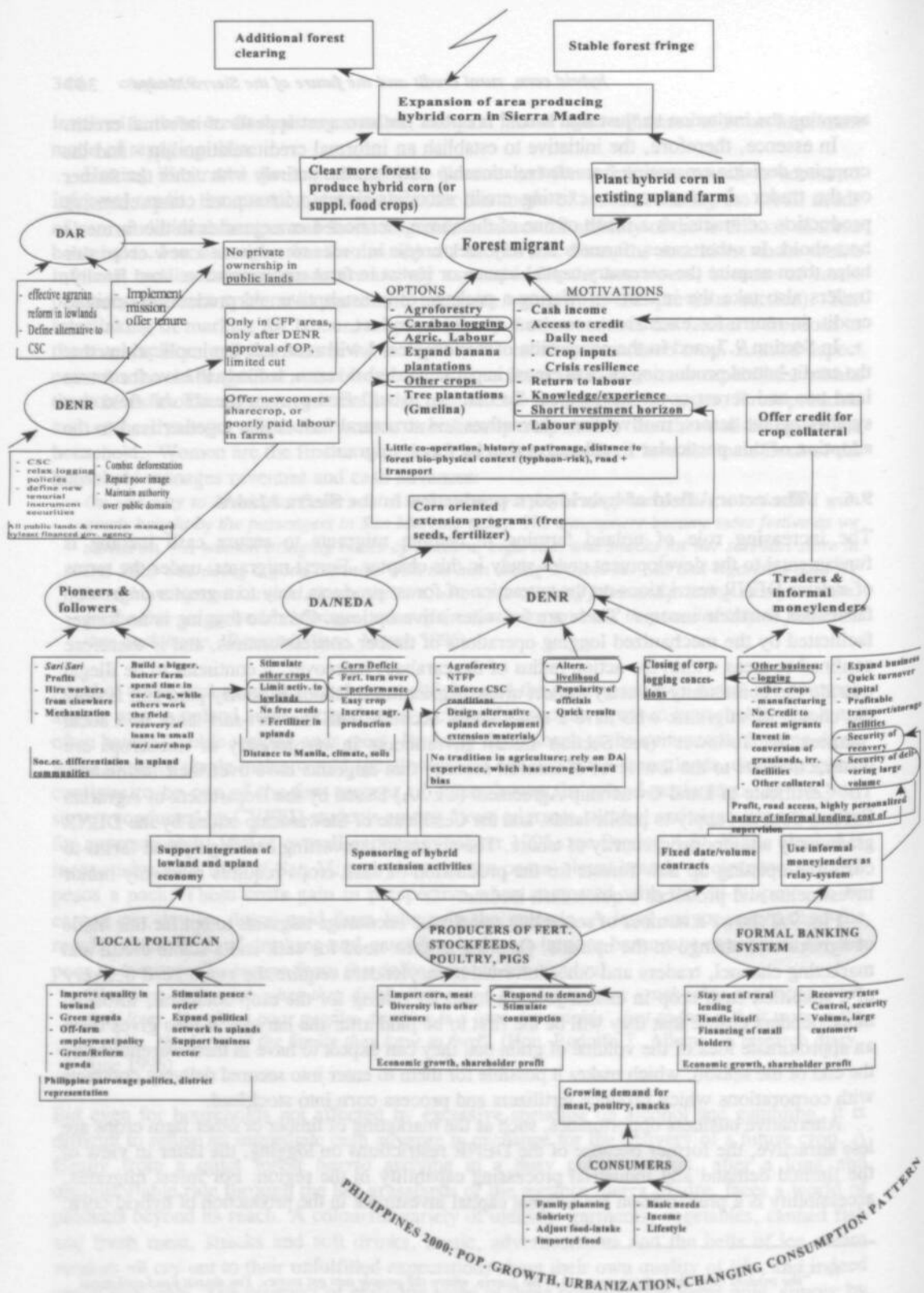


Fig. 9.2 Action-in-Context explanation of hybrid corn production in the Sierra Madre

traders need the assurance that the product can be transported soon after the harvest from the farm to their warehouse, where it can be protected from decay due to moulds and rodents. Government actors, including the DENR, also support the increasing production of hybrid corn in the forest lands. The DENR must offer stewardship holders and other forest migrants a livelihood option other than timber extraction, but lacks the expertise to deviate too far from the conventional farming systems practised in the lowlands. The majority of bureaucrats and field officials in the DENR were trained in forestry rather than agriculture, and the DENR must rely on technical expertise from the Department of Agriculture for its extension material on upland farming, in which hybrid corn is recommended as the annual crop to be incorporated into upland farming techniques.

The Department of Agriculture actively pursues a policy aimed at increasing the output of commercial grains, as I showed in Section 5.3.1. The Department's Six-Year Medium-Term Plan identifies rice, corn, livestock, poultry, coconut, sugar and fish as priority commodities in agricultural development. The central role of hybrid corn in the department's agricultural development drive could be seen at the annual agricultural fair, held during the same month at the DA experimental station in Ilagan. Hybrid corn cobs had been draped around many of the farm machines on display, several producers of certified seeds and agrochemicals had displays, and DA officials were wearing jeans jackets distributed by one of these companies, showing a yellow corn stalk surrounded by the logos of the DA and the sponsor.

In addition to these so-called 'integrators', companies producing fertilizer, stockfeed and processed food, as well as banks and politicians also play a role in the increasing cultivation of hybrid corn in the uplands. Formal banks find a welcome partner in the informal moneylenders. Their greater level of social immersion and the possibility of setting up loans which link consumptive and production-oriented components make informal moneylenders more efficient managers of these small-scale credit accounts with small farmers than the banks themselves. By lending informal moneylenders the capital they require for their credit operations, these banks can participate in the business opportunities of commercial smallholder farming without having to worry about labour-intensive borrower supervision or low recovery rates. For politicians, a greater degree of economic development and the integration of the uplands into lowland society are likewise attractive. First, because all politicians want economic progress, and second, because in the patronage politics which is still in place in most rural towns, moneylenders can serve as political bridgeheads to garner votes during election time. Moneylending traders contribute to the election campaign of a politician who promises to fund the rehabilitation of roads providing access to new business opportunities in the Sierra Madre (see Section 6.4 and 6.5).

The final level of influence shown in fig. 9.2 is the Philippines' national consumer market. The expansion of hybrid corn production to the forest lands is related to the increasing demand for products derived from it: meat, eggs, snacks and fast-food products. Companies producing these commodities naturally respond to this demand. The bulk of products marketed by the Philippine livestock industry are destined for the country's domestic consumer market.

The Philippines produces between 4.2 and 4.7 million tons of yellow corn every year, 80% of which comes from the so-called SOCSARGEN area in southern Mindanao, comprising the provinces of Sultan Kudarat, South Cotabato and Sarangani island. Cagayan Valley produces less than 10% of this volume (NSO 1995: 374). The country is facing increasing shortages in the local supply of yellow corn, leading to regular petitions, notably from representatives of the livestock industry, to lift or reduce government import tariffs; on all volumes imported in excess of the annual quota set by the Philippine government an import duty of 80% is levied, compared to 35% to imports within the normal quote. Officially, these import restrictions

serve to protect corn-growers from price falls due to international competition. As a result of falling production levels in the country's main corn-producing regions<sup>19</sup>, the livestock industry repeatedly requested the Philippine government to be allowed additional imports of yellow corn to relieve shortages, which were projected to run between 1 and 2.7 million tons in 1997 (PNA 27/5/97). In a press release issued in September 1997, Agriculture Secretary Salvador Escudero said that a decision by President Fidel Ramos was needed to allow the importation of an additional<sup>20</sup> 300,000 metric tons of yellow corn (and 29,000 tons of frozen beef<sup>21</sup>) at the minimal import tariff of 35% "...in consideration of the need to ensure that feeds are available to the livestock industry at affordable prices". The Secretary added that in 1996 and 1997, the domestic use of beef and *carabeef* (carabao beef) for meat-processing had increased by 25.3% and 41.2% respectively (PNA 11/9/97). Overall, the Philippine livestock industry, especially the hog and poultry producers, were reported to be expanding at a rate of 10-15% per year (PNA 11/5/97).

Two factors contribute to the strong demand for meat, poultry products and processed food in the Philippines. One is population growth: although the rate is now somewhat slower, the Philippine population is still increasing by more than 2% annually. At this rate the population would reach 100 million by the year 2010. The second factor is consumption patterns: these are related to the country's economic progress and corresponding changes in food preferences, especially in the rapidly expanding urban areas. More protein-rich diets are becoming affordable to more Filipinos, as wealth increases under the robust economic growth triggered by *Philippines 2000*, which the Ramos administration hopes will turn the country into a tiger economy by the year 2000.

I believe that an analysis of the role of population growth in the deforestation in the Sierra Madre is incomplete unless these dimensions are taken into account. The previous chapter demonstrated that forest migration to the Sierra Madre has been a predominantly intra-regional process, which was not influenced by the higher population density and scarcity of farmland in neighbouring regions. Fig. 9.2 shows that the strong demand for hybrid corn in Cagayan Valley is directly related to the growth of the national population, in particular the growing number of Filipinos who can afford a Western-style food consumption pattern. I will come back to this point in my concluding remarks.

### 9.7 Implications for future forest cover in the Sierra Madre

The actors' field examined in the previous section shows two avenues by which the expansion of hybrid corn-producing areas into the Sierra Madre takes place. One is the conversion of grasslands and *bangkag* areas into cornfields, and the other the opening-up of residual forest, which has more direct implications for forest cover. From the point of view of protecting the forest, the adoption of hybrid corn in *bangkag* farms in the uplands is less problematic, at least in the short run. This is because migrant households cultivating *bangkag* lands are generally better-off and therefore in a position to take the risk of borrowing inputs and cash in exchange

<sup>19</sup> Low farm-gate prices are one reason behind a shift to the production of bananas, peanuts and silage among corn-growers in Mindanao. The latter product, like livestock fodder, generates a higher return on labour, as it can be harvested earlier, before the corn stalks have matured, and does not require the milling and drying operations connected with grain production.

<sup>20</sup> Earlier that year, 145,000 metric tons of yellow corn had already been imported from China.

<sup>21</sup> Between 1976 and mid-1993, beef imports were banned in the Philippines.

for a future corn crop. The adoption of hybrid corn is unlikely to cause displacement, or the necessity to open up additional areas for supplementary income. From a soil-management perspective, however, permanent corn production impairs the chemical or mechanical properties of upland soils. The studies of Dros (1995) and Van der Veen (1996) referred to above emphasize the low levels of mineral nutrients, especially nitrogen and phosphorus, and organic matter in these soils, and the greater risk of acidification. Analyses of *bangkag* soils under permanent corn showed evidence of pH (H<sub>2</sub>O) levels around 4.0, a full point lower than that of the most acidic *uma* (Dros 1995: 94). Siebert and Belsky (1985:288-291) also found that acidity levels rose in former *uma* soils in Leyte, after they were subjected to intensive annual production. The use of chemical fertilizers with sodium and ammonium compounds does not solve the problem, but rather hastens this process, accelerating the deterioration of soil structure and water-holding capacity (Ministry of Agriculture and Fisheries 1981:66, cited in *ibid.*). In comparison with upland rice, corn production probably reduces mechanical soil erosion to some extent. During the crop establishment stage, weeds can be left to grow since, unlike upland rice, its leaves and roots are large enough to compete effectively for light and nutrients. After the harvest, soils become less exposed as farmers leave plant residues lying on the land to allow carabaos to graze there (Henkemans 1993: 43).

Owners of *bangkag* lands often cultivate *uma* land as well, either for the cultivation of food crops or alternative cash crops like bananas (see Section 9.3). Once the *bangkag* farm is devoted to the production of cash income, these farmers still have the option of expanding their *uma* lands in order to retain a certain degree of self-sufficiency in food or diversity of cash crops. As we saw in Chapter 4, pioneers and followers sometimes invite newly arriving migrants to cultivate their *bangkag* lands under sharecropping agreements, while they open up new *uma* lands themselves. Others hire special clearing teams, paying them in cash on a per-hectare basis, to speed up the expansion of *uma* lands they can claim as theirs. The option of using paid labour enables well-established migrants to accommodate a new crop by expanding its holdings beyond its own labour limitations, until all convertible land in the vicinity of the settlement has been occupied. For these households, too, devoting existing farmlands to a new cash crop is likely to speed up forest clearing.

An indirect forest cover impact of the cultivation of hybrid corn in the capital-intensive manner, under individual crop-for-credit contracts, is related to its role in stimulating forest migration. In Chapter 8, we saw that the risks associated with the credit-driven cultivation of hybrid corn by poor smallholders hasten socioeconomic differentiation, and tends to create a class of marginal, impoverished and indebted farmers and landless cultivators. This mode of agricultural intensification in the lowlands thus causes an additional migration push for those who still have the courage, labour and means to start a new farm in the Sierra Madre. For forest migrants without *bangkag* land, the production of hybrid corn is always connected with forest clearing. This extensive mode of corn production has immediate negative consequences for forest cover: the crop stimulates migrants to engage in more extensive fire-and-fallow cycles, since this makes it possible to produce hybrid varieties without the use of fertilizer. If forest migration gains momentum in the years to come, as I expect it to do on the basis of the arguments presented in the previous chapter, the outright conversion into cornlands of residual forests within the reach of accessible roads is likely to speed up forest loss.

Three case studies of Philippine upland communities who went through a successful transition from slash-and-burn farming to agroforestry and irrigated agriculture indicate that these groups took these steps forward because land had become scarce or would no longer support the annual crops they used to grow, or because law enforcement had been tightened (Fujisaka and Wollenberg 1992; Conolly 1991; Eder 1979, 1981). To a varying degree, forest

migrants in the Sierra Madre face similar trends, particularly those residing in older settlements. Agricultural expansion and carabao logging no longer offer very promising alternatives for income losses suffered due to the end of most corporate logging activities in the early 1990s. The common factor that enabled the upland communities in the studies cited above to make the transition towards more sustainable land uses was the availability of local capital, accumulated through logging activities. These funds were used to finance investments in the establishment of agroforestry farms and irrigated rice lands. This - in my view - critical prerequisite for the transition to an economically more stable livelihood is pre-empted by the introduction of hybrid corn based on individual credit relations between uncapped forest migrants and moneylenders in the lowlands. Uncertainties in yields and market prices, combined with constraints on the household's internal financial management capability, delay the accumulation of savings with which forest migrants could, either individually or collectively, put converted forest lands to a more productive, diverse and sustainable use.

Unlike lowland farmers, migrants are in a position to respond to crop failures by planting cash crops in newly cleared forest soils, or by offering their moneylender alternative products (bananas, lumber, rattan) as a means of correcting a negative balance. Thus corn cultivation is subsidized with natural resource capital, *i.e.*, forest soil fertility and forest products. The following section illustrates this on the basis of a recent community forestry project in Isabela. A cooperative of four upland barangays sought to restructure an unrecovered corn production loan from the Land Bank of the Philippines, using revenues from a community-based logging operation.

### 9.8 Subsidizing corn production with logging revenue: the Miramar Cooperative<sup>22</sup>

Four upland barangays, with a total population of approximately 3000, are the participants in the Miramar Cooperative. Until 1988, these barangays were bustling with economic activity: logging companies set up their field offices, workshops, log ponds and sawmills here, near an overflow bridge that connected many of the logging roads leading into the Sierra Madre with the provincial capitol of Ilagan. As a spin-off of the corporate logging industry, many small-scale enterprises had also developed here, including furniture shops, charcoal producers, chainsaw repair shops, bars and restaurants. All these downstream economic opportunities suffered as a result of the steady decline of logging after 1988. For those who remained, there were few other economic options but to shift to farming. Soon *bangkag* lands that had not been cultivated for many years were producing hybrid corn, and new *uma* lands were being carved from the large area of logged-over and reforested lands near these barangays. In these new farmlands, too, hybrid corn became the most important crop.

Until 1994, the production of hybrid corn was financed largely through individual deals between local residents and private traders in the town of Ilagan, including Sunshine Agri-Supply, a Chinese-owned agribusiness enterprise, and three other traders. After a period of negotiations, the Land Bank agreed to enter into a production loan with these upland farmers. This was an innovative step for the Bank, which normally operates in the lowlands, financing the transfer of land titles from owners of landed estates to agrarian reform beneficiaries, as well as a crop production credit line for these lowland farmers. Another novelty was the fact that the loan was linked to crop collateral, a common practice in informal moneylending, but

<sup>22</sup> Material on this case was gathered in March and April of 1996, through interviews with members of the Cooperative (including its president), the head of the local branch of the Land Bank of the Philippines, and discussions with consultants who had been involved in the formulation of the CFP project for Miramar.

unconventional in the formal sector. Through a "Deed of Assignment of Expected Produce" the Land Bank assured itself of being paid - in grain - before any other lender. For logistical as well as economic reasons, the Bank preferred to enter into a collective lending agreement with a large number of farmers. In 1994, when the first loan was granted, the Miramar cooperative had 95 members from the four barangays, who together cultivated 113 ha of corn. The canvas for a local agribusiness enterprise to supply the Cooperative with inputs was won by Sunshine Agri-Supply. This supplier was paid for these inputs only after the cooperative had sent confirmation to the Bank that all inputs had been received in good order. At the end of the season, Sunshine sold the grain on behalf of the Bank.

The first loan granted by the Land Bank involved the sum of 923,000 pesos. The interest rate was 12% per year plus a 2% supervisory fee, well below the 30% interest normally charged on three-month loans by informal moneylenders. The first crop was a success, and so a second production loan was issued, maturing in October 1995. Due to a drought, this crop failed. The Bank only recovered 300,000 pesos of this loan, including a payment of 203,000 pesos by the Philippine Crop Insurance Corporation (PIC), leaving the Cooperative with a negative balance of almost 700,000 Pesos. This loan was restructured, to enable the farmers to repay the amount from four harvests to be produced in the next two years. Nevertheless, the local director of the Land Bank was sceptical about his chances of recovering the loan in that manner:

*"They always pay back their largest debt first - the one with the highest interest rates, to the private traders. What these traders can offer, and we cannot, is this cash advance for their daily needs, for food and education. That is why the farmers always go there first and sell all that they have produced. We are the last to be paid, even though our interest rates are much lower. But we continue to lend to them, because that is our mandate. And now we are even going into a new activity, this community forestry, to give them additional income".* (Director of the local branch of the Land Bank, April 1996)

In early 1996, the Miramar Cooperative approached the Land Bank with a request for another loan, this time in the amount of 1.4 million pesos. This budget was intended as seed capital for the implementation of a two-year 'pilot harvesting activity' in an area of 4,845 hectares of grasslands, shrublands and residual forests, which used to be part of two corporate logging concessions in their area. Their operations ceased here in 1988, and their licenses ended two years later. Under a government-sponsored project, the Miramar barangays were awarded a community-based forest management agreement (a 25-year license, renewable for another 25 years) for the community-based management and development of this area. An NGO from the Bicol region assisted the community in developing a two-year Operations Plan which, after approval by the DENR, would serve as the basis for timber extraction activities financed by the Land Bank loan.

As in ordinary carabao-logging activities, which always start with a cash advance by the buyer, this loan was also intended to finance the initial felling, slicing, hauling and milling of the first trees. After these were sold, this pump-priming phase would be over and the repayment of the loan could begin. By March 1996, the Land Bank approved the loan in principle, subject to DENR approval of the Operations Plan. The Cooperative requested permission to extract 1800 m<sup>3</sup> of timber from the CFMA area that year. No Land Bank official had actually visited the forest area; the Bank relied on the DENR's assessment of the forest stand, which was the basis for entering into the community forestry agreement; it would only release the loan after the DENR had approved the operations plan. An independent senior forestry consultant, who hiked the 25 kilometres between the dirt road connecting the four cooperating barangays and the proposed cutting area said that the stand did not meet the

expectations raised by the tables underlying the proposed operations plan:

*"When you looked at the stand-stock tables, you got the impression that it was almost a virgin forest, but I can tell you that is not what it is. The TLA may have stopped in 1988, but the salabadiok and the furniture shops came to take their share too; there is not a single harvestable Narra there. This is the problem of the DENR: if you do not supervise, your system goes nowhere..."* (Dr. Roberto Araño, pers.com, April 1996)

The director of the Miramar cooperative was optimistic that the Land Bank would soon approve the new forestry loan, but also criticized the strict regulations laid down by the community forestry programme, which explicitly prohibits the use of bulldozers and trucks in the extraction of timber from the community's forest concession. Under the CFP programme, the DENR requires that all extraction and processing is done manually, using the carabao and the two-man saw. The forestry consultant cited above stated that anyone who had himself seen the hardship involved in this return to the pre-American era of timber-harvesting would have to agree that it was tantamount to "subjecting our people to slavery". Thus at the very start of this new approach, the DENR was already under strong pressure to ease these restrictions and allow a certain degree of mechanization in the extraction, transportation and milling of timber from CFP areas<sup>23</sup>.

Miramar was a special example of formal moneylending in more than one respect. It was the first time that the Land Bank used the system of lending capital with no other collateral than the guaranteed delivery of an agricultural crop. It was also the first time that the Land Bank in Ilagan gave a loan to an upland community, and the first time that a conglomerate of four barangays was granted an agricultural loan via a multi-purpose cooperative. In 1996, the Miramar cooperative became the first client of the Land Bank to successfully apply for forestry a loan with the Land Bank. As exceptional as the case was in 1996, it may not be for much longer.

The once isolated, unknown and inaccessible forest lands are gradually being integrated into lowland society. This is apparent in the expansion of informal credit practices and cropping strategies from the lowlands to the forest lands. More established migrant communities, such as those in Miramar, use the residual resources of the logged-over forest to cover the extra risks involved in this process. Additional land is cleared for crop production without external inputs. Revenues from the extraction of natural forest products are used to service an agricultural loan. This additional burden on the sustainable utilization of poorly stocked residual forests managed by migrant communities increases pressure to relax the strict regulations on extractable volume and mechanization. The economic feasibility of community forestry projects is already constrained by these limitations and their time-consuming and costly preparation phase (Seve 1996, see also Section 5.2.2). Hence, in forest settlements with access to extractable or convertible forest areas - as determined by policies, social network, distance, roads, mechanization, etc. - the introduction of hybrid corn via individual crop-for-credit contracts is bound to cause even greater pressure to relax these limitations and thus to speed up forest degradation and conversion.

<sup>23</sup> In 1997, the community hired logging trucks and a bulldozer to extract its allowable cut. In technical terms, the operation differed only in scale from the former mechanized logging operations (Research diary, March 1998).

## 9.9 Conclusions

Poverty, tenancy and irrecoverable loans surfaced in Chapters 4 and 8 as negative source motives in forest migration. This chapter has presented the first indications that migrants are again entering into similar combinations of cropping patterns and loans once they have settled inside the forest lands. The system of crop collateral, which is commonly used in credit deals between traders and asset-less farmers in the lowlands, is a suitable method of extending credit to forest migrants who, like many farmers in the lowlands, do not own the lands they till.

Of the commodities produced by forest migrants, agricultural crops are gaining in economic and environmental significance in comparison with forest products. As accessible forest products become scarcer, migrants seek to compensate declining forest income by increasing farm income. Agriculture is no longer geared mainly to the production of food and some supplemental cash, but is developing into the economic mainstay of forest migrants. In exchange for access to a stable credit and marketing channel, migrants all or part of their farmland to the production of hybrid corn, a pure cash crop that already dominates the agricultural landscape in the lowlands. This method is problematic largely from the point of view of soil maintenance, and may not lead directly to additional forest clearing. Losses due to crop failure may, however, be solved through additional timber extraction or the preparation of a new *uma*, where the next crop can be cultivated without investments in agrochemicals. In the Sierra Madre roads which are accessible by truck during the harvesting months are a precondition for the capital-intensive mode of hybrid corn production. Because hybrid corn is highly perishable, moneylenders are not keen to finance its cultivation unless they are reasonably sure that the crop can be transported to their warehouse soon after harvest.

Poorer, and often more recent migrants incorporate the crop into capital- and labour-intensive *uma* farms. The *uma* mode of hybrid corn production involves smaller volumes of corn, and correspondingly smaller loans, often obtained from fellow migrants who are better off, or the owners of *sari-sari* stores in the uplands. These smaller moneylenders may serve as relay stations for larger traders in the lowlands. This second method of adopting hybrid corn in the uplands causes additional forest clearing, either directly, as a means of creating space for the production of hybrid corn, or indirectly, in order to expand an existing farm and plant other subsistence crops in addition to corn. Once nearby forests have been cleared for farming, early migrants may sell their *ublag* land to newcomers, or leave them to fallow and move deeper into the forest, repeating the export of natural biomass and soil fertility there.

Farmers choose the path to be followed in commercializing upland agriculture, but government agencies and private enterprises in the lowlands likewise play an important role in determining these choices. Government extension programs, particularly those of the Department of Agriculture and the DENR, promote the adoption of hybrid varieties in the lowlands, and in the Sierra Madre, in order to achieve higher production and alleviate poverty among small farmers. Local government units also influence the migrant's land use decisions, by the way they maintain logging roads, facilitating the transportation of people and commodities between lowland markets and the first service centres developing inside the forest lands. By making the secured delivery of a specified crop a condition for a loan, informal moneylenders also influence the land use decisions of forest migrants. In the past, land ownership was the basis for large-scale production on haciendas. In recent times, credit now serves as a powerful means of securing the production of large crop volumes by small-holders. As the food processing industry responds to the changing consumption needs of a growing urban population, the demand for hybrid corn continues to expand.

Opportunities to expand the trading volume of commercial grains are tightening; most rain-

fed cornlands are already producing hybrid corn, and converting pasture lands into agricultural lands requires considerable investments in land improvement and supervision. The accessible farmlands and residual forests left behind by the logging industry offer a cost-effective alternative. By contracting growers in the uplands, additional volume can be produced with little more in the way of investment than rapid-turnover capital and inputs. With the risk and economic cost of price and quality fluctuations fully in the hands of growers, these are lucrative investments for traders and others in the business of storage and transportation, who have the option to store the crop in their warehouses until prices recover from their post-harvest slump.

The high cost of external credit constrains the accumulation of savings by the primary producers themselves, either individually or collectively. As a result, a crop failure or some personal adversity may trigger a vicious circle of increased credit exposure, corresponding debt service payments, marginal returns on labour for crop producers, little opportunity to save, increased reliance on informal moneylenders and so on. Farmers and forest migrants dropping out of this spiral have few alternatives but to start a new farm inside, or deeper inside, the forest lands of the Sierra Madre. In my view, therefore, capital formation at the level of the primary producers is absolutely essential for this trend to be reversed and for other measures aimed at a transition to bear fruit. This could take shape in various ways, such as a local savings and credit cooperative, smaller credit groups or individual agreements. Local investment capital will be necessary for the following reasons:

- 1) Returns on invested capital, which now flow out of the area into other sectors of the economy, can be earned locally and re-invested in local productivity-enhancing measures, mechanization, storage and processing facilities, and the like.
- 2) Farmers retain a greater degree of freedom as regards land use, crop choice, and the selection of a marketing channel. This, in turn, enables them to benefit from competition between traders, and to sell their product to the highest bidder.
- 3) This will lead to greater crisis resilience. If small farmers lack savings or assets of their own, a personal setback or crop failure will almost inevitably compel them to enter into expensive loans under the conditions described in this chapter. Although this aspect of rural lending is a highly sensitive one in a context where poverty represents an almost continuous emergency, local savings and investment facilities can - if carefully organized - be used for this purpose.

Local capital accumulation is a necessary, but not a sufficient condition for a more sustainable agricultural development course in the uplands to come about. Other measures, including the reorientation of government extension programmes towards upland agriculture, stemming the inflow of new forest migrants, and greater tenurial security are also needed to achieve a more stable route towards the intensification of land use in upland areas. However, if farmers and forest migrants can build up assets of their own, the impact of these measures will be greatly enhanced. The experience with agrarian reform in the lowlands shows what happens if a tenurial policy is not accompanied by simultaneous efforts in the area of rural credit, to enable smallholders to retain their title. Both government actors and private enterprise, notably traders and agribusiness operators, have a role to play in bringing this transition about.

By itself, a shift from forest product extraction and shifting cultivation to permanent and market-oriented farming can slow down deforestation. Alternative modes of intensification have been tried, both in Cagayan Valley and elsewhere in the world (National Research Council 1993; Reijntjes *et al.* 1992; Savenije & Huijsman 1992). The range of alternatives includes various combinations of crop, tree and animal production which conserve soil and

water, enable farmers to maintain and improve land productivity using organic material, and minimize the need for agrochemicals or other external capital inputs. Such alternative intensification paths may be expected to perform better, in both economic and environmental terms, but they require investments in labour and capital that are often beyond the ability of individual households to provide, especially in the early years (CVPED Team IV, 1994).

Much can be learned from courageous and creative local initiatives such as the Forest Farm approach of the Kalahan Educational Foundation in Imugan, Cagayan Valley; Bio-Organic Demonstration Farm and Training Centre of PAYOGA Kapatagan in Gamu, Isabela; and similar experiences elsewhere, including the Sloping Agricultural Land Technology by the Mindanao Baptist Rural Life Centre (CVPED 1992; Rice 1994; Henkemans 1994). All these initiatives have been strongly market-oriented, entrepreneurial activities. In an early phase of its development, the Kalahan, an indigenous forest people, started the production of jams and jellies made of fruits gathered from its forest reserves. One major aim of that development was to become less dependent on logging and on external sources of cash income. PAYOGA was not endowed with the Kalahan Foundation's asset of a 14,000-ha residual forest resource base, but rehabilitated seven hectares of degraded pasture lands into highly productive bio-organic farmland.

Initiated in 1986 as a group of socially concerned Parish YOUTH of GAMU (later, the acronym was re-interpreted into the more independent Parents and Youth of Gamu), and assisted by a Belgian couple until 1994, PAYOGA was originally an awareness-building exercise, in which concerned citizens discussed the causes of poverty and ways of increasing self-reliance and income. Between 1991 and 1998, the cooperative built two demonstration farms and training centres for low-external-input and sustainable agriculture. The programme included the establishment of a simple manufacturing component, designed to lower the use of expensive and ecologically unsustainable agrochemicals. A simple facility was built for the production of bio-organic fertilizer based on crop residuals collected from nearby farms. By combining this with a carefully organized cooperative credit system<sup>24</sup>, members of this cooperative were enabled to reduce their degree of reliance on external inputs and credit, enabling them to become more independent managers of the production process on their farm. By the mid-1990s PAYOGA had developed into a training centre for bio-organic farming.

In both the cases of KEF and PAYOGA the transition towards investment-based, sustainable livelihoods made upland agriculture more dynamic and market-sensitive. Farms were transformed by multi-functional and integrative land uses, combining high-value annual cash crops, such as vegetables, fruits and ornamental flowers with trees for timber and firewood, fish ponds and livestock. This is in stark contrast to the course of development described in this chapter, which is characterized by a high degree of individuality, short-term investments of external capital in crop production, a high degree of crop- and market-related uncertainty and a tendency towards mono-cropping. These positive experiences show that the local build-up of investment capital, the collective promotion of common interests, and accepted leadership are essential elements for a transition towards a more intensive, sustainable

<sup>24</sup> Access to credit is limited to members of the cooperative. Before becoming a member, one participates in a series of 6 pre-membership training sessions, dealing with the purpose and activities of the organization. To be able to borrow the maximum amount of 5,000 pesos from the cooperative's credit facility, a farmer buys 1,000 pesos' worth of shares, forming a team with three other members. If the loan is not repaid within three months after it expires, the 1,000 pesos is forfeited, and the three others are obliged to pay the remainder of the loan. Until they have done so, they cannot take out any other loans from the cooperative. This mechanism of social control is replicated at the team level, by setting up credit clusters consisting of 4 teams each. Thus, each team also monitors the recovery rates of three others as well (pers com., Gina Ruiz, PAYOGA, March 1996).

expectations raised by the tables underlying the proposed operations plan:

*"When you looked at the stand-stock tables, you got the impression that it was almost a virgin forest, but I can tell you that is not what it is. The TLA may have stopped in 1988, but the salabadiok and the furniture shops came to take their share too; there is not a single harvestable Narra there. This is the problem of the DENR: if you do not supervise, your system goes nowhere..."* (Dr. Roberto Araño, pers.com, April 1996)

The director of the Miramar cooperative was optimistic that the Land Bank would soon approve the new forestry loan, but also criticized the strict regulations laid down by the community forestry programme, which explicitly prohibits the use of bulldozers and trucks in the extraction of timber from the community's forest concession. Under the CFP programme, the DENR requires that all extraction and processing is done manually, using the carabao and the two-man saw. The forestry consultant cited above stated that anyone who had himself seen the hardship involved in this return to the pre-American era of timber-harvesting would have to agree that it was tantamount to *"subjecting our people to slavery"*. Thus at the very start of this new approach, the DENR was already under strong pressure to ease these restrictions and allow a certain degree of mechanization in the extraction, transportation and milling of timber from CFP areas<sup>23</sup>.

Miramar was a special example of formal moneylending in more than one respect. It was the first time that the Land Bank used the system of lending capital with no other collateral than the guaranteed delivery of an agricultural crop. It was also the first time that the Land Bank in Ilagan gave a loan to an upland community, and the first time that a conglomerate of four barangays was granted an agricultural loan via a multi-purpose cooperative. In 1996, the Miramar cooperative became the first client of the Land Bank to successfully apply for forestry a loan with the Land Bank. As exceptional as the case was in 1996, it may not be for much longer.

The once isolated, unknown and inaccessible forest lands are gradually being integrated into lowland society. This is apparent in the expansion of informal credit practices and cropping strategies from the lowlands to the forest lands. More established migrant communities, such as those in Miramar, use the residual resources of the logged-over forest to cover the extra risks involved in this process. Additional land is cleared for crop production without external inputs. Revenues from the extraction of natural forest products are used to service an agricultural loan. This additional burden on the sustainable utilization of poorly stocked residual forests managed by migrant communities increases pressure to relax the strict regulations on extractable volume and mechanization. The economic feasibility of community forestry projects is already constrained by these limitations and their time-consuming and costly preparation phase (Seve 1996, see also Section 5.2.2). Hence, in forest settlements with access to extractable or convertible forest areas - as determined by policies, social network, distance, roads, mechanization, etc. - the introduction of hybrid corn via individual crop-for-credit contracts is bound to cause even greater pressure to relax these limitations and thus to speed up forest degradation and conversion.

<sup>23</sup> In 1997, the community hired logging trucks and a bulldozer to extract its allowable cut. In technical terms, the operation differed only in scale from the former mechanized logging operations (Research diary, March 1998).

## 9.9 Conclusions

Poverty, tenancy and irrecoverable loans surfaced in Chapters 4 and 8 as negative source motives in forest migration. This chapter has presented the first indications that migrants are again entering into similar combinations of cropping patterns and loans once they have settled inside the forest lands. The system of crop collateral, which is commonly used in credit deals between traders and asset-less farmers in the lowlands, is a suitable method of extending credit to forest migrants who, like many farmers in the lowlands, do not own the lands they till.

Of the commodities produced by forest migrants, agricultural crops are gaining in economic and environmental significance in comparison with forest products. As accessible forest products become scarcer, migrants seek to compensate declining forest income by increasing farm income. Agriculture is no longer geared mainly to the production of food and some supplemental cash, but is developing into the economic mainstay of forest migrants. In exchange for access to a stable credit and marketing channel, migrants all or part of their farmland to the production of hybrid corn, a pure cash crop that already dominates the agricultural landscape in the lowlands. This method is problematic largely from the point of view of soil maintenance, and may not lead directly to additional forest clearing. Losses due to crop failure may, however, be solved through additional timber extraction or the preparation of a new *uma*, where the next crop can be cultivated without investments in agrochemicals. In the Sierra Madre roads which are accessible by truck during the harvesting months are a precondition for the capital-intensive mode of hybrid corn production. Because hybrid corn is highly perishable, moneylenders are not keen to finance its cultivation unless they are reasonably sure that the crop can be transported to their warehouse soon after harvest.

Poorer, and often more recent migrants incorporate the crop into capital- and labour-extensive *uma* farms. The *uma* mode of hybrid corn production involves smaller volumes of corn, and correspondingly smaller loans, often obtained from fellow migrants who are better off, or the owners of *sari-sari* stores in the uplands. These smaller moneylenders may serve as relay stations for larger traders in the lowlands. This second method of adopting hybrid corn in the uplands causes additional forest clearing, either directly, as a means of creating space for the production of hybrid corn, or indirectly, in order to expand an existing farm and plant other subsistence crops in addition to corn. Once nearby forests have been cleared for farming, early migrants may sell their *ublag* land to newcomers, or leave them to fallow and move deeper into the forest, repeating the export of natural biomass and soil fertility there.

Farmers choose the path to be followed in commercializing upland agriculture, but government agencies and private enterprises in the lowlands likewise play an important role in determining these choices. Government extension programs, particularly those of the Department of Agriculture and the DENR, promote the adoption of hybrid varieties in the lowlands, and in the Sierra Madre, in order to achieve higher production and alleviate poverty among small farmers. Local government units also influence the migrant's land use decisions, by the way they maintain logging roads, facilitating the transportation of people and commodities between lowland markets and the first service centres developing inside the forest lands. By making the secured delivery of a specified crop a condition for a loan, informal moneylenders also influence the land use decisions of forest migrants. In the past, land ownership was the basis for large-scale production on haciendas. In recent times, credit now serves as a powerful means of securing the production of large crop volumes by small-holders. As the food processing industry responds to the changing consumption needs of a growing urban population, the demand for hybrid corn continues to expand.

Opportunities to expand the trading volume of commercial grains are tightening; most rain-

fed cornlands are already producing hybrid corn, and converting pasture lands into agricultural lands requires considerable investments in land improvement and supervision. The accessible farmlands and residual forests left behind by the logging industry offer a cost-effective alternative. By contracting growers in the uplands, additional volume can be produced with little more in the way of investment than rapid-turnover capital and inputs. With the risk and economic cost of price and quality fluctuations fully in the hands of growers, these are lucrative investments for traders and others in the business of storage and transportation, who have the option to store the crop in their warehouses until prices recover from their post-harvest slump.

The high cost of external credit constrains the accumulation of savings by the primary producers themselves, either individually or collectively. As a result, a crop failure or some personal adversity may trigger a vicious circle of increased credit exposure, corresponding debt service payments, marginal returns on labour for crop producers, little opportunity to save, increased reliance on informal moneylenders and so on. Farmers and forest migrants dropping out of this spiral have few alternatives but to start a new farm inside, or deeper inside, the forest lands of the Sierra Madre. In my view, therefore, capital formation at the level of the primary producers is absolutely essential for this trend to be reversed and for other measures aimed at a transition to bear fruit. This could take shape in various ways, such as a local savings and credit cooperative, smaller credit groups or individual agreements. Local investment capital will be necessary for the following reasons:

- 1) Returns on invested capital, which now flow out of the area into other sectors of the economy, can be earned locally and re-invested in local productivity-enhancing measures, mechanization, storage and processing facilities, and the like.
- 2) Farmers retain a greater degree of freedom as regards land use, crop choice, and the selection of a marketing channel. This, in turn, enables them to benefit from competition between traders, and to sell their product to the highest bidder.
- 3) This will lead to greater crisis resilience. If small farmers lack savings or assets of their own, a personal setback or crop failure will almost inevitably compel them to enter into expensive loans under the conditions described in this chapter. Although this aspect of rural lending is a highly sensitive one in a context where poverty represents an almost continuous emergency, local savings and investment facilities can - if carefully organized - be used for this purpose.

Local capital accumulation is a necessary, but not a sufficient condition for a more sustainable agricultural development course in the uplands to come about. Other measures, including the reorientation of government extension programmes towards upland agriculture, stemming the inflow of new forest migrants, and greater tenurial security are also needed to achieve a more stable route towards the intensification of land use in upland areas. However, if farmers and forest migrants can build up assets of their own, the impact of these measures will be greatly enhanced. The experience with agrarian reform in the lowlands shows what happens if a tenurial policy is not accompanied by simultaneous efforts in the area of rural credit, to enable smallholders to retain their title. Both government actors and private enterprise, notably traders and agribusiness operators, have a role to play in bringing this transition about.

By itself, a shift from forest product extraction and shifting cultivation to permanent and market-oriented farming can slow down deforestation. Alternative modes of intensification have been tried, both in Cagayan Valley and elsewhere in the world (National Research Council 1993; Reijntjes *et al.* 1992; Savenije & Huijsman 1992). The range of alternatives includes various combinations of crop, tree and animal production which conserve soil and

water, enable farmers to maintain and improve land productivity using organic material, and minimize the need for agrochemicals or other external capital inputs. Such alternative intensification paths may be expected to perform better, in both economic and environmental terms, but they require investments in labour and capital that are often beyond the ability of individual households to provide, especially in the early years (CVPED Team IV, 1994).

Much can be learned from courageous and creative local initiatives such as the Forest Farm approach of the Kalahan Educational Foundation in Imugan, Cagayan Valley; Bio-Organic Demonstration Farm and Training Centre of PAYOGA Kapatagan in Gamu, Isabela; and similar experiences elsewhere, including the Sloping Agricultural Land Technology by the Mindanao Baptist Rural Life Centre (CVPED 1992; Rice 1994; Henkemans 1994). All these initiatives have been strongly market-oriented, entrepreneurial activities. In an early phase of its development, the Kalahan, an indigenous forest people, started the production of jams and jellies made of fruits gathered from its forest reserves. One major aim of that development was to become less dependent on logging and on external sources of cash income. PAYOGA was not endowed with the Kalahan Foundation's asset of a 14,000-ha residual forest resource base, but rehabilitated seven hectares of degraded pasture lands into highly productive bio-organic farmland.

Initiated in 1986 as a group of socially concerned Parish YOUTH of GAMU (later, the acronym was re-interpreted into the more independent Parents and Youth of Gamu), and assisted by a Belgian couple until 1994, PAYOGA was originally an awareness-building exercise, in which concerned citizens discussed the causes of poverty and ways of increasing self-reliance and income. Between 1991 and 1998, the cooperative built two demonstration farms and training centres for low-external-input and sustainable agriculture. The programme included the establishment of a simple manufacturing component, designed to lower the use of expensive and ecologically unsustainable agrochemicals. A simple facility was built for the production of bio-organic fertilizer based on crop residuals collected from nearby farms. By combining this with a carefully organized cooperative credit system<sup>24</sup>, members of this cooperative were enabled to reduce their degree of reliance on external inputs and credit, enabling them to become more independent managers of the production process on their farm. By the mid-1990s PAYOGA had developed into a training centre for bio-organic farming.

In both the cases of KEF and PAYOGA the transition towards investment-based, sustainable livelihoods made upland agriculture more dynamic and market-sensitive. Farms were transformed by multi-functional and integrative land uses, combining high-value annual cash crops, such as vegetables, fruits and ornamental flowers with trees for timber and firewood, fish ponds and livestock. This is in stark contrast to the course of development described in this chapter, which is characterized by a high degree of individuality, short-term investments of external capital in crop production, a high degree of crop- and market-related uncertainty and a tendency towards mono-cropping. These positive experiences show that the local build-up of investment capital, the collective promotion of common interests, and accepted leadership are essential elements for a transition towards a more intensive, sustainable

---

<sup>24</sup> Access to credit is limited to members of the cooperative. Before becoming a member, one participates in a series of 6 pre-membership training sessions, dealing with the purpose and activities of the organization. To be able to borrow the maximum amount of 5,000 pesos from the cooperative's credit facility, a farmer buys 1,000 pesos' worth of shares, forming a team with three other members. If the loan is not repaid within three months after it expires, the 1,000 pesos is forfeited, and the three others are obliged to pay the remainder of the loan. Until they have done so, they cannot take out any other loans from the cooperative. This mechanism of social control is replicated at the team level, by setting up credit clusters consisting of 4 teams each. Thus, each team also monitors the recovery rates of three others as well (pers com., Gina Ruiz, PAYOGA, March 1996).

and economically rewarding mode of upland farming. Complementary to the need for investments aimed at mobilizing local potential in this direction are policies to solve the problems which continue to cause an inflow of poor migrants into the Sierra Madre.

At the other end of the economic spectrum, there is the growing domestic demand for processed foods, and livestock products derived from corn, which links the deforestation of the Sierra Madre to the growing and increasingly prosperous Philippine population. Unless the recent economic turmoil in Asia will prove more than a temporary re-adjustment, this trend is likely to be continue in the near future. Urbanization and increasing per capita income are developments associated with the economic progress for which the country had so long been striving, and which was finally achieved during the 1990s. The macro-level options which remain are population policy, more effective measures to increase the productivity of existing farmlands, and a campaign to raise awareness about the environmental impact of changes in lifestyle. The latter measure is an appeal that Western observers such as myself have no right to make in view of the current disparities in wealth and resource utilization between citizens in the developing and the industrialized world. If the Philippines' poor farming population had a greater share in the increased consumer spending on food, they would be able to shoulder more of the collective responsibility to protect the Sierra Madre, and keep it from being mobilized to feed even larger numbers of urban Filipinos now happily joining the global fast food economy.

## Synthesis

Tropical deforestation is generally regarded as the result of two often sequential activities: the opening-up of forest areas for the extraction of timber and minerals, and the conversion of forests into other land uses. The first step in this process is often tolerated, if not actively promoted, by the governments of countries in which these forests lie. The hard currency generated by the corporate extraction and processing of natural resources provides them with the means to improve infrastructure and public services, or to pay off debt. Once there are roads leading into large forest areas, company workers, landless migrants, land speculators and other outsiders follow the logging companies into the forest, to collect other forest commodities and eventually to clear degraded forest vegetation for slash-and-burn farming or ranching. Poverty, population growth, and detrimental government policies are generally seen as the root causes of the final phase in the deforestation process. Many studies on tropical deforestation have tended to focus on this last phase, partly because it is here that the forest is irreversibly replaced by another land use. However, the insights gained in this case study point to a staggered deforestation process, one that starts with the extraction of various forest products and ends with conversion into permanent farmlands or grasslands. By explaining deforestation from the perspective of changing relations between the forest lands and lowland society, I have attempted to arrive at a more refined understanding of that process.

One modification of the existing general deforestation theory is that - contrary to the common view of selective logging as an activity that does not directly result in loss of forest cover - corporate timber concessions have significantly reduced the aggregate tree crown cover in the Sierra Madre. Between 1950 and 1990, when logging corporations had virtually exclusive access to the region, the share of old-growth forests and forests with more than 80% tree crown cover in the overall forest area declined from 35% to 14%. The share of low-density forests (*i.e.*, with 10-60% crown cover) increased from 20% to 40%. The category with a 60-80% crown cover remained more or less stable at 25-30%, but these were encroaching upon areas that used to be covered with high-density forest. Only about 5% of the 750,000 hectares of forest analyzed in the aerial photograph interpretations were cleared during this same period (1950-1990), which is an indication of the limited number of forest migrants who entered the Sierra Madre prior to 1990. The aim of selective logging, *i.e.*, to turn old-growth dipterocarp forest into a production forest by improving the structure of the timber stand and protecting logged-over forest from further extraction in the course of the 30-year cutting cycle, was not achieved in the majority of forest concessions, least of all in those on the western slopes.

Selective logging only works if the residual stand is carefully managed after the first cut and protected from premature additional cuts. The primary responsibility for failing forest protection lies with those who held Timber Licensing Agreements in extensive areas of the Sierra Madre. However, it was the responsibility of the Government, more specifically the Bureau of Forest Development and later the Department of Environment and Natural Resources, to verify that licensees were abiding by the relevant forest regulations, and to impose sanctions on those who were not. Thus one major cause of deforestation during the corporate logging period was ineffective government supervision, specifically by the departments mentioned above. Before elaborating further on that aspect, I take a brief look at the influence of roads against this background of weak governance.

The forests on the nearly inaccessible Pacific slopes are in far better condition than those on the western slopes of the Sierra Madre, where timber licensees, their contractors and illegal logging operations have created a dense network of dirt roads. There were large timber concessions on the Pacific slopes as well, and a small population which had settled in the vicinity of those concessions. Government supervision, which had already proved ineffective on the western slopes, was even less successful in the remote Pacific forests, and this is often used as an argument in favour of opening roads across the Sierra Madre. However, the sole factor responsible for these differences in forest cover is access. The vast majority of the local population live in the lowlands of Cagayan Valley, and enter the Sierra Madre from the west. During the decades of corporate logging, the majority of those entering the forest were engaged in the premature re-logging of residual forests, as reflected in the higher degradation rates on the western slopes. One can only conclude that, in a context where governments define natural forests as public property - as was the case for 80% of the world's closed-canopy tropical moist forests in 1980 - roads place greater demands on the effectiveness of government measures to deal with external and internal pressures to put these resources to immediate economic use. Where those measures are not effective - as in Cagayan Valley between 1950 and 1990 - roads promote deforestation. But there is more to be said about the involvement of roads. Access to markets may be an important reason for forest migrants to invest in more sustainable land uses, once their communities have become better informed, entitled and organized to manage forest lands and resources. Although there have been isolated investments in rice terraces, agroforestry and tree plantations inside the Sierra Madre, specific studies will be needed to ascertain the precise influence of the proximity and quality of access routes on such investments.

Historical factors, the result of nearly four centuries of Spanish and American rule, are at the heart of the problematic role of successive governments in the management of the country's once extensive forests. One colonial legacy is the public ownership of all unclassified lands, classified forest lands and other untitled lands and natural resources. This principle, of Spanish origin, legally reinforced by the American colonial administration at the beginning of this century, and reconfirmed by the 1987 Constitution, dispossessed indigenous forest people of lands they regarded as their ancestral domain. At the same time, the national government lacked the expertise and the mechanisms to back up its exclusive claim to the twenty million hectares of natural forest then present in the archipelago. With local people not entitled to protect their forests, and the national government ill-equipped to do so in their place, public forests came to be perceived as free commodities, to be appropriated on a first-come, first-served basis.

A second historical legacy, the policy by which parts of the public domain were temporarily entrusted to private timber licensees, accentuated the discrepancy between government claims and government capabilities when it came to forest management. Widespread violations of the terms of these licenses took place without any serious risk of detection, let alone a reprimand by the understaffed and underfunded forest agency charged with monitoring private access to the public domain. The American initiative to stimulate private investments by setting up a mechanized, large-scale logging industry made additional demands on the mechanism of government supervision. By setting up a school of forestry at the University of the Philippines, the United States introduced the country to the principles of scientific forest development, trained local professionals to put them into practice, and provided successive government administrations with a scientific justification for a logging boom that it had lost control of. Corporate logging reached its peak in the post-war years, and finally collapsed after the end of the Marcos administration in 1986. By the time logging was banned in all old-growth forests in 1992, only 3% of the Philippines' original forest cover had not yet been logged.

The policy of the United States administration to model the new elective bodies of the Philippines after those of its own democracy did nothing to increase the feasibility of its earlier decision to create a 'national forest patrimony'. The choice of a system of representation by district meant that laws defining private access to public forests were developed by a national legislature with a predominantly provincial composition and orientation. In the rural areas where forests are found, such as Cagayan Valley, patronage and brokerage services continue to be a source of political legitimacy for members of the House of Representatives, provincial governors and town mayors. These politicians may be appealed to by anyone, rich or poor, whose interests are affected by a policy or a law. A politician who fails to build temporary alliances at the national level, in order to block the passage of laws detrimental to his constituents back home, still has the option of intervening in the implementation of those laws by national Line Agencies, such as the DENR. Local DENR officials, whose task it is to protect national forests from unsustainable use, often find an elected official blocking their path.

To avoid confrontation, local bureaucrats and field officials seek to implement policies in such a way that an impression of compliance is created, while at the same time external requests for a flexible interpretation of policies can be accommodated. All the members of these informal *mutual accommodation networks* share in the benefits derived from extractive activities which exceed the legal limits. In addition to financial incentives, the benefits of participation include career prospects and a measure of immunity from administrative sanctions. By the same token, an appointed official who declines to cooperate must not only withstand the lure of these incentives, but will have to face the possibility of administrative and even physical harassment. The lack of political independence of the Bureau of Forestry and its post-Marcos successor, the DENR, is rooted in the hold which an originally provincial elite continues to have on the power and resources of the state. As part of the same strategy of protecting local forest users against national legislative restrictions, members of the House of Representatives allocated to the DENR resources which were sufficient to maintain the image of a nation with strict environmental policies, but too small to permit it to effectively enforce those policies in their respective constituencies.

In spite of the absence of effective protection, and the dense network of logging roads providing access to the western slopes of the Sierra Madre, up until the late eighties the second phase of the deforestation process, *i.e.*, the conversion of residual forests by land-seeking migrants, took place on only a minor scale. At that time fewer than 150,000 people, or 5% of the population of the region, were estimated to reside inside the Sierra Madre, a fact which may have had to do with the presence of unoccupied agricultural land adjacent to the floodplains of the Cagayan River. In the period 1960-1990, when corporate logging in Cagayan Valley was going through its boom/bust cycle, there was also a significant increase in the amount of land devoted to agriculture. The development of new farmlands was the work of people from the region itself. By the time the Maharlika Highway was constructed in the early seventies, there were more people leaving the region than entering it, despite marked differences in population density between this area and the neighbouring Ilokos and Central Luzon regions. In any case, the number of immigrants was insignificant in comparison with the region's natural population increment. In other words, after 1970 forest migration was not the result of a 'population spill' from highly populated neighbouring provinces to the less densely populated Cagayan Valley. Rather, the Cordillera mountains and the lowlands of Cagayan Valley have remained the two most important source areas of forest migrants in the Sierra Madre.

The relatively minor flow of forest migrants entering the Sierra Madre before 1990 cannot be fully explained by the relatively low population density in these source areas. Given the

region's low urbanization rate and the uneven spatial distribution of its population, the availability of farmland is in the same order of magnitude as the national average, around 0.3 hectares per capita. One factor which helps to explain the relatively low number of people venturing into the forest lands up until 1990 is the longstanding reputation of forests as the home of wild people, spirits and rebels. Pre-colonial contacts between Cagayan Valley's scattered villages of indigenous river people and the mountain tribes of the Sierra Madre and the Cordillera were incidental, alternating between trade and armed conflict.

The Spanish conquest of Cagayan Valley rendered upland-lowland relations more structurally discordant. The forest lands became the refuge of those unwilling to undergo proselytization and taxation, and later - at the time of the Tobacco Monopoly - a source of 'free' tobacco and other 'pagan products'. Because of their scarcity and illegal status, the trade in these commodities was a source of considerable profit to those who were tacitly allowed to engage in it, mainly members of the lowland elite, upon whose cooperation the Spanish government depended to uphold its rule. After independence, the Sierra Madre became a stronghold of anti-government groups once again, now organized under the banner of the New People's Army. Logs became the new 'pagan product', only accessible to those who had good contacts with the government as well as as revolutionaries. Either by military means, or through negotiated pay-offs to the NPA, large-scale logging was able to proceed, while forest migration was unattractive due to the risk of being drawn into the armed conflict between the Philippine army and the NPA. Government policies to brand migrants as illegal occupants of the forest, while holding out the prospect of a more equitable distribution of existing farmlands served to further discourage migration.

One short decade after the 1986 EDSA revolution, the old contradictions between lowland society and the forest lands were set for a final thaw. As the corporate approach to forest management gradually declined in profitability and political support, migrant communities and indigenous forest peoples gained recognition as key actors in the management of the Philippines' logged-over natural forests. Simultaneously, factors which had thus far discouraged people from venturing into the forest lands, became less importance. The NPA was losing ideological ground, due to the increasing democratic legitimacy of post-Marcos administrations; without the resources that used to be extorted from logging companies, it no longer posed the security threat to forest migrants that it had during the seventies and eighties. In the lowlands, two ambitious agrarian reform programmes failed to bring about tangible economic progress, and this probably helped to keep poor and landless farmers from contemplating forest migration during this period. While government programmes in the lowlands proved to be of little use to the poor, forest policies were progressively releasing publicly owned but privately managed forest lands and resources to local people. As timber licenses were cancelled, and the last private forest guards abandoned the concessions, existing migrant and indigenous forest communities still lacked the authority, cohesion, and resources to protect this large area of residual forest against new stakeholders. A virtual open-access resource had been created, there for the taking by poor and landless people from the nearby lowlands and the Cordillera region.

The principal livelihood opportunities that forest migrants have developed so far inside the Sierra Madre are compatible neither with the long-term agricultural productivity of forest soils, nor with forest conservation goals. The extensive fire-and-fallow (*uma*) farming techniques which are used in areas with unclaimed residual forest do not exhaust soil fertility to the same extent as the more intensive, shorter-fallow systems, but they do result in a shifting forest frontier. The recent introduction of hybrid corn into these extensive fire-and-fallow systems is further aggravating their deforestation impact. Hybrid corn production in the ploughed, permanent *bangkag* farms causes a deterioration in the chemical and mechanical properties of

these prime upland farms, and is likewise unsustainable. To reduce economic risks, and losses incurred in the production of hybrid corn, the early migrants who owned these lands had the option of asking newly arriving migrants to either open up new lands for them, or to cultivate their corn farms while they engaged in carabao logging. Initially, the recent shift from large-scale mechanized logging to small-scale carabao logging led to a sharp reduction in overall log extraction from the Sierra Madre. However, the forest stands where migrants extracted their timber had already been repeatedly logged in the recent past, and must be left to recover for at least a decade before a sustainable yield can be extracted. The more distant forests, where higher stocks of commercial timber are found, cannot be exploited without some form of mechanization for the construction of access routes and log transportation. Should that option indeed become an accepted part of community-based forest management, there would be little practical difference between present and past logging operations.

Migrants settled in the Philippine forests well before the first community-based forest policies were shaped. Timber licensees and their local contractors were hiring forest migrants to produce logs for them, and furniture makers were ordering their Narra timber directly from carabao loggers long before that activity was conditionally legalized. Thus in effect the Department Administrative Orders granting timber amnesties to furniture-makers, sawmills and hardware stores was only formalizing what was already common practice in policy implementation. Likewise, the informal ownership of public forest land was already an accepted basis for clearing and tilling among forest migrants before it was recognized by the government through the Certificate of Stewardship. These examples of recent shifts in forest policies, progressive as they may be from a social point of view, show that the DENR follows a defensive line, legalizing violations of earlier policies which it failed to enforce. The handover of forest responsibilities was not accompanied by measures to remedy longstanding weaknesses in the enforcement of environmental laws. In fact, the 1991 Local Government Code further reduces the DENR to a technical advisory body, while decisions on forest access are taken at the interface of Local Government Units and forest communities. Given the resilience of patronage politics in the countryside, there are insufficient checks and balances between these actors to ensure that the local and supralocal benefits of forest protection and sustainable use will be given adequate weight *vis á vis* short-term, local benefits to be derived from deforestation. A well-financed and independent national environmental agency is indispensable, to ensure that local actors incorporate democratically defined national goals of forest policy into their local management considerations.

The main challenge in community-based forest management is at the level of the upland residents themselves. Neither migrant communities nor the indigenous people's organizations are the effective and homogeneous societies they are often implicitly assumed to be. Existing leadership structures come under increasing strain when a large economic asset, such as a 16,000 hectare community forest area, or an ancestral domain title comes its way. Outsiders will find internal support for offers to 'assist' the community in the 'development' of its resources. The development and strengthening of cooperative institutions at the local level will require a substantial investment in training, not only in leadership and organizational management, but in the fields of forestry and the environment as well. The foresters who are now assisting the communities in designing their management programmes, partly former logging company employees and partly young university graduates, are products of a forestry education that continues to have a strong technical orientation, with an emphasis on timber production. Conventional principles of selective logging and forest development thus re-emerge in modern community-based forest concessions. A resilient principle, which continues to underlie this

conventional approach despite having been defeated in practice in nearly all logging operations, is what may best be described as the 'take now, protect later' principle. As in corporate timber concessions, the community is assumed to rotate its logging activities on a block-by-block basis, extracting from each block the equivalent volume of what it is theoretically assumed will grow back in the coming 25 years. In contrast to absentee licensees, forest communities may be expected to have fairly strong motives to ensure that logged-over blocks are protected from premature cuts, especially if the first condition is met, *i.e.*, the presence of an efficient collective decision-making institution.

A fundamental problem caused by the timber bias of the community-based forest management approach is the fact that it tries to solve the short-term economic problems of forest migrants through the extraction of a product which renews itself very slowly. Agroforestry, bio-organic farming, and other sustainable strategies to protect soils from degradation and increase their productivity have made very little headway in the Sierra Madre, for several reasons. One of these is shortage of labour, especially in the poorer households, who earn their income through the least rewarding options of slash-and-burn farming and paid labour on the farms of better-off migrants. Exchange labour and communal labour, which might be capable of surmounting these constraints at the level of the individual household, are less common in the young and often culturally heterogeneous societies of forest migrants. The shortage of investment capital, *e.g.*, to buy seedlings or livestock, and to set up facilities for the production of organic manure, also places constraints on possibilities for forest migrants to make the transition to intensified upland use.

In my view, peasants do not necessarily consider the establishment of informal credit relations to be at odds with a risk-avoidance livelihood strategy. Farmers and forest migrants with lands suitable for plough agriculture have good prospects of being able to repay a loan tailored to their expected crop yield. They attach importance to the establishment of a personal credit line, because it enables them to buffer fluctuations in income and expenditure which they cannot deal with on an individual basis. While the poorest migrants, with minimal access to cash income, do not take on major loans, they are often granted minor credit accounts with fellow farmers and store-owners, who have the option of demanding repayment through agricultural wage labour, sharecropping deals, or the transfer of land-use rights, should these borrowers build up irrecoverable arrears. Such individual credit-lines drain agricultural profits out of the forest lands, limiting the accumulation of investment capital at the level of primary producers, and constraining their freedom of crop choice and marketing channel.

In contrast to the alleged importance of land tenure as the key to sustainable land use, this study underlines the role of capital as the fundamental factor determining access to land and cropping patterns. Offering a combination of production-oriented and consumptive credit, informal moneylenders are clearly more interested in crops than in land. This is due not only to agrarian reform, which artificially constrains the free-market value of farmland, but also to a lack of interest among trader-moneylenders in becoming actively engaged in farming themselves. Thus a common form of collateral in informal moneylending is the exclusive delivery of a specified crop, often hybrid corn. The growing number of urban Filipinos who can afford a Western, protein-rich diet is increasing the demand for processed food, meat, poultry and dairy products and, consequently, for hybrid corn, the principal raw material involved in the production of these items. While yields in the lowlands stagnate, despite the increase in the use of agrochemicals, the expansion of hybrid corn production into forest lands is a cost-effective alternative response to the growing demand for hybrid corn. Precisely because of the declining

relevance of land ownership, crop-based capital investments are increasingly being made in farms on public forest land. In fact, the availability of residual forests offers farmers and moneylenders a back-up option, which may be called upon for the recovery of occasional losses incurred in the case of a discrepancy between the expected and actual yield - or price - of the crop collateral.

In the coming decade, the future of the Philippines' last natural forests will be decided. For the first time in the history of the Philippines, forest migrants and indigenous forest communities now have an opportunity to reverse the trends of the past. The main conclusion of this case study is that a wide range of actors outside the forest, including policy makers, politicians, traders and urban consumers, will co-determine how, and how many forest managers will seize that opportunity. The present relations between the Sierra Madre and the population centres of Cagayan Valley may be compared to those between Cagayan Valley and the national economy of the Philippines in the early 1920s, when the American administration opened the first road link between the region and Central Luzon, ushering in a period of agricultural expansion and resource extraction. By the mid- 1990s, preliminary access routes had also been laid out into the Sierra Madre, and the first government bridgeheads established there, ending the longstanding isolated, and rebellious state of the forest lands. Lowlanders from Cagayan Valley are now producing the first social and biophysical maps of this last frontier, and planning its future. In the course of this process, it will be useful to look back at the kind of economic progress that the region's role as a source of unprocessed tobacco, logs and grain for the national economy has brought to the primary producers of those products. Protecting the unique forests of the Sierra Madre is, first and foremost, a matter of preventing the nation's environmental history from repeating itself on a regional scale in the twenty-first century.



Process: Reclassed to Forest Cover classes

Process: Normalized area for 1950, 1980 & 1990

Year: 1950  
File name: FC50  
File type: image

Year: 1950  
File name: FC50N

Import Id	Import Category	FC id	ArcView data		Idrisi data		Category	Comment	% of total
			Area in Hectares	total per FC id	Area in Hectares	% diff			
1	others	1	28647.953	76578.583	76303	-0.4	deforested	7.9	
2	not specified	1	809.120						
3	Ai						not present in import		
4	Ae						not present in import		
5	Ab						not present in import		
6	G						not present in import		
7	Gk						not present in import		
8	0d	1	13685.920						
9	10d	2	41706.703	199437.989	200342	0.5	low cover	20.7	
10	30d	2	157731.285						
11	60d	3	253756.159	253756.159	256373	1.0	medium cover	26.5	
12	80d	4	340934.635	340934.635	341820	0.3	high cover	35.3	
13	80my	5	89746.299	89746.299	90786	1.2	mossy & montane	9.4	
14	80ma	6	2415.301	2415.301	2449	1.4	mangrove	0.3	
15	not used						not present in import		
16	empty fields	1	33435.590						
total			962868.967	962868.967	968073	0.5		100.0	

FC_id	Hectares	Category	diff. with FC50	% diff.
2	99826	low cover	-100516	-50.2
3	228882	medium cover	-27491	-10.7
4	318614	high cover	-23206	-6.8
5	88114	mossy & montane	-2672	-2.9
6	1623	mangrove	-826	-33.7
total	750443		-217630	-22.5

Error checking:  
total col. J  
difference

962868.967  
0.000

Import Id	Import Category	FC id	Area in Hectares	total per FC id	Area in Hectares	% diff	Category	Comment	% of total	FC_id	Hectares	Category	diff. with FC50	% diff.
1	others	1	28647.953	76578.583	76303	-0.4	deforested		7.9	1	13384	deforested	-62919	-82.5
2	not specified	1	809.120							2	99826	low cover	-100516	-50.2
3	Ai							not present in import		3	228882	medium cover	-27491	-10.7
4	Ae							not present in import		4	318614	high cover	-23206	-6.8
5	Ab							not present in import		5	88114	mossy & montane	-2672	-2.9
6	G							not present in import		6	1623	mangrove	-826	-33.7
7	Gk							not present in import		total	750443		-217630	-22.5
8	0d	1	13685.920											
9	10d	2	41706.703	199437.989	200342	0.5	low cover		20.7					
10	30d	2	157731.285											
11	60d	3	253756.159	253756.159	256373	1.0	medium cover		26.5					
12	80d	4	340934.635	340934.635	341820	0.3	high cover		35.3					
13	80my	5	89746.299	89746.299	90786	1.2	mossy & montane		9.4					
14	80ma	6	2415.301	2415.301	2449	1.4	mangrove		0.3					
15	not used							not present in import						
16	empty fields	1	33435.590											
total			962868.967	962868.967	968073	0.5			100.0		968073			

Process: Reclassed to Forest Cover classes

Year: 1980  
 File name: FC80  
 File type: image

Import Id	Import Category	FC Id	Area in Hectares	total per FC Id	Area in Hectares	% diff.	Category	Comment	% of total
1	others	1	3560.083	60687.038	60888	0.3	deforested		7.7
2	not specified	1	1832.839						
3	Ai							not present in import	
4	Ae							not present in import	
5	Ab							not present in import	
6	G							not present in import	
7	Gk							not present in import	
8	0d	1	55294.116						
9	10d	2	142911.616	278804.761	280552	0.6	low cover		35.6
10	30d	2	135893.145						
11	60d	3	230169.557	230169.557	232580	1.0	medium cover		29.5
12	80d	4	128170.447	128170.447	128933	0.6	high cover		16.4
13	80my	5	81683.576	81683.576	82678	1.2	mossy & montane		10.5
14	80ma	6	1889.851	1889.851	1932	2.2	mangrove		0.2
15	not used							not present in import	
16	empty fields	1	781405.230	781405.230	787563	0.8		not present in import	100.0
total			781405.230	781405.230	787563	0.8			100.0

Error checking:  
 total col. J  
 difference

16	empty fields	1	781405.230	781405.230	787563	0.8		not present in import	100.0
17	not used							not present in import	
18	not used							not present in import	
19	not used							not present in import	
20	not used							not present in import	
21	not used							not present in import	
22	not used							not present in import	
23	not used							not present in import	
24	not used							not present in import	
25	not used							not present in import	
26	not used							not present in import	
27	not used							not present in import	
28	not used							not present in import	
29	not used							not present in import	
30	not used							not present in import	
31	not used							not present in import	
32	not used							not present in import	
33	not used							not present in import	
34	not used							not present in import	
35	not used							not present in import	
36	not used							not present in import	
37	not used							not present in import	
38	not used							not present in import	
39	not used							not present in import	
40	not used							not present in import	
41	not used							not present in import	
42	not used							not present in import	
43	not used							not present in import	
44	not used							not present in import	
45	not used							not present in import	
46	not used							not present in import	
47	not used							not present in import	
48	not used							not present in import	
49	not used							not present in import	
50	not used							not present in import	
51	not used							not present in import	
52	not used							not present in import	
53	not used							not present in import	
54	not used							not present in import	
55	not used							not present in import	
56	not used							not present in import	
57	not used							not present in import	
58	not used							not present in import	
59	not used							not present in import	
60	not used							not present in import	
61	not used							not present in import	
62	not used							not present in import	
63	not used							not present in import	
64	not used							not present in import	
65	not used							not present in import	
66	not used							not present in import	
67	not used							not present in import	
68	not used							not present in import	
69	not used							not present in import	
70	not used							not present in import	
71	not used							not present in import	
72	not used							not present in import	
73	not used							not present in import	
74	not used							not present in import	
75	not used							not present in import	
76	not used							not present in import	
77	not used							not present in import	
78	not used							not present in import	
79	not used							not present in import	
80	not used							not present in import	
81	not used							not present in import	
82	not used							not present in import	
83	not used							not present in import	
84	not used							not present in import	
85	not used							not present in import	
86	not used							not present in import	
87	not used							not present in import	
88	not used							not present in import	
89	not used							not present in import	
90	not used							not present in import	
91	not used							not present in import	
92	not used							not present in import	
93	not used							not present in import	
94	not used							not present in import	
95	not used							not present in import	
96	not used							not present in import	
97	not used							not present in import	
98	not used							not present in import	
99	not used							not present in import	
100	not used							not present in import	

Process: Normalized area for 1950, 1980 & 1990

Year: 1980  
 File name: FC80N

Idrisi data				
FC_id	Hectares	Category	diff. with FC80	% diff.
1	39168	deforested	-21720	-35.7
2	269876	low cover	-10676	-3.8
3	231128	medium cover	-1452	-0.6
4	128526	high cover	-407	-0.3
5	80669	mossy & montane	-2009	-2.4
6	1076	mangrove	-856	-44.3
total	750443		-37120	-4.7

1	39168	deforested	-21720	-35.7
2	269876	low cover	-10676	-3.8
3	231128	medium cover	-1452	-0.6
4	128526	high cover	-407	-0.3
5	80669	mossy & montane	-2009	-2.4
6	1076	mangrove	-856	-44.3
total	750443		-37120	-4.7

Process: Normalized area for 1950, 1980 & 1990

Process: Reclassed to Forest Cover classes

Process: Normalized area for 1950, 1980 & 1990

Year: 1990  
 File name: FC90  
 File type: image

Year: 1990  
 File name: FC90N

Import Id	Import Category	ArcView data			Idrisi data			Comment	% of total	FC_Id	Hectares	Category	diff. with FC90	% diff.
		FC id	Area in Hectares	total per FC id	Area in Hectares	% diff.	Category							
1	others	1	2651.243	52148.027	52149	0.0	deforested		6.8	1	48415	deforested	-3734	-7.2
2	not specified	1						not present in import		2	304204	low cover	-6595	-2.1
3	AI							not present in import		3	196600	medium cover	-956	-0.5
4	Ae							not present in import		4	104357	high cover	-914	-0.9
5	Ab							not present in import		5	96386	mossy & montane	-1715	-1.7
6	G							not present in import		6	481	mangrove	-574	-54.4
7	Gk							not present in import		total	750443		-14488	-1.9
8	Od	1	49496.784											
9	10d	2	160595.861	309130.100	310799	0.5	low cover		40.6					
10	30d	2	148534.240											
11	60d	3	195724.763	195724.763	197556	0.9	medium cover		25.8					
12	80d	4	103979.289	103979.289	105271	1.2	high cover		13.8					
13	80my	5	96913.071	96913.071	98101	1.2	mossy & montane		12.8					
14	80ma	6	1029.567	1029.567	1055	2.5	mangrove		0.1					
15	not used							not present in import						
16	empty fields	1						not present in import						
total			758924.818	758924.818	764931	0.8			100.0		764931			

Error checking:  
 total col. J  
 difference

758924.818  
 0.000

## Annex B

Calculations of projected forest conversion due to *uma* farming, 1990-2040 (table 4.8)

Year	Unweeding area	Population	Expenditure	No. of additional households farming in <i>uma</i> (Sikre Study)	Area of additional farmland required (ha)	Total forest area converted (ha)	Rate of forest conversion per household per year
<b>Scenario 1 (0.5 pop growth, 3 ha./farm, 20% unweeding days)</b>							
1990	135000	135000					
1991		137000	2700	2700		207000	0.1223
2015		211402	84482	84482	74198	593720	0.1544
2040		383305	128705	128705	91346		
<b>Scenario 2 (0.8 pop growth, 3 ha./farm, 40% unweeding days)</b>							
1990	135000	135000					
1991		137700	2700	2700		204720	0.0883
2015		221462	84482	84482	25945	477547	0.1435
2040		369364	128705	128705	68519		
<b>Scenario 3 (0.5 pop growth, 5 ha./farm, 20% unweeding days)</b>							
1990	135000	135000					
1991		139250	4250	4250		470320	0.1573
2015		282600	147400	147400	58064	194855	0.1742
2040		591827	456027	456027	182211		
<b>Scenario 4 (0.5 pop growth, 6 ha./farm, 40% unweeding days)</b>							
1990	135000	135000					
1991		139050	4650	4650		400788	0.1493
2015		282600	147500	147500	44008	957269	0.2003
2040		594827	459027	459027	173348		

## Annex B

Calculations of projected forest conversion due to new farming, 1990-2040 (table 4.8)

Year	Uma/ublag area	Population	Increment	No of additional households farming in Sierra Madre	Area of additional farmland required (ha)	Total forest area converted into farmland	Hectares cleared per household per year
<i>Scenario 1 (2% pop. growth, 5 ha. farm, 20% out-migrating boys)</i>							
1990	135000	135000					
1991		137700	2700				
2015		221482	86482	34593	172964	307964	0.1123
2040		363364	228364	91346	456729	591729	0.1544
<i>Scenario 2 (2% pop. growth, 5 ha. farm, 40% out-migrating boys)</i>							
1990	135000	135000					
1991		137700	2700				
2015		221482	86482	25945	129723	264723	0.0980
2040		363364	228364	68509	342547	477547	0.1435
<i>Scenario 3 (3% pop. growth, 5 ha. farm, 20% out-migrating boys)</i>							
1990	135000	135000					
1991		139050	4050				
2015		282660	147660	59064	295320	430320	0.1373
2040		591827	456827	182731	913655	1048655	0.1743
<i>Scenario 4 (3% pop. growth, 6 ha. farm, 40% out-migrating boys)</i>							
1990	135000	135000					
1991		139050	4050				
2015		282660	147660	44298	265788	400788	0.1491
2040		591827	456827	137048	822289	957289	0.2005

## HYBRID CORN IN IBRA

Characteristics	Cash crop, cultivated with certified seeds
Seeds	40 kg x 30 PhP/kg plus 30% credit cost = 1236 P
Other investments	no ploughing, no other inputs
Labour input	75 days (Nunan 1995; Dirck 1995)
Yield	10 cavans x 70kg/cavan x 6.5 PhP/kg = 4550 PhP
Net income	3314 PhP
Labour investment	75 days/ha (Nunan 1995)
Return to labour	45 PhP/day

## Annex C

## HYBRID CORN IN BANCKAO

Characteristics	Cash crop, produced with agrochemical inputs
Seeds	40 kg x 30 PhP/kg = 1200 PhP
Other investments	Urea: 1 bag/ha = 380 PhP Ammonia (expressing) (230 PhP), Weedicide (100 PhP)

**Calculations underlying estimated returns to labour of corn, rice and banana in upland farms (table 4.12; all on a one hectare basis)**

	Cacabo: 800 PhP
	Total investment: 3413 PhP
Yield	Harvest: 12 carts = 30 cavans = 2,100 kg
Net income	2,100 x 6.5 - 3413 = 10,000 PhP/ha
Labour investment	73 days (Nunan 1995)
Return to labour	140 PhP/day

## BANANA IN IBRA

Characteristics	Produced for regular, small cash incomes
Planting material	suckers from other plantations
Other investments	none
Yield	Saba variety: purchased plantlets, 8 year production; 400 trees/ha yielding 1.00 cavan per tree per year (in years 3-5). Average productivity: 25,000 guys. Fruit sale price = 0.2 PhP/guys
Net income	5000 PhP/ha/yr
Labour input	Once every 5 years preparation of new plantation = 20 days + planting 17 days, or 4 days/ha maintenance/weeding 1 day per month = 12 days harvesting 2 days per month, or 24 days/yr Total 40 days per year
Return to labour	125 PhP/day
	Lakatan/Mondul variety: Every 5 years need 8 suckers to reach full prod. of 40,000 plantlets = 31,111 guys. Fruit sale price = 0.7 PhP/guys
Net income	9300 P
Labour input	as above, but replanting every 5 years (15 days/ha), 47 days/yr
Return to labour	200 PhP/day

**HYBRID CORN IN UMA**

<i>Characteristics</i>	: pure cash crop, cultivated with certified seeds
<i>Seeds</i>	: 40 kg x 30 Ph₱/kg plus 30% credit cost = 1236 P
<i>Other investment</i>	: no ploughing, no other inputs
<i>Labour input</i>	: 75 days (Numan 1995; Dirx 1995)
<i>Yield</i>	: 10 cavans x 70kg/cavan x 6.5 Ph₱/kg = 4550 Ph₱
<i>Net income</i>	: 3314 Ph₱
<i>Labour investment</i>	: 75 days/ha (Numan 1995)
<i>Return to labour</i>	: 45 Ph₱/day

---

**HYBRID CORN IN BANGKAG**

<i>Characteristics</i>	: Cash crop, produced with agrochemical inputs
<i>Seeds</i>	: 40 kg x 30 Ph₱/kg = 1200 Ph₱
<i>other investments</i>	: Urea: 1 bag/ha = 380 Ph₱ Ammonia topdressing (230 Ph₱), Weedicide (100 Ph₱), Pesticide: 100 Ph₱ Cost of Credit: 30% of 1560 = 603 Ph₱ Carabao: 800 Ph₱ Total Investment: 3413 Ph₱
<i>Yield</i>	: Harvest: 12 carts = 30 cavans = 2,100 kg
<i>Net income</i>	: 2,100 x 6.5 - 3414 = 10,000 Ph₱/ha.
<i>Labour investment</i>	: 73 days (Numan 1995)
<i>Return to labour</i>	: 140 Ph₱/day

---

**BANANA IN UMA**

<i>Characteristics</i>	: Produced for regular, small cash income
<i>Planting material</i>	: suckers from other plantation
<i>Other investments</i>	: none
<i>Yield</i>	: Saba variety: permanent plantation, 8 year productivity; 400 trees /ha yielding 100 pieces per tree per year (in years 2-5). Average productivity 25,000 pc/yr Farm gate price = 0.2P/pc
<i>Net income</i>	: 5000 Ph₱ /ha/yr
<i>Labour input</i>	: Once every 8 years preparation of new plantation = 20 days + planting 12 days, or 4 days/yr maintenance/guarding 1 day per month = 12 days harvesting 2 days per month, or 24 days/yr Total 40 days per year
<i>Return to labour</i>	: 125 Ph₱/day
	<b>Lakatan/Manila variety:</b> Every 3 years lose 8 months to reach full prod. of 45,000 pieces/yr = 31,111 pc/yr. Farmgate price = 0.3 Ph₱/pc
<i>Net income</i>	: 9300 P
<i>Labour input</i>	: as above, but replanting every 3 years (11 days/yr), 47 days/yr
<i>Return to labour</i>	: 200 Ph₱/day

---

#### UPLAND RICE & BEAN IN UMA

<i>Characteristics</i>	: Often the first crop after preparing a new uma; intercropped with minor other food crops; produced for subsistence
<i>Seeds</i>	: <b>rice</b> : 15-20 kg/ha (60 Ph₱/kg, or save from previous harvest) <b>beans</b> : 20 kg/ha (60 Ph₱/kg, or save from previous harvest)
<i>Other investments</i>	: none
<i>Labour</i>	: 100 - 110 days (Dirkx 1995; Numan 1995)
<i>Yield</i>	: <b>rice</b> : 10 cavans/ha = 450 kg (reported average yields in the Sierra Madre range from 1.5 to 5 cav/ha, with maximums of 17-20 cav/ha in fresh <i>uma</i> or after long fallow. <b>beans</b> : 200 kg/ha
<i>Net income</i>	: $(450 \times 8 + 200 \times 15) - (1,250 + 1,200) = 4,150$ Ph₱ (crop valued at shadow farmgate prices)
<i>Return to labour</i>	: 40 Ph₱/day

---

#### TRADITIONAL WHITE CORN VARIETIES IN UMA

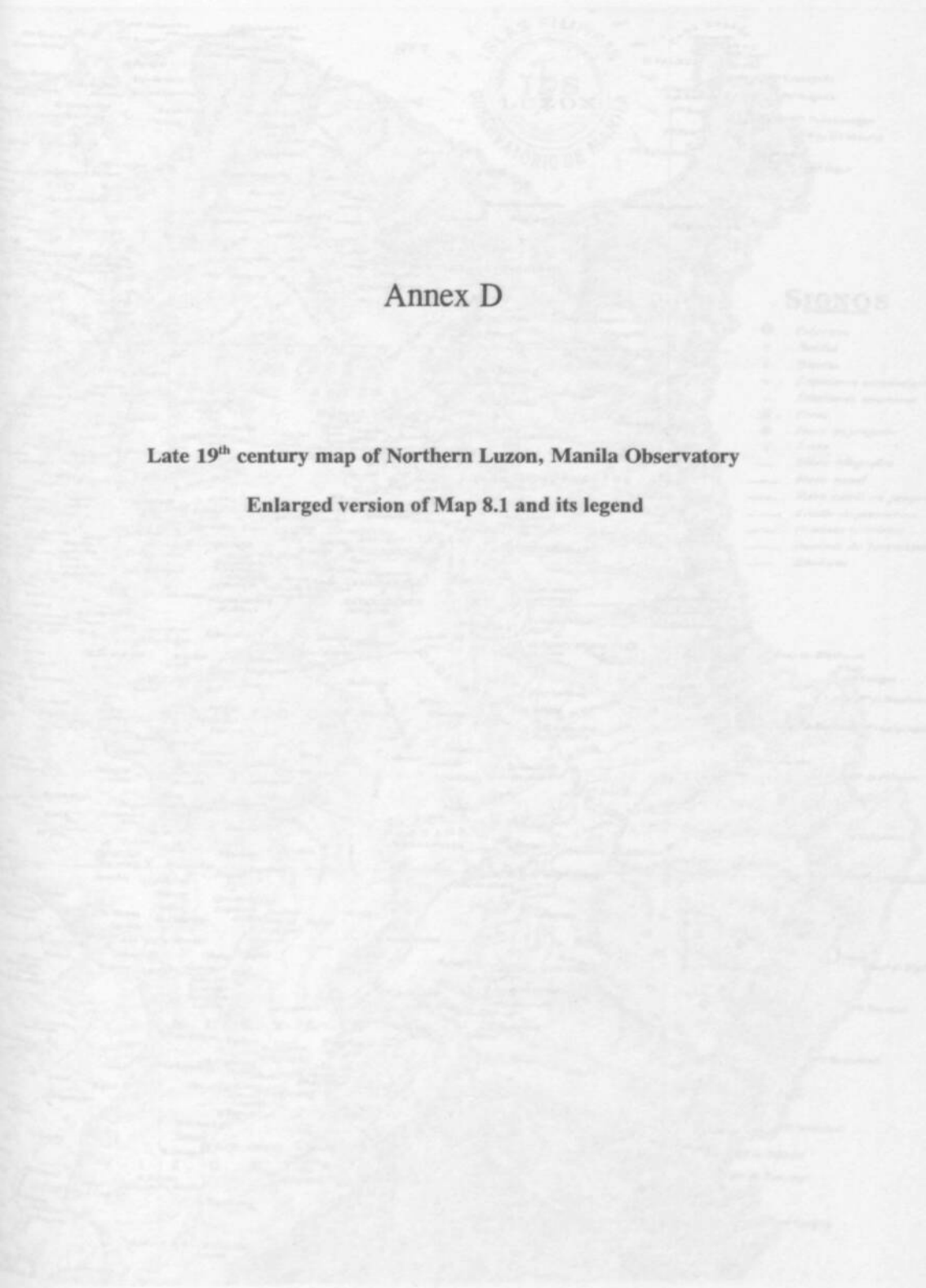
<i>Characteristics</i>	: in older <i>uma</i> , alternative staple, also produced for cash
<i>Seeds</i>	: 25 kg/ha at 8 Ph₱/kg = 200 Ph₱ (or from previous harvest)
<i>Other investments</i>	: none
<i>Yield</i>	: 6 cavans x 70 kg = 420 kg/ha
<i>Labour input</i>	: 75 days (Dirkx 1995; Numan 1995)
<i>Net income</i>	: $420 \times 11 - 200 = 4420$ Ph₱ (no need to buy seeds; value at shadow farmgate prices)
<i>Return to labour</i>	: 60 Ph₱/day

---

#### TRADITIONAL WHITE CORN VARIETIES IN BANGKAG

<i>Characteristics</i>	: Production goal: traditional staple, incidental sale of surplus
<i>Seeds</i>	: 40 kg x 8 Ph₱/kg = 320 P
<i>Other investments</i>	: Carabao: 800 Ph₱/ha
<i>Yield</i>	: 10 - 15 cavans x 70kg = 840 kg/ha (10 Ph₱/kg) 9 cavans/ha (Dirkx 1995: 560-720 kg/ha; Hayami 1996, Mindanao 656 - 861kg/ha)
<i>labour input</i>	: 85 days (own estimate)
<i>Net income:</i>	: $800 \times 10 - 800 = 7200$ Ph₱/ha
<i>Return to labour</i>	: 85 Ph₱/day

---



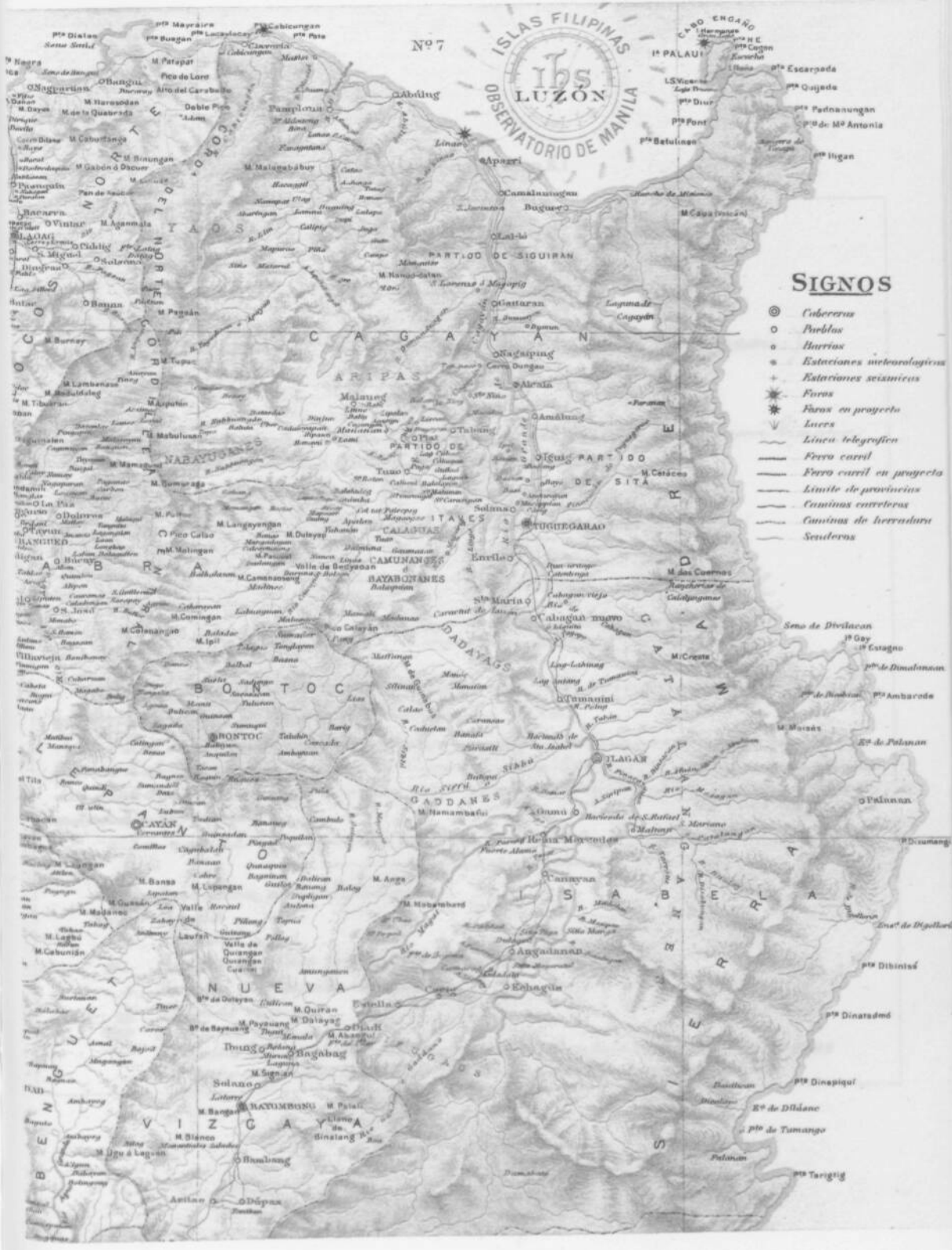
Annex D

Late 19<sup>th</sup> century map of Northern Luzon, Manila Observatory

Enlarged version of Map 8.1 and its legend

SIGNOS

- Capital
- Town
- Village
- Station
- Railway station
- Port
- Main highway
- Main road
- Main canal or stream
- Road
- Stream
- Canal
- Boundary
- District



### SIGNOS

- ⊙ Cabecera
- Poblado
- Barrios
- Estaciones meteorológicas
- + Estaciones sísmicas
- ✦ Ferros
- ✦ Ferros en proyecto
- ✦ Luers
- Línea telegráfica
- Ferro carril
- Ferro carril en proyecto
- Límite de provincias
- Caminos carreteros
- Caminos de terraceros
- Senderos

# FILIPINAS

## Rio Grande de Cagayan (N. de la isla de Luzon.)

Hoja I. Comprende desde la entrada del Puerto de Aparri hasta el estero del Bangul ó de Cordoba.

Hoja II. Desde el referido estero hasta Ilagan.

Corregido en Octubre de 1898.

*H. Tutuál y Rosell*

*Nota:* Las principales poblaciones, son tomadas de la Hoja II. del Archipiélago Filipino publicada en 1845.

La anchura del Rio varia en algunos lugares, como por ejemplo: en Lal-lóe varia desde 340 metros, hasta 500 metros, y en Enguejaras desde 500 metros hasta á más de 1,000 esto segun el agua que lleva en cada crecida.

La canal es variable en las crecidas.

- ◎ Cabecera de la Provincia.
  - Pueblo.
  - Rancho.
  - Piedras grandes y pequeñas en mitad del canal.
  - + Troncos en mitad del canal
  - \*\* El fondo es arena.
  - \*\*\* Orilla de piedra.
- La barra de la entrada al Puerto de Aparri en baja mar tiene 16 á 20 pies  
Los vapores hasta 16 pies de calado pueden cargar en Lal-lóe.





### Box E1 The frontier sitio of Amistad, Baggao, Cagayan

No of households	: 117 (1990 pop = 614)
Year of arrival of first migrants	: late 1950s
Corporate logging period	: 1972-1992
Distance to residual forest	: 3 km
Mode of access	: foottrail
Distance to road	: 7 km
Distance to Nat'l Highway	: 50 km
Distance to market	: 25 km
Hybrid corn cultivation (1996)	: none

#### Context

The first migrants arriving in the *sitio* of Amistad were Ilokano tenants from the lowland town of Amulung. They arrived in the 1950s, followed by relatives and, in 1968, by the first Ibaloy migrants from the Cordillera. When Veterans Woodworks opened a logging road to Amistad in 1979, many people from Amulung followed. Ilokanos still make up 45% of the *sitio's* population. The forests around Amistad used to have exceptionally dense stands of Narra, but local residents only realized this in the early 1990s, the same period when large scale mechanized logging operations ceased here. **Carabao logging continues to be an important source of income here.** Those who had been employed by the company continued logging with the chainsaws and carabaos they had earned. In 1994, there were 15 chainsaws in Amistad: 5 were fully utilized for logging activities and operated by the owner; 6 were offered for rent for logging or preparing *uma* fields; and others were declared to be 'for personal use'. There were 16 carabaos used in log hauling. Between April and June of that year, a total of 72 trucks, each loaded with an average 2000 boardfeet (or 5 cubic meters) of Narra flitches left Amistad. Against local prices of 6-8 Pesos per boardfeet (P15 in retail trading in Manila), this volume represents a value of P 1,000,000, = (40,000 US\$) Recently, the carabao logging association of the *sitio* was legalized and awarded a 4,000 ha Community Forest Management Agreement. **The Ibaloy migrants are experienced upland farmers, producing beans and other vegetables for the Baguio market.** Amistad has relatively rich soils where a variety of cash crops including beans, citrus trees, bananas and coffee thrived well, using long fallow fire and fallow techniques. The *bangkag* and *talon* lands are in the hands of the pioneers, one of whom owns more than 100 hectares. Corporate logging operations ceased here in 1991; since then, the 7 km logging track between Amistad and the nearest barangay is only accessible for trucks and jeepneys during summer. The logging road which used to run from Amistad towards the east is slowly developing into a carabao trail, bordered by wildlings of Narra and other original forest species. In 1994, the Department of Agriculture, through the local barangay officials, ran a seed dispersal programme in the *sitio*; while all families were supposed to receive 1 kg of certified corn seeds, only few actually planted the crop, producing only minor quantities "to feed the pigs". In 1996, migrants were clearing residual forest for the establishment of plantations of the fast growing and fire resistant *Gmelina arborea* tree. Guaranteed purchase contracts were offered by a newly established pulp mill in Sofana, Cagayan.

## Box E2 Sitio Laginday, San Mariano, Isabela (1991)

No of households	: 20 (1992 pop = 107)
Year of arrival of first migrants	: 1980
Corporate logging era	: 1975-1985
Mode of access	: foottrail
Distance to residual forest	: 5 km
Distance to road	: 5 km
Distance to Nat'l Highway	: 45 km
Distance to market	: 45 km
Cash crops	: Hybrid corn in bangkag and intercropped in <i>uma</i>

### Context

Some twenty migrant households, mostly from Ifugao live in this remote *sitio* of barangay Dinuman, one of the oldest forest settlements in the Sierra Madre, located along the old trail between the towns of San Mariano and Palanan. The narrow, slippery road between Dinuman and San Mariano, which repeatedly crosses creeks and tributaries of the Cagayan River, served as a logging road in the 1970s and has now become the artery of economic and social contacts between the Centro of San Mariano and its scattered upland barangays.

Occasionally scraped and gravelled, **only logging trucks ply this road, and only during part of the year.** After arriving in the *barangay* of Dinuman, *sitio* Laginday is only reached after a one hour hike. **Most people who stay here originate from Kaingan, Ifugao and arrived in the early 1980s.** Relatives, who left Kiangan in 1965 as logging company employees, invited them to follow and develop their own farms here, too. The early migrants had first settled in Dinuman, an older forest settlement 6 km South of Laginday, but shifted when they found good farm lands and springs there. Using their traditional skills from Ifugao, they constructed water-conveyance structures, bunds and canals there, enabling them to develop irrigated farmlands ('*talon*') here. Around these fields of green, the landscape is dominated by bamboo stands, grasslands and burnt residual forest stands, created by those who followed the early migrants. Since the last corporate logging operations ceased in this area, in 1985, **agriculture has gained in importance for the livelihood of these migrants.** Once an *uma* has been made, two crops per year can be grown there for a period of two to three years: the first crop is upland rice, after that a mixture of mung bean, peanuts and hybrid corn is planted. Fields with annuals are surrounded by a patchwork of heavily degraded residual forest and recovering *uma*, or *ublag* (fallow) lands. These *ublags* are planted with perennials, such as banana and coffee.

### Box E3 Barangay Dimatan, Tumauni, Isabela

N <sup>o</sup> of households	: 60 (1990 pop. = 346)
Year of arrival pioneer migrants	: 1957
Corporate logging period	: 1972 - 1991
Mode of access	: Jeepney, partly gravelled logging road, eight months/yr
Distance to residual forest	: 10 km
Distance to logging road	: 0
Distance to Nat'l Highway	: 12
Distance to market	: 12
Hybrid corn production	: in <i>bangkag</i> , with external inputs, two crops per year

#### Context

In 1957, the six founding fathers (Adasen), migrants from indigenous upland tribe in Abra who were accompanied by an Ilokano, walked barefoot from Abra province into the Sierra Madre, where they occupied a fertile valley floor in the Sierra Madre. They developed rice lands, upland farms and tree-plantations here. Ilokano and Ybanag migrants followed in the 1970s, when commercial logging started in the area. In 1988, after several years political pressure by political leaders, advising them to leave the forest in order to avoid being mistaken for supporters, or members of the New People's Army, they abandoned their first settlement and settled in the grasslands on the foothills of the Sierra Madre. As part of the resettlement programme, all households were granted a Certificate of Stewardship Contract (CSC) to 7 ha of lands, some inside a ranch which used to be owned by relative of the Marcos family and was confiscated by the Presidential Commission on Good Governance after the 1986 EDSA Revolution, and some in the adjacent lands of the Laredo family, a well-to do trader in Tumauni. **These lands now produce two crops of yellow corn per year.** In addition, the migrants continue to cultivate their original fields inside the forest. These lands are used for the production of **upland rice and a mix of other subsistence crops.** Families, who became chainsaw owners during their employment with the logging company, still derive substantial revenues from carabao logging; **there are more than 80 carabaos in this barangay.** The increasing scarcity of premium species within the action radius of the carabao prompts migrants to shift to the extraction of softwoods. **The flitches and farm products are collected by trucks plying daily between Dimatan and the lowland town of Tumauni.**

- Anderson, W. (1982) "Cacique democracy in the Philippines: Origin and dream." In: *New Left Review* 160:3-31.
- Anderson, J.P. (1987) *A rearing project of ruminant cycles in milk used for shifting cultivation under nitrous chloride conditions in tropical Asia: Part I (Tech. Research Report, Agricultural Royal Tropical Institute (RTI))*.
- Angier, N. (1994) "De tyranale van het regenwoud." [The tyranny of the rainforest] In: *Volkstribune*, 17 Dec 1994.
- Aquino, B.A. (1995) "EDSA as vision and blueprint." In: *Kasama-Tuglo*, 1, (ed.) *Days for EDSA 1995: Looking back, looking forward*. Manila: Foundation for Worldwide People Power, Inc.
- Aquino, D. M. (1991) *Analysis of the Timber Forest Producer's situation in San Mariano, Zamboanga*. MSc. Thesis, Los Baños University of the Philippines.
- Aquino, D. M. (1994) *The rising role of women: Problems and solutions*. Paper presented at the 2<sup>nd</sup> European Conference on Philippine Studies, 15-18 April 1994, London: School of Oriental and African Studies.
- Arriaga, L. and M. Velazquez (1994) *The social dimensions of population*. In: Arriaga, L. et al. (eds) (pp. 107-124).
- Arriaga, L., M.P. Stone and G.C. Major (eds.) (1994) *Population & environment: reconciling the debate*. Bombay: The Praeger and Oxford: Praeger Press.
- ASS (1963) *The Philippines: authoritarian government, institutional and cultural roots*. London: Asia Society.
- Bain, D.H. (1984) *Grains in distress: Asia's rice in the Philippines*. Boston: Houghton Mifflin Company.
- Bancroft, G. (published manuscript, received 1998) *A history of poverty: The politics of natural disaster in the Philippines 1950-1993*. Auckland: University of Auckland.

## References

- Abesamis, T.S and L.J. Angelo (1995) "Program context: Power to the people - again." In: Abesamis, T.S (ed.) *Technical cooperation for the management of change: The case of the Local Development Assistance Program and its strategic contributions to meaningful decentralization in the Philippines*. Quezon City: National Economic Development Authority.
- ADB (1988) *Report and Recommendation of the President to the Board of Directors on the proposed loans and technical assistance to the Republic of the Philippines for a Forestry Sector Program*. Report N° 853:PHI. Manila: Asian Development Bank.
- ADB(1994) *Forestry Sector Study of the Philippines*. Manila: Agriculture Department, Asian Development Bank.
- Adams, M. (1996) "Timber trends; a look back over the last year of trading." In: *ITTO Tropical Forest Update* 6 (4):18-19.
- Agabin, M. (1988) *A review of policies impinging on the informal credit markets in the Philippines*. PIDS Working paper Series N° 88-12. Makati: Philippine Institute for Development Studies.
- Aggabao, E. (1993) *The role of the Chinese in the extraction and trade of wood products in Cagayan Valley*. MF thesis. Cabagan: Isabela State University.
- Agrawal, A. (1995) "Dismantling the divide between indigenous and scientific knowledge." In: *Development and Change*, 26: 413-439.
- Aguilar, F.V. (1994) "Of cocks and bets: gambling, class structuring and state formation in the Philippines." In: Eder, J.E. and R.L. Youngblood (eds.) (*op. cit.*):147-196.
- Aguinaldo, R.E. (1988) *Proposal for a rational and judicious utilization and management of forest resources in the province of Cagayan*. Tuguegarao (ms).
- Aken, B. van (1997) "Changing labour allocation in kaingin agriculture in Maddela, Quirino." In: Guzman and de Groot (eds.) (*op. cit.*):79-84.
- Alejo, M.J., Ma. E. P. Rivera and N. I. P. Valencia (1996) *(Des)cribing elections. A study of elections in the lifeworld of San Isidro*. Quezon City: Institute for Popular Democracy.
- Angeles M.S. de los (1982) *Research on forest policies for Philippine development planning; A survey*. Manila: Philippine Institute for Development Studies.
- Anderson, B. (1988) "Cacique democracy in the Philippines: Origins and dreams." In: *New Left Review* 160:3-31.
- Andriessse, J.P. (1987) *A monitoring project of nutrient cycling in soils used for shifting cultivation under various climatic conditions in tropical Asia*. Part I (Text). Research Report. Amsterdam: Royal Tropical Institute (KIT).
- Angier, N. (1994) "De tyrannie van het regenwoud." [the tyranny of the rainforest] In: *Volkskrant*, 17 Dec 1994.
- Aquino, B.A. (1996) "EDSA as vision and liberation". In: Kalaw-Tirol, L. (ed.) *Duet for EDSA 1996: Looking back, looking forward*. Manila: Foundation for Worldwide People Power, Inc.
- Aquino, D. M. (1991) *Analysis of Non Timber Forest Products utilization in San Mariano, Isabela*. MSc thesis. Los Baños: University of the Philippines
- Aquino, D. M. (1994) *The remaining Philippine forests: Problems and solutions*. Paper presented at the 2<sup>nd</sup> European Conference on Philippine Studies, 13-15 April 1994, London: School of Oriental and African Studies.
- Arizpe, L. and M. Velásquez (1994) The social dimensions of population. In: Arizpe, L. *et al.* (eds.) (*op. cit.*): 15-40
- Arizpe, L., M.P. Stone and D.C. Major (eds.) (1994) *Population & environment; rethinking the debate*. Boulder, San Francisco and Oxford: Westview Press.
- ASS (1983) *The Philippines: authoritarian government, multinationals and ancestral lands*. London: Anti Slavery Society.
- Bain, D.H. (1984) *Sitting in darkness. Americans in the Philippines*. Boston: Houghton Mifflin Company.
- Bankoff, G. (undated manuscript, received 1998) *A history of poverty: The politics of natural disasters in the Philippines 1950-1995*. Auckland: University of Auckland.

- Bakker, J.M. (1995) *Farmers in the forest fringe: a study on income generating activities for upland households in the Northern Sierra Madre, Philippines*. CML student report N° 45. Leiden and Cabagan, Isabela: CVPED.
- Baldi, M. (in prep.) *Report of field research among Agta groups in Bolos Point and Gattaran, Cagayan*. CML student report. Leiden and Cabagan, Isabela: CVPED.
- Barbier, E., J. Burgess, J. Bishop and B. Aylward (1994) "Deforestation: the role of the international trade in tropical timber." In: Brown and Pearce (*op. cit.*):271-297
- Basilacan, A. (1992) "Rural poverty in the Philippines; Incidence, determinants and policies." In: *Asian Development Review*, 10(1):125-163
- Balisacan, A.M., R.E. Evenson, T.N. Srinivasan, Ma. C. L. Bantilan, G.T. Castillo, C.A. Florencio, P.S. Intal Jr, M. Mangahas and A. Quisumbing (1993) *Perspectives on Philippine poverty*. Quezon City: Centre for Integrative and Development Studies, University of the Philippines and The Council of Southeast Asian Studies, Yale University.
- Bautista, G.M. (1990) "The forestry crisis in the Philippines: Nature, causes and issues." In: *The Developing Economies*, 28 (1):67-94.
- Bautista, G.M. (1991) "A critique of the Master Plan for Forestry Development." In: *Enviroscope* 17 (6): 6-13. Manila: Haribon.
- Bautista, G.M. (1994a) Data from an aerial reconnaissance, carried out in September 1992 by the Natural Resources Management Project, presented during a Regional Forest Policy Workshop, 27-28 October 1994, Santiago, Isabela, Philippines.
- Bautista, G.M. (1994b) *Natural resources, economic development and the state; The Philippine experience*. Singapore: Institute of Southeast Asian Studies.
- Bee, Ooi Jin (1987) *Depletion of forest resources in the Philippines*. Field report series n° 18. Singapore: Institute of Southeast Asian Studies.
- Beer, J.H. de and M.J. McDermott (1989) *The economic value of Non-Timber Forest Products in Southeast Asia* (with emphasis on Indonesia, Malaysia and Thailand). Amsterdam: Netherlands Committee for IUCN.
- Bellwood, P. (1985) *Prehistory of the Indo-Malaysian archipelago*. Sydney: ANU Academic Press.
- Belsky, J.M. (1993) "Household food security, farm trees and agroforestry: a comparative study in Indonesia and the Philippines" in: *Human Organization* Vol.52, N° 2:130-141.
- Bernstein, H. (1979) "African peasantries: A theoretical framework." In: *Journal of Peasant Studies* 6 (4):421-443.
- BFD (1984) *ASEAN forests: A world heritage*. Proceedings of the first ASEAN Forestry Congress 10-15 October 1983, Paris. Vol. 1-3. Manila: Bureau of Forest Development.
- BFD (1987) *Forest resources of Region 02*. Report of the RP-German Forest Resources Inventory Project. Manila: Bureau of Forest Development, Department of Agriculture and Natural Resources.
- Billsborrow, R.E. and M. Geores (1994a) "Population change and agricultural intensification in Developing Countries." In: Arizpe, L. *et al.* (*op. cit.*):171-207.
- Billsborrow, R.E. and M. Geores (1994b) "Population, land use and the environment in developing countries; what can we learn from cross-national data?" In: Brown and Pearce (*op. cit.*):106-133
- Billsborrow, R.E. (1997) KNAW Hofstee Lezing, 5 June 1997, Amsterdam.
- Binzwanger, H.P. and M.R. Rosenzweig (1986) "Behavioral and material determinants of production relations in agriculture." In: *Journal of Development Studies* 22: 504-539.
- Blaikie, P.M. (1985) *The political economy of soil erosion in developing countries*. Harlow (UK): Longman.
- Blair, E.H. and J.A. Robertson (eds.) (1903-1909) *The Philippine Islands, 1493-1803* (55 volumes) Cleveland: A.H. Clark.
- Blok, A. (1969) "Variations in patronage." In: *Sociologische Gids* 16 (6):365-378.
- Boado, E.L. (1988) "Incentive policies and forest use in the Philippines." In: Repetto and Gillis (*op. cit.*):165-205.
- Boerboom, J.H.A. (1982) *Tropische bosformaties. Inleiding op het College Tropische bossenteelt*. Tropical Forest Formations; introduction to the lecture series Tropical Forestry] Wageningen: Vakgroep Bosteelt, Landbouw Universiteit.
- Boersema, J.J., J.W. Copius Peereboom and W.T. de Groot (eds.) (1989) *Basisboek Milieukunde: over de analyse en oplossing van milieuproblemen*. Amsterdam & Meppel: Boom.
- Boussineau, J. (1969) "Patrons as brokers." In: *Sociologische Gids* 16 (6):379-386.

- Bootsma, N.A. (1986) *Buren in de koloniale tijd. De Filippijnen onder Amerikaans bewind en de Nederlandse, Indische en Indonesische reacties daarop, 1898-1942*. [Neighbours in colonial times. The Philippines under American rule and the Dutch and Indonesian reactions to this, 1898-1942]. Leiden: Koninklijk Instituut voor Taal, Land en Volkenkunde (KITLV).
- Boserup, E. (1965) *The conditions of agricultural growth. The economics of agrarian change under population pressure*. London: Allen&Unwin.
- Bourke, I.J. (1997) "International trade in forest products and the environment." In: *Unasylva* 46 (183).
- Boyce, J.K. (1993) *The political economy of growth and impoverishment in the Marcos era*. Quezon City: Ateneo de Manila University Press.
- Boyce, W.D. (n.d.) *The Philippine Islands illustrated*. Chicago and New York: Rand McNally & Company.
- Braadbaard, O. (1994) "Business contracts in Javanese vegetable marketing." In: *Human Organization*, 53 (2) 143-149. Society for Applied Anthropology.
- Braam, A. van (1986) *Leerboek Bestuurskunde* [Textbook Public Administration]. Muiderberg: Coutinho.
- Brandon, K.E. and M. Wells (1992) "Planning for people and parks: Design dilemmas." In: *World Development*, 20 (4) 557 - 570.
- Brillantes, A.B. (1997) *Decentralized democratic government under the Local Government Code: A governmental perspective*. Paper presented at the 3<sup>rd</sup> European Conference on Philippine Studies, 27-30 April 1997, IRSEA, Aix en Provence.
- Broad, R. and J. Cavanagh (1993) *Plundering paradise. The struggle for the environment in the Philippines*. Quezon City: University of California Press and Anvil Publishing.
- Brosius, J. P. (1996) *Dispatches from Penang; discursive production and praxis in Malaysian rainforest politics*. Draft Paper presented during the annual meeting of the Association of Asian Studies, 11-14 April, Honolulu.
- Brown, E.C. (1994) "Grounds at stake in ancestral domains." In: Eder, J.E. and R.L. Youngblood (eds.) (*op. cit.*):43-76.
- Brown, K. and D.W. Pearce (eds.) (1994) *The causes of tropical deforestation. The economic and statistical analysis of factors giving rise to the loss of tropical forests*. London: University College London Press.
- Brown, K. and D.W. Pearce (eds.) (1994) "Saving the world's tropical forests." In: Brown and Pearce (*op. cit.*):2-26.
- Brown, L. (1991) Forward in Perlin (*op. cit.*).
- Bruijnzeel, L.A. (1986) "Environmental impacts of (de)forestation in the humid tropics. A watershed perspective." In: *Wallaceana*, 46:3-13.
- Bruijnzeel, L.A. (1990) *Hydrology of moist tropical forests and the effects of conversion: A state of knowledge review*. Paris: UNESCO and Amsterdam: Free University.
- Bruijnzeel, L.A. and W.R.S. Critchley (1994) *Environmental impacts of logging moist tropical Forests*. Paris: UNESCO.
- Buis, J. (1985) *Historia forestis. Nederlandse bosgeschiedenis, deel I & II*. [Dutch forest history, part I and II]. Utrecht: HES Uitgevers.
- Buizer, I.M. (1994) *Interactions between field officials and local people; field officials and the local people at the forest fringe in the Sierra Madre, Philippines*. CML student report N<sup>o</sup> 27. Leiden, and Cabagan, Isabela: CVPED.
- Bureau of Agriculture (1927) *Philippine tobacco*. Manila: Bureau of Printing.
- Bureau of Forestry (1970) *Handbook on selective logging* (Second Edition) Manila: Bureau of Forestry.
- Burton, J.W. (1996) "British interests in the Philippine American War." Paper presented at the 5<sup>th</sup> International Conference on Philippine Studies, April 14-16, 1996, University of Mañoa, Honolulu.
- Carroll, J.J., S.J. (1994) "Glimpses into Philippine political culture: gleanings from Ateneo Public Opinion Survey Data." In: *Pilipinas* 22 (Spring 1994):47-61.
- Caufield, C. (1982) *Tropical moist forests; Te resource, the people, the threat*. London: Earthscan and IIED.
- Chambers, Robert (1988) "Sustainable rural Livelihoods: a key strategy for people, environment and evelopment." In: Conroy C. and M. Livinoff (eds.) *The Greening of Aid - Sustainable Livelihoods in Practice*. London: Earthscan.

- Chrispijn, R. (1995) *Politics, policies and the environment. A study on the role of politics at the implementation of environmental policies and those policies themselves as a preparation for the CVPED Environmental Management Plan Scenario for the Northern Sierra Madre Biogeographic Zone, Region 2, Philippines*. CML student report N° 39. Leiden and Cabagan, Isabela: CVPED.
- CI (1991) *Initial Glimpses: The Palanan Wilderness*. Washington, D.C.: Conservation International.
- CI (1996) List of biodiversity conservation priority sites. Washington, D.C.: Conservation International.
- Clad, J. (1988) "The fragile forests. Church pastoral letter against despoilation." In: *Far Eastern Economic Review*, 25 Feb. 1988.
- Clarke, G. (1993) "People Power? Non Governmental Organizations and Philippine politics since 1986." In: *Philippine Quarterly of Culture and Society* (21):231-256.
- Clarke, G. (1995) "Non governmental organizations and the Philippine state: 1986-93." In: *South East Asia Research* (3)1:67-9. London: School of Oriental and African Studies.
- Chua, D. (1996) "Helicopter logging lifts off in Sarawak." In: *ITTO Tropical Forest Update* 6 (3):2-4
- Clement, P. and B. van Dijk (1995) *Forest quality change in the northern Sierra Madre, Cagayan Valley, Philippines*. Preliminary student report. Leiden: CML. (ms).
- Colchester, M. and L. Lohmann (1990) *The Tropical Forestry Action Plan: What progress?* Penang: World Rainforest Movement, the Ecologist and Friends of the Earth
- Colchester, M. and L. Lohmann (eds.) (1993) *The struggle for land and the fate of the forest*. Penang: World Rainforest Movement, The Ecologist and Zed Books.
- Colchester, M. (1995) *Forest politics in Suriname*. Utrecht and Chadlington: International Books and the World Rainforest Movement
- Collins, N.M., J.A. Sayer, and T.C. Whitmore (1991) *The conservation atlas of tropical forests: Asia and the Pacific*. Gland: IUCN.
- Committee on Insular Affairs of the House of Representatives (1910) *Hearings on the question of the investigation of the Interior Department of the Philippine Government touching the administration of Philippine lands, in pursuance of House Resolution n° 795*. Washington: Government Printing Office.
- Commonwealth of the Philippines (Bureau of Commerce and Industry) (1924) *An economic map of the Philippines*. Manila: Bureau of Printing.
- Commonwealth of the Philippines (Department of Agriculture and Commerce) (1939) *Forest resources of the Philippines*. Manila: Bureau of Printing.
- Commonwealth of the Philippines (1939) *Land resources of the Philippines*. Manila: Bureau of Printing.
- Comyn, de T. (1969, or. 1820) *State of the Philippines in 1810* [English translation of "estado de las islas Filipinas en 1810, brevemente descrito por Tomas de Comyn"]. Manila: Filipiana Book Guild.
- Conelly, T.W. (1992) "Agricultural intensification in a Philippine frontier community: impact on labour efficiency and farm diversity." In: *Human Ecology* 20: 203-223.
- Conolly, M.J. (1992) *Church lands and peasant unrest in the Philippines. Agrarian conflict in 20<sup>th</sup> century Luzon*. Manila: Ateneo de Manila University Press.
- Conklin, H.C. (1957) *Hanunóo agriculture; A report on an integral system of shifting cultivation in the Philippines*. Rome: FAO.
- Constantino, R. (1991) "The centennials (1)." In: *Daily Globe*, 27 aug 1991.
- Cornista, L.B. and E. F. Escueta (1990) Communal forest leases as a tenurial option in the Philippine uplands. In: Poffenberger (*op. cit.*):134-144.
- Coronel, S.S. (1998) "Party time: Most political parties are vote getting machines and alliances of convenience." In: *The Investigative Reporting Magazine* 4 (1&2):56-61. Quezon City: Philippine Centre for Investigative Journalism.
- Corpus, O.D. (1997) *An economic history of the Philippines*. Quezon City: University of the Philippines Press.
- Costanza, R., R.d'Arge, R. de Groot, S. Farber, M. Grasso, B. Hannon, K. Limburg, S. Naeem, R.V. O'Neill, J. Paruelo, R.G. Raskin, P. Sutton and M. van den Belt (1997) "The value of the world's ecosystem services and natural capital." In: *Nature* 387 (May 1997): 253-260.
- Coumans, C. (1995) "Ideology and idealism in the struggle of Maridiqueños against Marcopper." In: *Pilipinas* N° 24 (Spring 1995):37-74.
- Critchley, W.R.S and L.A. Bruijnzeel (1996) *Environmental impacts of converting moist tropical forest to agriculture and plantations*. Paris: Unesco.

- Cruz, C. A. (1982) *Economic efficiency of the Selective Logging System in selected areas in the Philippines*. Los Baños, University of the Philippines: PhD Dissertation.
- Cruz, Ma C. (1986) *Integrated summary report: Population and migration, implications for upland development*. PIDS working paper 86-07. Manila: Philippine Institute for Development Studies.
- Cruz, Ma. C., C. Meyer, R. Repetto and R. Woodward (1992) *Population growth, poverty and environmental stress. Frontier migration in the Philippines and Costa Rica*. Washington, D.C.: World Resources Institute.
- Cruz, W. and R. Repetto (1992) *The environmental effects of stabilization and structural adjustment Programs. The Philippines Case*. Washington, D.C.: World Resources Institute.
- CVPED (1992) *Forestry for people and nature; field research and theory on environment and development in the Cagayan Valley, Philippines*. Leiden and Cabagan, Isabela: CVPED.
- CVPED Team IV (1994) *Internal interim report, Environmental Management Plan preparation*. Unpublished student report. Cabagan, Isabela: CVPED.
- Cushner, N.P. (1976) *Landed estates in the colonial Philippines*. New Haven: Yale University.
- Danielsen, F., D.S. Balete, T.D. Christensen, M. Heegaard, O.F. Jakobsen, A. Jensen, T. Lund and M.K. Poulsen (1994) *Conservation of biological diversity in the Sierra Madre mountains of Isabela and southern Cagayan province, The Philippines*. Copenhagen: DENR/Birdlife International/Copenhagen University/Danish Ornithological Society.
- Dans, J.P. (1940) "Land for the asking." In: *The Philippine Herald Midweek Magazine* 10 (41): 1-2.
- DA (1995) *Six year medium term development plan*. Tuguegarao, Cagayan: Department of Agriculture.
- Development Alternatives Inc. (DAI) (1995) *A development strategy for the DENR decentralization in the medium term: the issue of increased LGU participation in forest management*. Quezon City: DAI Natural Resources Management Program.
- Department of Agrarian Reform (DAR) (1995) *Accomplishment report for 1994* (Vol 1 and 2). Manila, DAR Central Office.
- DENR (1990) *Master Plan for Forestry Development (main report)*. Quezon City: Department of Environment and Natural Resources.
- DENR (1991) *Regional Master Plan for Forestry Development (Cagayan Valley Region)*. Tuguegarao, Cagayan: Department of Environment and Natural Resources, Region II.
- DENR (1993) *The Integrated Social Forestry Program; A primer*. Quezon City: Department of Environment and Natural Resources.
- Diemer, G (1990) *Irrigatie in Afrika. Boeren en ingenieurs, techniek en cultuur*. [Irrigation in Africa: Farmers and Engineers, technology and culture.] Leiden University: PhD Dissertation.
- Dirkx, E.J. (1995) *Shifting cultivation and farmers' decision making in the Sierra Madre uplands, the Philippines*. CML student report N° 59. Leiden and Cabagan, Isabela: CVPED.
- Doedens, Bert (1992) *Sustainable land use and destruction along the forest fringe. A Research on land use in an Ifugao migrant settlement in the uplands of the Sierra Madre, Philippines*. CML student report N° 14. Leiden and Cabagan, Isabela: CVPED.
- Dorner, P. and W.C. Thiesenhusen (1992) *Land tenure and deforestation*. UNRISD Discussion paper 34:6-26. Geneva: United Nations Research Institute for Social Development.
- Dove, M.R. (1983) "Theories of swidden agriculture and the political economy of ignorance." In: *Agroforestry Systems* 1: 85-99.
- Dove, M.R. (1985) "Swidden agriculture in Indonesia: The subsistence strategies of the Kalimantan Kantu". New Babylon Studies in the Social Sciences. New York: Mouton.
- Dove, M.R. (1992) "Foresters' beliefs about farmers: a priority for social science research in social forestry." In: *Agroforestry Systems* 17:13-42.
- Dove, M.R. and J. Nickum (1996) "Re-thinking 'Thinking Globally and Acting Locally': a critical look at north-south environmental rhetoric." Draft paper presented during the annual meeting of the Association of Asian Studies, 11-14 April 1996, Honolulu.
- Dros, J.M. (1995) *Sustainable farming in the tropical rainforest: the controversy of sustainability and productivity*. CML student report N° 49. Leiden and Cabagan, Isabela: CVPED.
- Dykstra, D.P (1992) untitled publication, cited in Eurofor (1993):29-30.
- Eccleston, B. (1996) "NGOs and competing representations of deforestation as an environmental issue in Malaysia." In: *Journal of Commonwealth and Comparative Politics* 34 (March 1996): 1-25
- Ecologist, the (1993) *Whose Common Future? Reclaiming the commons*. London: Earthscan.
- Eder, J.F. (1974) *Who shall succeed? Agricultural development and social inequality on a Philippine frontier*. Cambridge: Cambridge University Press.
- Eder, J.F. (1981) "From grain crops to tree crops in the Cayunan swidden system." In: *Pacific Viewpoint* 1-21.

- Eder, J.F. (1989) Review of Ooi Jin Bee (*op. cit.*) In: *Journal of Asian Studies* 679-81.
- Eder, J.F. (1996) "After deforestation: Migrant lowland farmers in the Philippine uplands." In: Sponsel, L.L., T. N. Headland and R.C. Bailey (eds.) *Tropical Deforestation: The Human Dimension*: 253-271. New York: Colombia University Press.
- Eder, J.F. and R.L. Youngblood (eds.) (1994) *Patterns of Power and Politics in the Philippines; implications for development*. Tempe: Arizona State University Centre for Southeast Asian Studies.
- Eggink, J.W. and J. Ubels (1984) *Irrigation, peasants and development*. Wageningen: Wageningen Agricultural University.
- EIA (1996) *Corporate power, corruption & the destruction of the world's forests; the case for a new global forest agreement*. London and Washington, D.C.: Environmental Investigation Agency.
- Esguerra, E.F. and R.L. Meyer (1992) "Collateral substitutes in rural informal markets in the Philippines." In: Adams, D.W. and D.A. Fitchett (eds.) *Informal finance in low income countries*. Boulder: Westview Press.
- Esguerra, E.F. (1993) *From trader to lender: Interlinked contracts from a credit market perspective*. Discussion paper n° 9303. Diliman: School of Economics, University of the Philippines.
- EUROFOR (1993) *Une strategie Communautaire globale dans le secteur forestier*, Vol. 1-3. Luxembourg: European Parliament, Direction Générale des Etudes, Direction de l'Agriculture, de la Pêche, des Forêts et du Développement Rural.
- FAO/WHO (1973) *Energy and protein requirements, report of a joint FAO/WHO ad hoc expert committee*. Nutrition meetings report series N° 52. Rome: Food and Agriculture Organization.
- FAO (1987) *Assessment of forest resources in six countries*. FAO Special study on Forest management. Bangkok: Food and Agriculture Organization.
- FAO (1992) *Forest Resources Assessment, tropical countries* (Draft). Rome: Food and Agriculture Organization.
- FAO (1994) *Forest development and policy dilemmas*. Rome: Food and Agriculture Organization.
- FAO (1997) *State of the world's forests 1997*. Rome: Food and Agriculture Organization.
- FAPE (1975) *Philippine Atlas: A historical, economic and educational profile of the Philippines* (Vol 1) Manila: Fund for Assistance to Private Education.
- FEBTC (1998) Website, quoting data on the Philippine economy from the National Statistical Coordination Board (May 1996). Metro Manila: Far East Bank and Trust Company.
- Fegan, B. (1993) "Entrepreneurs in votes and violence; Three generations of a peasant political family." in: Mc Coy (ed.) (*op. cit.*):33-107.
- Fiselier, J.F. (1990) *Living off the Tides. Strategies for the integration of conservation and sustainable resource utilization in mangroves*. Leiden, Environmental Database on Wetland Interventions.
- Fittkau E.J. (ed.) (1983) "Festschrift zu Ehren von Dr. Johann Baptist Ritter von Spix." In: *Spixiana*, Suppl. 9:1-441.
- Floro, S.L. (1987) *Credit relations and market interlinkage in Philippine agriculture*. Stanford, California, Stanford University: PhD dissertation.
- Floro, S.L. and P. Yotopoulos (1991) *Informal credit markets and the new institutional economics; The case of Philippine agriculture*. Boulder: Westview Press.
- Frel. T. de (1993) *The Liwanag reforestation project. A study of reforestation and deforestation in N.E. Luzon, Philippines*. CML student report N° 21. Leiden and Cabagan, Isabela: CVPED.
- FRI (RP-German Forest Resource Inventory) (1987) *Forest resources of Region 02*. Manila: Department of Environment and Natural Resources.
- FRI (RP-German Forest Resource Inventory) (1988) *RP-German Forest Resources Inventory. Applications of results to forest policy*. Proceedings of a seminar held 15-19 February. Manila: Department of Environment and Natural Resources.
- Fujisaka, S., P. Sajise and R. Del Castillo (eds.) (1986) *Man, agriculture and the tropical forest. Change and Development in the Philippine Uplands*. Bangkok: Winrock International.
- Fujisaka, S. and E. Wollenberg (1991) "From forest to agroforest and logger to agroforester." In: *Agroforestry Systems* (14):113-129.
- Gadakhkar, R. (1992) "World's biodiversity needs to be preserved." In: *Down to Earth* (Oct 1992):43-44.
- Galang, Z.M. (1949) *Encyclopedia of the Philippines. Vol. 6: Commerce and industry*. Manila: Exequiel Floro.
- Gamalinda, E. and S. Coronel (1993) *Saving the earth; the Philippine experience*. Makati: Philippine Centre for Investigative Journalism.
- Garrity, D.P., D.M. Kummer and E.S. Guiang (1993) "The Philippines." In: National Research

- Council (*op. cit.*):549-624.
- Geron, P. (1988) *Philippine informal rural credit markets. Efficiency and equity issues*. Seminar Paper, Manila.
- Gibbs, C. Payuan E. and R. del Castillo (1990) "The growth of the Philippine Social Forestry Program." In: Poffenberger, M. (ed.) (*op. cit.*):253-265.
- Gillis, M. (1980) *Fiscal and financial issues in tropical hardwood concessions*. Development Discussion paper N° 142. Cambridge, Mass.: Harvard Institute for International Development.
- Gillis, M. (1988) "Indonesia: public policies, resource management and the tropical forest." In: Repetto and Gillis (*op. cit.*):43-114.
- Gleeck, L.E. Jr. (1993) *The third Philippine Republic 1946-1972*. Quezon City: New Day.
- Gloria, G. (1997) "Politics, RP style: Gaudy, gushy, gothic." In: *Manila Times*, 15/16 April 1997.
- Goertzen, D. (1991) "Agents for change: NGOs take the lead in development process." In: *Far Eastern Economic Review*, 8 Aug 1991.
- Gomez, E.D, P.M. Alino, H.T. Yap and W.Y. Licuanan (1994). "A review of the status of Philippine Reefs." In: *Marine Pollution Bulletin*, 29:62-68.
- Graaf, N.R de (1991) "Managing natural regeneration for sustained timber production in Suriname: the Celos sylvicultural and harvesting system." In: A. Gomez-Pompa *et al.* (eds) *Rainforest regeneration and management*: 393-405. UNESCO Man and the Biosphere series, Vol. 6 Paris.: UNESCO & Parthenon.
- Graaf, N.R de (1996) "Het gebruik van natuurlijke processen bij duurzaam bosbeheer in de vochtige tropen volgens CELOS management systeem." [using natural processes in sustainable forest management in the humid tropics] In: *Nederlands Bosbouw Tijdschrift* (68): 235-242
- Graeber, B. (1993) *I leave the trees in the backyard for my children. Options for sustainable local forest management in the Sierra Madre, Philippines*. CML student report N° 32. Leiden and Cabagan, Isabela: CVPED.
- Grainger, A. (1990) "Modelling deforestation in the humid tropics." In: Palo, M. and G. Mery (eds.) (*op. cit.*): 51-67.
- Grainger, A. (1993a) *Controlling Tropical Deforestation*. London: Earthscan.
- Grainger, A. (1993b) "Population as concept and parameter in the modeling of deforestation. In: Ness, G. *et al.* (*op. cit.*) 1993:71-101.
- Grainger, A. (1995) "Changes in land use and forest management in Southeast Asia: an evolutionary perspective." In: Sandbukt, Ø. (*op. cit.*): 3-18.
- Griffin, P. B. (1985) "Population movements and socio-economic change in the Sierra Madre." In: Griffin, P. B. and A. Estioko Griffin (eds.) *The Agta of Northeastern Luzon; recent studies*. Cebu City: University of San Carlos.
- Griffin, P.B. (1988) "National policy on minority cultural communities: The Philippine case." In: *Southeast Asian Journal of Social Studies* 16 (2): 5-16.
- Griffin, M.B (1996) "The cultural identity of foragers and the Agta of Palanan, Isabela, the Philippines." In: *Anthropos* 91:111-123.
- Grindle, M.S. (1977) *Bureaucrats, politicians and peasants in Mexico: a case study in public policy*. Berkeley: University of California Press.
- Grindle, M.S. (1980) "The implementor: Political constraints on rural development in Mexico". In Grindle (ed.) *Politics and policy implementation in the third world*. Princeton, N.J: Princeton University Press.
- Groot, W.T de (1992) *Environmental science theory; Concepts and methods in a one-world problem oriented paradigm*. Amsterdam and New York: Elsevier Science Publishers.
- Groot, W.T de and E.M. Kamminga (1995) *Forest, people, government. A policy oriented analysis of the social dynamics of tropical deforestation*. CML Report N° 120. Leiden, Centre of Environmental Science.
- GTZ (1990) Sierra Madre results of the RP German "Inventory of Forest Occupants" project (1987). Manila: Department of Environment and Natural Resources.
- Gutierrez, E.U. (1994) *The ties that bind. A guide to family, business and other interests in the Ninth House of Representatives*. Pasig, Metro Manila: Philippine Centre for Investigative Journalism and Institute for Popular Democracy.
- Gutierrez, E.U. (1997) "Making the Grade: comparative strengths in the 1998 elections." In: *Political brief*, 5 (3, July 1997). Manila, Institute of Popular Democracy.
- Guzman, R.P. de and M.A. Reforma (eds.) (1988) *Government and politics of the Philippines*.

- Singapore: Institute of Southeast Asian Studies and Oxford University Press, Quezon City: College of Public Administration, University of the Philippines.
- Guzman, Ma. V. P. De (1992) *Land/Resource tenure: Legal and policy framework*. Natural Resources Management Program, Policy Studies Report N° 92-10. Manila: Louis Berger International Inc.
- Guzman, R.S. and W.T. de Groot (eds.) (1997) *Research for the Sierra Madre forest*. Proceedings of the second CVPED Conference, August 23-26, Cabagan, Isabela, Philippines. Leiden and Cabagan, Isabela: CVPED.
- Hainsworth, R.G. and R.T. Moyer (1945) *Agricultural geography of the Philippine Islands* Washington, D.C.: United States Department of Agriculture, Office of Foreign Agricultural Relations.
- Hamilton, L.S and A.J. Pearce (1987) "What are the soil and water benefits of planting trees in developing country watersheds?" In: Southgate D.D and J.F. Disinger (eds.) *Sustainable resource development in the Third World*: 40-58. London: Westview Press.
- Hardin, G. (1968) "The tragedy of the commons" In: *Science*:1243-8.
- Hayama, A. (1996) *Upland farmers and institutional reforestation: A case study in an immigrant upland community in Mindanao, Philippines*. Paper presented at the 5<sup>th</sup> International Conference on Philippine Studies, April 14-16, Honolulu.
- Hayama, A. (1997) *The transformation of interaction of the landless with the uplands in southeastern Nueva Ecija*. Paper presented during the 3<sup>rd</sup> European Conference on Philippine Studies, April 27-30, 1997, IRSEA, Aix en Provence.
- Hayami, Y., Ma A. R. Quisumbing and L.S. Adriano (1990) *Toward an alternative land reform paradigm; a Philippine perspective*. Manila, Ateneo de Manila University Press.
- Headland, T.N. (1986) *Why foragers do not become farmers: A historical study of a changing ecosystem and its effects on a Negrito hunter-gatherer group in the Philippines*. Hawaii, University of Hawaii, [PhD dissertation].
- Headland, T.N and J.D. Headland (1997) "Limitation of human rights, land exclusion and tribal extinction: the Agta Negritos of the Philippines." In: *Human Organization* (58) 1:79-90.
- Hedman, E.L (1994) *Beyond boycott: the Philippine left and electoral politics after 1986*. Paper presented at the 2<sup>nd</sup> European Conference on Philippine Studies, April 13-15, London: SOAS.
- Hendriks, M. (1997) *Vegetable trade in the Central Philippines. An anthropological study of exchange and credit in a modernizing economy*. Amsterdam: University of Amsterdam. PhD dissertation.
- Henkemans, A. (1994) *Towards appropriate upland farming technologies. A study on agroforestry-related farming techniques for upland farm development at the forest fringe in the Sierra Madre, Philippines*. CML student report N° 26. Leiden and Cabagan, Isabela: CVPED.
- Herrin, A. (ed.) (1994) *Population, human resources and development*. (Vol. 1). Quezon City: Centre for Integrative and Development Studies, University of the Philippines.
- Hill, P. (1986) *Development economics on trial; the anthropological case for a prosecution*. Cambridge: Cambridge University Press.
- Hoekstra, S.P. (1992) *Grassroot Politics. The implementation of environmental policies regarding grasslands in N.E Luzon, Philippines*. CML student report N° 11. Leiden and Cabagan, Isabela: CVPED.
- Holleman, Mr. F.D. (1990, or. 1931) *Philippijnsch Dagboek Volksrecht in de Filippijnen; een moeizame verkenning, april-juli 1931*. [Philippine diary on indigenous law in the Philippines; an arduous exploration] Leiden: Van Vollenhove Instituut.
- Hoogmoed, M.S. and R. De Jong (eds.) (1992) *Tropisch regenwoud. Schatkamer van biodiversiteit*. Leiden: National Museum of Natural History.
- Homborg, H. van den (1993) "Chapter 1: Introduction." In: *Gender, environment and development; a guide to the literature*. Amsterdam: InDRA/International Books.
- Horne, P. and M. Palo (1995) "Benefits and cost of deforestation: the case of the Philippines." In: Sandbukt, Ø. (ed.) (1995): 19-35.
- Houghton, R. A (1995) "Emissions of carbon from deforestation in Southeast Asia." In: Primack, R.B. and T.E. Lovejoy (eds.):263-289.
- Huke, R E. (ed.) (1965) *Shadows on the Land. An Economic Geography of the Philippines*. Manila: Bookmark, Inc.
- Huijbregts, B. (1996) *Pushing the forest fringe. Activities in the forest fringe of a migrant community, Sierra Madre mountains, Quirino, Philippines*. CVPED/CML student report N° 55. Leiden and Cabagan, Isabela: CVPED.

- Huigen, M. (1997) *Standard operating procedures with special operation payments. A study on forest policy distortions in a local furniture industry in the Philippines*. CVPED/CML student report N° 71. Leiden and Cabagan, Isabela: CVPED.
- Hurst, P. (1990) *Rainforest politics, ecological destruction in Southeast Asia*. London and New Jersey: Zed Books.
- Hutchcroft, P. (1994) "Predatory oligarchy, patrimonial state: The politics of banking in the Philippines." In: Eder, J.F and R.L. Youngblood (eds.) (*op. cit.*):75-102.
- Hyden, Goran (1980) *Beyond ujamaa in Tanzania. Underdevelopment and an uncaptured peasantry*. London: Heinemann.
- Ibon Databank (1988) *Land reform in the Philippines*. Manila: Ibon.
- ICCO (in press) *Hulp en handel in de praktijk [Aid and trade in practice]*. Report on the consultative meeting on the production and marketing of sustainably produced forest products, 8-16 May 1998, Gurupa, Brazil.
- Inman, K. (1991) *Population, development, debt and the international decline of forests*. MA thesis, Department of Sociology, University of Georgia.
- ITTO (1993) *Tropical Forest Update* 3 (4).
- ITTO (1997) *Annual review and assessment of the world tropical timber situation, 1996*. Yokohama: International Tropical Timber Organization.
- Jepma, C.J. (1995) *Tropical deforestation; A socio economic approach*. London: Earthscan.
- Jesus, Ed. C. de (1980) *The Tobacco Monopoly in the Philippines. Bureaucratic enterprise and social change, 1766-1880*. Quezon City: Ateneo de Manila University Press.
- Jesus, Ed. C. de (1982) "Control and compromise in the Cagayan Valley". In: McCoy and De Jesus (*op. cit.*):21-37.
- Johnson, B (1991) *Responding to tropical deforestation*. Research paper. Washington, D.C.: WWF, Osborne Centre.
- Johnson, S. (1995) "Production and trade of tropical logs." In: *ITTO Tropical Forest Update*, 5(1): 21-23. Canberra: ANUTECH.
- Johnson, S. (1996) "Production and trade of tropical sawnwood. Summary of sawnwood production and trade statistics from ITTO's 1995 Annual Review." In: *ITTO Tropical Forest Update* 6 (2):20-22.
- Jones, G.R. (1989) *Red revolution. Inside the Philippine guerilla movement*. Boulder: Westview Press.
- Jordan, C.F. (1985) *Nutrient cycling in tropical forest ecosystems*. London: Wiley & Sons.
- Jordana y Morera, R. (1874) *Memoria sobre la produccion de los montes publicos de Filipinas en el año economico de 1871-1872 por el ingeniero Inspector de ramo en aquellas Islas*. [production report on the Philippine public forests in the economic year 1871-1872, by the government's engineer inspector in these islands]. Madrid, Ministerio de Ultramar.
- Jordana y Morera, R. (1876) *Memoria sobre la produccion de los montes publicos de Filipinas en el año economico de 1873-1874 por el ingeniero Inspector de ramo en aquellas Islas*. Madrid, Ministerio de Ultramar.
- Kahn, J.R. and J.A. McDonald (1995) "Third world debt and tropical deforestation." In: *Ecological Economics* (12), 107 - 123.
- Karnow, S. (1989) *In our image; America's empire in the Philippines*. New York: Random House.
- Kartanawata, K. and A.P. Vayda (1984) Forest conversion in East Kalimantan, Indonesia: the activities and impact of timber companies, shifting cultivators, migrant pepper cultivators and others. In: Di Castri, F., F.W.G. Baker and M. Hadley (eds.) *Ecology in practice*, part I: Ecosystem management: 98-126. Dublin: Tycooli.
- Keesing, F.M. (1962) *The Ethnohistory of Northern Luzon*, Stanford Anthropological Series N° 4. Stanford: California University Press.
- Kerbert, H.J. (1908) "Amerikaans boschbeheer op de Filippijnen." [American forest management in the Philippines] in: *Tectona*, 1 (1908-1909):377-394.
- Kerbert, H.J. (1909) "Publicaties betreffende het Boschwezen in de Filippijnen van het jaar 1908." [Publications concerning the forestry sector in the Philippines of the year 1908]. In: *Tectona*, 2 (1909-1910):15-21.
- Kerkvliet, B.J.T (1991) *Every day politics in the Philippines. Class and status relations in a Central Luzon village*. Quezon City: New Day Publishers.
- Klein, M. & M. van der Wal (1997) "About tropical hardwood, chocolate and gorilla's. Conservation of forest fauna in south Cameroon." In: *BOS NiEuWSLETTER* 16 (3) 37:50-58.
- Kleinman, P.J.A., D. Pimentel and R.B. Bryant (1995) "The ecological sustainability of slash and

- burn agriculture." In: *Agriculture, Ecosystems and Environment* 52: 235-249.
- Klock, J.S. (1995) "Agricultural and forest policies of the American colonial regime in Ifugao territory, Luzon, Philippines, 1901-1945." In: *Philippine Quarterly of Culture and Society* 23:3-19.
- Kroonenberg, S.B. (1992), "Hoe eeuwig zingen de bossen: tropisch regenwoud, klimaatsveranderingen en biodiversiteit." [How eternally do the forests sing: tropical rainforest, climate change and biodiversity] In: Hoogmoed and De Jong (eds.) (*op. cit.*):53-60.
- Kummer, D.M. (1992a) *Deforestation in the postwar Philippines*. Quezon City: Ateneo de Manila University Press.
- Kummer, D.M. (1992b) "Measuring forest decline in the Philippines; an exercise in historiography". In: *Forest and Conservation History* 36:185-191.
- Kummer, D.M. (1992c) "Upland agriculture, the land frontier and forest decline in the Philippines" In: *Agroforestry Systems* N° 18: 31-46.
- Kummer, D.M. (1995) "The political use of Philippine forestry statistics in the postwar period." In: *Crime, Law & Social Change* 22:163-180.
- Kummer, D.M. and B.L. Turner (nd), *Deforestation in Southeast Asia: exploring the human causes of land-use cover change*. Clark University.(ms)
- La Viña, A.G.M. (1991) *Law and ecology. A compilation of Philippine laws and international documents pertaining to ecology*. Legal rights and natural resource centre, Manila: Cacho Publishing House.
- Laarman, Jan G. (1988) "Export of tropical hardwoods in the twentieth century." In: Richards and Tucker (eds.) (*op. cit.*): 147-166.
- Laarman, J.G, E.J. Steward and P.C. Dugan (1995) "The economics of extraction in Philippine forests: when timber turns to gold." In: *Mountain Research and Development*, 15 (2): 153-164.
- Lacaba, J.F. (ed.) (1995) *Boss. Five case studies of local politics in the Philippines*. Pasig: Philippine Centre for Investigative Journalism and the Institute for Popular Democracy.
- Landé, C.H. (1964) *Leaders, factions and parties; the structure of Philippine politics*. Southeast Asia Studies Monograph N° 6. New Haven: Yale University.
- Landé, C.H. (1996) *Post Marcos politics: a geographical and statistical analysis of the 1992 presidential elections*. Singapore: Institute of Southeast Asian Studies.
- Langly, J.P. (ed.) (1981), *Tropical Forest Resources Assessment Project (GEMS), Tropical Africa, Tropical Asia, Tropical America*, 4 Volumes. Rome: FAO/UNEP.
- Langly, L.P. (1982), *Tropical Forest Resources*, FAO Forestry Paper N° 30, Rome: FAO.
- Langly, L.P. (1983) "Assessment of forest resources in the tropics" In: *Forestry Abstracts*. Commonwealth Forestry Bureau 44 (6) 287-318.
- Larkin, J.A. (1982) "Philippine History Reconsidered" In: *American History Review*, 87 (3):595-628
- Larson, D. (1988) *Marketing and credit linkages; The case of corn traders in the southern Philippines*. DAERS, Ohio State University. ESO paper N°1
- Local Development Assistance Program (LDAP) (1994) *Internal Revenue Allotment System in the Philippines: trends, patterns, and effects*. Makati: Associates in Rural Development and LDAP.
- Leonen, M.V.F. (1993) "The Philippines: dwindling forests and agrarian reform". In Colchester and Lohmann (*op. cit.*):264-290.
- Lewis, H.T. (1991) *Ilokano irrigation, the corporate resolution*. Asian Studies at Hawaii N° 37. Honolulu: University of Hawaii Press.
- Lipsky, M. (1980) *Street-level bureaucracy. Dilemmas of the individual in public services*. New York: Russel Sage.
- Liu, D.S., L.R. Iverson and S. Brown (1993) "Rates and patterns of deforestation in the Philippines: application of Geographic Information System analysis." In: *Forest Ecology and Management*, 57: 1-16.
- Lopez, A. (1994) "Running a revolution." In: *Asiaweek* 20 (10): 28-41.
- Lu, F. (1994) *Impact of area-specific logging moratorium*. Paper presented at the Regional NRMP-/DENR Forest policy workshop, 26-28 October 1994, Santiago, Isabela.
- Lynch, O.J. (1986) "Philippine law and upland tenure." In: Fujisaka, S. *et al.* (*op.cit.*):269-292.
- Lynch, O.J. (1992) "Securing community-based tenurial rights in the tropical forests of Asia. An overview of current and prospective strategies." In: *Issues in Development* (Nov. 1992) Washington, D.C.: World Resources Institute.
- Lynch, O.J. and K. Talbott with Marshall S. Berdan (1995) *Balancing acts: community based forest management and the national law in Asia and the Pacific*. Washington, D.C: World Resources Institute.
- Magno, F. A (1996) *Forest regeneration in the environmental transition*. Paper presented at the 5<sup>th</sup>

- International Conference on Philippine Studies, April 14-16, 1996, Honolulu.
- Mallat, J. (1846) *Les Philippines; histoire, géographie, mœurs, agriculture, industrie, commerce des colonies Espagnoles dans l' Océanie*. Paris: Arthus Bertrand.
- Malumbres, Fr. J. , O.P. (1918) *Historia de Cagayan*. Manila: University of Santo Thomas.
- Mangahas, M, V.A, Miralao and R.P. de los Reyes (1976) *Tenants, lessees, owners; welfare implications of tenure change*. Quezon City: Institute of Philippine Culture, Ateneo de Manila University Press.
- Maus, J. and R.E.F.F. Schieferli Malix (1989) *Environmental problems in north-east Luzon*. CML student report N° 1. Leiden and Cabagan, Isabela, Philippines: CVPED.
- May, G.A. (1989) "Civic ritual and political reality: Municipal elections in the late nineteenth century." in: Paredes, R.R. (ed.) (*op.cit.*):13-40.
- McCoy, A. and Ed. de Jesus (eds.) (1982) *Philippine social history: Global trade and local transformations*. Quezon City: Ateneo de Manila University Press.
- McCoy, A. W. (ed.) (1993) *An anarchy of families. State and family in the Philippines*. Madison, Centre for Southeast Asian Studies, University of Wisconsin and Ateneo de Manila University Press.
- McKenzie., D. (1988) "Uphill battle to save Filipino trees." In: *New Scientist* 118: 1619.
- Mc Neely, J.A., K.R. Miller, W.V. Reid, R.A. Mittermeier and T.B. Werner (1990) *Conserving the world's biological diversity*. Gland, Switzerland: IUCN and Washington, D.C: WRI, CI, WWF-US and the World Bank.
- McNicoll, G. (1990) "Social organization and ecological stability under demographic stress." In: G. McNicoll and M. McCain (eds.) *Rural development and population: Institutions and policy. Population and Development Review* 15, supplement, 1989/1990: 147-167.
- Migdal, J. (1988) *Strong societies and weak States. State-society relations and state capabilities in the third world*. Princeton, New Jersey: Princeton University Press.
- Millan, M.M. and A.T. Macadangdang (1994) *Carabao logging in Mansarong, Baggao, Cagayan*. Paper presented at the 2<sup>nd</sup> CVPED Work Conference, Cabagan, Isabela, 26-29 August 1994.
- Millan, M.M. and J.M. Dros (1997) "Carabao logging, kaingin farming and their environmental impacts". In: Guzman and de Groot (eds.) (1997):65-77.
- Moonen, E.M.B. (1998) "Land use strategies in the Sierra Madre." In: King, V.T. (ed.) *Environmental challenges in Southeast Asia*: 231- 258. Oslo: NIAS and Richmond: Curzon Press.
- Moore, B. (1910) "Forest problems in the Philippines" In: *American forestry; An illustrated magazine about forestry and kindred subjects*. Washington, D.C.: American Forestry Association.
- Muijzenberg, O.D. van den (1973) *Horizontale mobiliteit in Centraal Luzon. Kenmerken en achtergronden*. [Horizontal mobility in Central Luzon: characteristics and background]. PhD dissertation. Amsterdam: University of Amsterdam.
- Muijzenberg, O.D. van den (1975) "Involution or evolution in Central Luzon?" In: Kloos, P. and H.J.M. Claessen (eds.) *Current Anthropology in the Netherlands*: 141-155. The Hague: Anthropological branch of the Netherlands Sociological and Anthropological Society.
- Muijzenberg, O.D. van den (1991) "Tenant emancipation, diversification and social differentiation in Central Luzon." In: Breman, J. and S. Mundle (eds.) *Rural transformations in Asia*: 317-37. Oxford: Oxford University Press.
- Myers, N. (1980) *Conversion of tropical moist forests*. Washington, D.C.: U.S. National Research Council.
- Myers, N. (1984) *The primary source. Tropical forests and our future*. London: W.W. Norton and Company, Inc.
- Myers, N. (1991) "Tropical forests: present status and future outlook." In: *Climate Change* (19) (September):3-32.
- Myers, N. (1994) "Tropical Deforestation: rates and patterns." In: Brown, K. and D.W. Pearce (*op.cit.*):27-40.
- Myers, N. (1996) "The world's forests: problems and potentials." In: *Environmental Conservation* 23 (2): 156-168. Foundation for Environmental Conservation.
- Nakano, S. (1996) 'Windfall' revenue controversy (1937-1941) *A view on Commonwealth history*. Paper presented at the 5<sup>th</sup> International Conference on Philippine Studies, April 14-16, 1996, Honolulu.
- National Research Council (1993) *Sustainable Agriculture and the Environment in the Humid Tropics*. Washington, D.C., National Academy Press.
- Nectoux, F. and Y. Kuroda (1989) *Timber from the South Seas: and analysis of Japan's tropical timber trade and its environmental impacts*. Gland: World Wildlife Fund for Nature.

- NEDA (1989) *Technical Notes on Poverty, Inequality and Employment*. NEDA Staff Paper Series (1):1, Manila: National Economic and Development Authority.
- NEDA (1990) *Economic and social indicators for 1988*. Manila, National Statistics Coordination Board, National Economic and Development Authority.
- NEDA (1991) *Regional physical framework plan, Cagayan Valley*. Tuguegarao, Cagayan: National Economic Development Authority, Regional Office.
- NEDA (1995) *Development Information, Cagayan Valley*. Tuguegarao, Cagayan: National Economic and Development Authority, Region II.
- Ness G., W.D. Drake and S.R. Brechin (1993) *Population environment dynamics; ideas and observations*. Michigan: University of Michigan Press.
- Nilsson, S. (1996) (ed.) *Boreal forests: the role of research*. Laxenburg, Austria: International Institute for Applied Systems Analysis.
- Noblejas, A.H. (1961) *Philippine law on natural resources* (revised edition) Manila: Central Book Supply.
- Nolledo, J.N. (1991) *The Local Government Code of 1991, with introductory features*. Manila: Rex Bookstore and Kalookan City: Philippine Graphic Arts.
- Noordhuizen, J. (1996) *Top-down and bottom up analyses of the integrated social forestry program; see how things shape*. CML student report N° 68. Leiden and Cabagan, Isabela: CVPED.
- NSO (1990) *1990 Census of population and housing (Isabela, Cagayan, Nueva Viscaya, Quirino, Batanes)*. Manila: National Statistics Office.
- NSO (1995) *Philippine statistical yearbook, 1994*. Manila: National Statistics Office.
- Numan, D. (1995) *Time is money? The allocation of family labour in two northern Sierra Madre communities, the Philippines*. CML student report N° 48. Leiden and Cabagan, Isabela: CVPED.
- Olofson, H. (ed.) *Adaptive strategies and change in Philippine swidden based societies*. College, Laguna: Forest Research Institute.
- Oosterberg, W. (1997) *Approximation of the effect of deforestation on the extent of floods in Cagayan Valley, Philippines*. CML Report N° 140. Leiden: Centre of Environmental Science.
- OIDCI (1992) *ENR-SECAL Regional Resources Management Program, main report (Vol. 1)*. Manila: Orient Integrated Development Consultants Inc.
- Orstom, E. (1990) *Governing the commons. The evolution of institutions for collective action*. Cambridge: Cambridge University Press.
- Otsuka, K. and E. Marciano (1988) "Permanent labour contract in Central Luzon: a study on tenancy and labor contracts under land reform regulation." Los Baños, Philippines, International Rice Research Institute.
- Overhoff, M. (1997) "Wereldbank en bosbescherming." [the World Bank and forest protection] In: *Ecologie en Ontwikkeling* 5 (2):22-23. Amsterdam, Netherlands Committee for IUCN.
- Paguirigan, D.B. and U.V. Madamba (1927) "A study of the cost of production of tobacco in the Cagayan Valley". In: Bureau of Agriculture (1927) *Philippine tobacco*, Manila: Bureau of Printing.
- Palloni, A. (1994) "The relation between population and deforestation: Methods for drawing causal inferences from macro and micro Studies". In: Arizpe, L. et al. (op. cit.):87-124.
- Palo, M. (1987) "Deforestation Perspectives for the Tropics; A provisional theory with pilot Applications". In: Dykstra, D., M. Kallio and C. Binkley (eds.) *The global forest sector: An analytical perspective*. Chapter 3:57-89. London: IIASA & John Wiley.
- Palo, M, G. Mery and J. Salmi (1987) "Deforestation in the tropics: pilot scenarios based on quantitative analyses." In: Palo, M. and J. Salmi (eds.), *Deforestation or development in the third world*, Vol.1: 53-106 Helsinki: Finnish Forest Research Institute.
- Palo, M. (1990), "Deforestation or development in the third world: roles of system causality and population". In: Palo, M. and G. Mery (eds.) (1990) *Deforestation or development in the third world*, Vol.3: 155-174. Helsinki: Finnish Forest Research Institute.
- Palo, M (1994) "Population and deforestation." In: Brown, K. and D.W. Pearce (op. cit.):42-56.
- Palte, J.G.L. (1989) *Upland farming in Java, Indonesia, a socio-economic study on upland agriculture and subsistence under population pressure*. Faculty of Geographical Sciences, Univ. of Utrecht.
- Paredes, R.R. (ed.) *Philippine colonial democracy*. Manila, Ateneo de Manila University Press.
- Paredes, R.R. (1989) "The origins of national politics: Taft and the Partido Federal." in: Paredes, R.R. (ed.) (op.cit.): 41-69.
- Pasicolan, P.N. (1996) *Tree growing on different grounds. An analysis of local participation in contract reforestation in the Philippines*. Leiden, Centre of Environmental Science. PhD Dissertation.

- PCAC (1981) *A Study on the informal rural markets in three selected provinces of the Philippines*. Manila, Presidential Committee on Agricultural Credit.
- PCIJ (1990) *Saving the earth: The Philippine experience. A folio of reports written for the Philippine Center for Investigative Journalism*. Manila: Philippine Center for Investigative Journalism.
- PDI (various dates) Articles clipped from the *Philippine Daily Inquirer*.
- Pearce, D., N. Adger, D. Maddison and D. Moran (1995) "Debt and the environment". In: *Scientific American* 272 (6):28-32.
- Peluso, N.L. (1992) *Rich forests, poor people. Resource control and resistance in Java*. Berkeley: University of California Press.
- Perlin, J. (1991) *A Forest Journey. The role of wood in the development of civilization*. Cambridge, Mass.: Harvard University Press.
- Peplow, E. (1991) *Introduction to the Philippines*. Hong Kong: The Guidebook Company.
- Peters, L. (1995) *Shifting Cultivation in the uplands of Maddela, Quirino, the Philippines*. CML student report N° 54. Leiden and Cabagan, Isabela: CVPED.
- Persoon, G.A. (1997) "'It's all the same!' Veldwerk en kennisvorming bij het begrijpen en oplossen van milieuproblemen in de Filipijnen." [Fieldwork and knowledge formation in the analysis and solution of environmental problems in the Philippines]. In: Claessen, H.J.M and H.F. Vermeulen (eds.) *Veertig jaren onderweg*: 109-124. Leiden: DSWO Press.
- Persoon, G.A and H.H. de Jongh (1997) *Pigs across ethnic boundaries: a wild animal in three Southeast Asian contexts*. Paper presented at the IIAS Conference Animals in Asia, Leiden, 15-16 Sep 1997. International Institute for Asia Studies.
- Philippine Commission (various issues, 1904-1931) *Reports of the civil government of the Philippine Islands*. Manila: Bureau of Printing.
- Pinches, M. (1992) "The working class experience of shame, inequality and people power in Tatalon, Manila." In: B. Kerkvliet, and R. Mojares (eds.) *From Marcos to Aquino: local perspectives on political transition in the Philippines*. Quezon City: Ateneo de Manila University Press.
- Pinkerton, J. (1807) *Modern geography, a description of the empires, kingdoms, states and colonies, oceans, seas and isles in all parts of the world*. Vol. 2, Asia: 555-568.
- Plugge, I. (1992) *Patience is a virtue; the question of sustainability and land insecurity in the Philippines*. CML student report N° 15. Leiden and Cabagan, Isabela: CVPED.
- Plumwood, V. and R. Routley (1982) "World rainforest destruction - The social factors." In: *The Ecologist* (12):4-22.
- PNA (various dates) News releases by the Philippine News Agency, distributed on electronic mail by Balita News Service.
- Poffenberger, M. (1990) *Keepers of the forest. Land management alternatives in Southeast Asia*. Quezon City: Ateneo de Manila University Press.
- Polet, G. (1991) *Rattan and bamboo utilization in a Sierra Madre community*. CML student report N° 3. Leiden and Cabagan, Isabela: CVPED.
- Porio, E. and B.R. Taylor (1995) "Popular environmentalists in the Philippines: People's claims to natural resources". In: Taylor, B.R. (ed.) *Ecological resistance movements; The global emergence of radical and popular environmentalism*. New York: State University of New York Press.
- Porter, G. and D. J. Ganapin (1988) *Resources, population and the Philippines' future. A case study*. World Resources Institute Paper N° 4. Washington: the World Resources Institute.
- Primack, R.B. and Lovejoy, Th.E. (eds.) (1995) *Ecology, conservation and management of Southeast Asian rainforests*. New Haven and London: Yale University Press.
- Province of Isabela (1993) *Isabela Provincial Profile*. Ilagan, Isabela: Provincial Planning and Development Office, Province of Isabela.
- Putzel, J. (1990) "The Comprehensive Agrarian Reform Programme; why it mattered little who was in charge". In: Arcilla, G. (ed.), *Lupa at buhay: Agrarian reform in the Philippines*. Amsterdam: Philippine Development Forum.
- Putzel, J. (1992a) *Agrarian reform, the state and environmental crisis in the Philippines*. In: Proceedings of the CIIR Seminar on Agrarian Reform and the Environment in Southeast Asia, London.
- Putzel, J. (1992b) *A captive land. The politics of agrarian reform in the Philippines*. Quezon City: Ateneo de Manila University Press.
- Rai, N.K. (1990) *Living in a lean-to. Philippine Negrito foragers in transition*. Ann Arbor: Museum of Anthropology, University of Michigan.
- Querijero, C.T. (1997) "The Philippine political party system: a sad, bad tale". In: *Politik* 3 (3, Feb.1997): 42-47. Quezon City: Ateneo Centre for Social Policy.
- Raintree, J.B. (1986) "Agro-forestry pathways" In: *Unasylva* 38 (4):2-15. Rome: FAO.

- Rao, Y.S (1992) "Forestry profile: Philippines" In: *FAO Tigerpaper* 19 (4): 13-14.
- Reid, A. (1996) *Inside out: The colonial displacement of Sumatra's population*. Paper presented at the KITLV/EDEN workshop on Man and Environment in Indonesia, 1500-1950. 27-29 June 1996, Leiden.
- Reid, W.V. and K.R. Miller (1989), *Keeping options alive; The scientific basis for conserving biodiversity*. Washington, D.C.: World Resources Institute.
- Reintjes, C, B. Haverkort and A. Waters-Bayer (1992) *Farming for the future. An introduction to Low External Input Agriculture*. Leusden: ETC/ILEIA and London/Basingstoke: Macmillan.
- Repetto, R. and M. Gillis (eds.) (1988) *Public policy and the misuse of forest resources*. World Resources Institute, Washington.
- Repetto, R. (1990), "Deforestation in the tropics". In: *Scientific American*, 262 (4):18-24.
- Reyes, M. (1989) "Logging ban to save forests?" In: *Philippine Lumberman*, 24 (3):10-13.
- Richards, John F and Richard P. Tucker (eds.) (1988) *World deforestation in the twentieth century*. Duke Press Policy Studies. Durham & London: Duke University Press.
- Rice, Rev. T. (1994) *Forest farms: meeting national timber needs through community-based forestry*. Imugan, Sta Fe, Nueva Viscaya: Ikalahan Foundation.
- Rice, T. and S. Counsell (1993) *Forests foregone. The European Community's trade in tropical timbers and the destruction of the rainforests*. London: Friends of the Earth.
- Rice, R.E., R.E. Gullison and J.W. Reid (1997) "Can sustainable management save tropical forests?" In: *Scientific American*, 276 (4):34-39.
- Ridsdale, C.E (1991) *Preliminary report Palanan vegetation*. Leiden: Rijksherbarium. (ms)
- Riggs, F.W. (1964) *Administration in developing countries: The theory of prismatic society*. Boston: Houghton Mifflin.
- Rivera Castillet, Ed. de (1960) *Cagayan province and her people*. Manila: Community publishers.
- Robinson, J.G. (1993) "The limits to caring: Sustainable living and the loss of biodiversity." In: *Conservation Biology* 7 (1) 20-28.
- Rocamora, J. (1995) *Classes, bosses, goons and guns. Re-imagining Philippine political culture*. In Lacaba, J.F. (ed.) (*op.cit.*): vii-xxxi.
- Rocamora, J. (1998) *Philippine political parties: Continuity and change*. Quezon City, Institute for Popular Democracy.
- Rocero, M. (1982) *Ethnobotany of the Itawis of Cagayan province, Philippines*. Anthropological Papers N° 14. Manila: National Museum.
- Rocheleau, D.E. (1995) "Gender and biodiversity: a feminist political ecology perspective." In: *IDS Bulletin*, 26 (1):9-16.
- Roest, F. (1996) *Patterns from above. A GIS based research on forest quality in the Sierra Madre (1950-1990)*. CML student report N° 61. Leiden and Cabagan, Isabela: CVPED.
- Romero, M.R. (1991) *Watershed management impacts on the Tumauini Irrigation System, Tumauini, Isabela*. Los Baños, Laguna: University of the Philippines. MSc Thesis.
- Rommelse, R. (1996) *The design of a sustainable land use plan for the secondary forest zone of the Sierra Madre mountains in the Philippines*. CML student report N° 44. Leiden and Cabagan, Isabela: CVPED.
- Rood, S. (1997) *An assessment of the state of knowledge concerning decentralized governance under the 1991 Local Government Code*. Paper presented at the 3<sup>rd</sup> European Conference on Philippine Studies, 27-30 April 1997, IRSEA, Aix en Provence.
- Rosaldo, R. (1980) *Ilongot headhunting, 1883-1974. A study in society and history*. Stanford: Stanford University Press.
- Roth, D.M. (1977) *The friar estates of the Philippines*. Albuquerque: University of New Mexico Press.
- Roth, D.M. (1983) *Philippine forests and forestry: 1565-1920* In: Tucker, R.P and J.F. Richards (eds.) *Global deforestation and the nineteenth century world economy*: 30-49. Durham: Duke University Press.
- Rotmensen, G.J. *A future for shifting cultivation? A literature review on incorporation and ecology*. CML papers on environment and development, N° 11. Leiden: Centre of Environmental Science.
- Rudel, T.K., with B. Horowitz (1993) *Tropical deforestation. Small farmers and land clearing in the Ecuadorian Amazon*. New York: Columbia University Press.
- Rudel, T.K. (1994) "Population, development and tropical deforestation". In: Brown and Pearce (*op.cit.*):96-105.

- Rutten, R. (1994) "Courting the workers' vote in a Hacienda Region: Rhetoric and response in the 1992 Philippine elections." In: *Pilipinas*, No 22: 1-34.
- Rush, J. (1991) *The last tree; Reclaiming the environment in tropical Asia*. New York: Asia Society and Westview Press.
- Sacay, O.J., M. Aggabain and Ch.I.E. Tanchoco (1985) *The small farmer credit dilemma*. Manila: Technical Board for Agricultural Credit.
- Sajise, P.E. (1986) "The Changing Upland Landscape" in: Fujisaka, S. et al. (op.cit.):13-41.
- Sajor, E. (1996) *Indigenous social security, state market incorporation and environmental changes in a northern Philippine upland*. Paper presented at the 3<sup>rd</sup> European Conference on Philippine Studies, Aix en Provence, 27-30 April 1997.
- Salazar, W. (1997a) *The German community in the Philippines in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries*. Paper presented at the 3<sup>rd</sup> European Conference on Philippine Studies, 27-30 April 1997, Aix en Provence.
- Salazar, W. (1997b) 'British and German passivity in the face of the Spanish neo-mercantilist resurgence in the Philippines, c. 1883-1898' In: *Itinerario*, 21 (2).
- Salverda, A. Th. L (1910) Reaction to the report of forester Kerbert on his inspection tour of timber concessions in the Philippines. In: *Tectona*, 2 (1909-1910): 523-533.
- Samangun, H. (1996) *Deforestation on Yamdena Island; The reasons for our protest and campaign from 1991 to the present*. Pamphlet.
- Sandbukt, Ø. (ed.) (1995) *Management of tropical forests: towards an integrated perspective*. Oslo: Centre for Development and the Environment, University of Oslo.
- Sargent, C. and S. Bass (1992) *Plantation Politics*. London: Earthscan.
- Sarre, A. (1993) "Country profile - Philippines." In: *ITTO Tropical Forest Update*, 3(4).
- Sarre, A. M. Sobral Filho and M. Reis (1996) "The amazing Amazon. Is the Amazon poised for a new era of development?" in: *ITTO Tropical Forest Update* 6(4):3-7.
- Savenije, H. and A. Huisman (eds.) (1991) *Making haste slowly. Strengthening local environmental management in agricultural development*. Amsterdam: Royal Tropical Institute (KIT).
- Sayer, J. A. (1995) *Science and international nature conservation*. Inaugural lecture for the Prince Bernhard Chair. Utrecht: University of Utrecht.
- Schmink, M. (1994) "The socio economic matrix of deforestation". In: Arizpe, L. et al. (eds.) (op.cit.): 253-276.
- Schücking, H. and P. Anderson (1991) "Voices unheard and unheeded". In: Shiva (ed.) *Biodiversity. Social and ecological perspectives*:13-41. London: Zed Books and the World Rainforest Movement.
- Schwartz, A. and J. Friedland (1992) "Green fingers; Indonesia's Prajogo proves that money grows on trees." In: *Far Eastern Economic Review*, 12 March 1992: 42-45.
- Scott, J.C. (1976) *The moral economy of the peasant. Rebellion and subsistence in Southeast Asia*. New Haven and London: Yale University Press.
- Scott, J.C. (1986) *Weapons of the weak. Everyday forms of peasant resistance*. New Haven and London: Yale University Press.
- Scott, J.C. (1998) *Seeing like a state. How certain schemes to improve the human condition have failed*. New Haven and London: Yale University Press.
- Scott, W.H. (1981) *Pre-Hispanic source materials for the study of Philippine history*. Quezon City: New Day.
- Scott, W.H. (1982) *Cracks in the parchment curtain and other essays in Philippine history*. Quezon City: New Day.
- Scott, W.H. (1994) *Barangay. Sixteenth century Philippine culture and society*. Quezon City: Ateneo de Manila University Press.
- Serrano, R. (1985) "Lessons learned from oldest, one of biggest timber concessions in country." In: *Philippine Lumberman* (May 1985):20-21,30.
- Seraspi, E. (1994) "Community Forest Management Agreement. A socialized tenure instrument for upland development." Paper presented at the Regional NRMP/DENR Forest policy workshop, 26-28 October 1994, Santiago, Isabela, Philippines.
- Seve, J. (1996) *Brainstorming thoughts on size of CBFM size of operation & on CBFM pre-implementation funding*. Internal, non-official working documents.
- Siebert, S.F. and J.M. Belsky (1985) "Some socio economic and environmental aspects of forest use by lowland farmers in Leyte, Philippines and their implications for agricultural development and forest management". In: *Philippine Quarterly of Culture & Society* (13):282-296.

- Simons, H. (1992) 'Kanya Kanya': *The environmental impact of forest utilization in the Antagan Watershed*. CML student report N° 18. Leiden and Cabagan, Isabela: CVPED.
- Singh, K.D. (1993) "The Tropical Forest Resources Assessment" in: *Unasylva*, 44 (174):10-19.
- Siriwardena, S.S.A.L. (1989) *From planned Intervention to negotiated development. The struggle of bureaucrats, farmers and traders in the Mahaweli irrigation scheme in Sri Lanka*. Wageningen Agricultural University. PhD Dissertation.
- Sommer, A. (1976) "Attempt at an assessment of the world's tropical forests." In: *Unasylva* 28 (112/113):5-25.
- Sørensen, K.W. (1994) "Climate change and biodiversity." In: *Tropical Forest Update* 4 (1): 4-5.
- Sorogon, A.P. (1955) *A special study on landed estates in the Philippines. Analysis and findings*. Manila: United States of America Operations mission to the Philippines. International Cooperation Administration.
- Southgate, D. (1989) *How to promote tropical deforestation: the case of Ecuador*. Columbus Ohio, Ohio State University. (ms).
- Srinivasan, T.N. (1993) *Poverty in the Philippines; A comparative perspective*. In: Balisacan, A.M. et al. (op. cit.):1-15.
- Sullivan, R.J. (1992) *Exemplar of americanism, the Philippine career of Dean C. Worcester*. Quezon City: New Day.
- Sy, M. and V. Lasmarias (1983) "the Philippine dipterocarp forest: a post harvest scenario." In: *Philippine Lumberman* :36. Los Baños, Laguna.
- Tamesis, F. (1963) "Philippine forests and the lumber industry" In: Huke (op. cit.): 73-95.
- Thompson, M.R. (1994) *A risk-prone consolidation after a troubled transition; Philippine democratization in a comparative perspective*. Paper presented at the 2<sup>nd</sup> European Conference on Philippine Studies, April 13-15, London: SOAS.
- TNI (1987) *Europe and the Philippines; towards a new relationship*. Amsterdam: Trans National Institute.
- Tolentino, B.J. (1987) *Current imperatives and developments in Philippine agricultural credit policy*. Unpublished paper, prepared for the Philippine Department of Agriculture and Food and the Monetary Board of the Central Bank of the Philippines.
- Top, G.M. van den and R.R. Araño (1992) "The chemistry of joint research." In: CVPED (op. cit.): 83-91.
- Top, G.M. van den (1994) *Deforestation in the northern Sierra Madre, Philippines. Explanation, political choices and solution design*. Paper presented at the 2<sup>nd</sup> European Conference on Philippine Studies, April 13-15, 1994, London: SOAS.
- Top, G.M. van den (1997) "The deforestation of the northern Sierra Madre, Philippines. Historic roots of a contemporary environmental problem". In: *Pilipinas* 26: 97-119. Tempe: Program for Southeast Asian Studies, Arizona State University.
- Top, G.M. van den, R.R. Araño, M.D. Masipiqueña, M. Buizer and D.M. Boersma (1997) "Working towards a model for sustainable land use in the Sierra Madre". In: Guzman and De Groot (eds.) (op. cit.):7-14.
- Top, G.M. van den (1998) Public forests, private stakes and government. The deforestation of the northern Sierra Madre, Philippines. In: V.T. King (ed.) *Environmental Challenges in South-East Asia*: 193-230. Oslo: NIAS and Richmond: Curzon Press.
- Top, G.M. van den and G.A. Persoon (in prep) "Dissolving state responsibilities for forests: The cooperation between international and local actors in Northeast Luzon". In: *Proceedings of the 3<sup>rd</sup> European Conference on Philippine Studies*, 27-30 April 1997. Manila and Aix en Provence Ateneo University Press and IRSEA Presse.
- Tucker, R.P. (1992) "Managing subsistence use of the forest; the Philippine Bureau of Forestry, 1904-60". In: J. Dargavall, (ed.) *Changing Pacific Forests: Historical Perspectives on the Forest Economy of the Pacific Basin* (Proceedings). Durham: Forest History Society, Duke University Press.
- Tumaliuan, B.T. (1994) *Interagency approach in forest protection in Region 2*. Paper presented at the NRMP workshop on Forest Policies in Cagayan Valley, 27-28 Oct, 1994, Santiago, Isabela.
- U.S. Coast and Geodetic Survey (1900) *Atlas of the Philippine Islands*. Washington: Government Printing Office.
- Udanga, R.E. (1991) *Recent developments in the timber markets and their effects on the timber industries of the ASEAN region*. Paper presented at the ASEAN working group on trade (timber). ASEAN Chambers of Commerce and Industry, 29 July 1991, Manila.

- Udo de Haes, H.A. (1987) *Persoonlijk voordeel; van vijand tot bondgenoot in het milieubeheer*. Inaugural speech, Leiden University.
- Udo de Haes, H.A. (1989) "Algemene aspecten van de Milieukunde". In: Boersema *et al.* (op.cit.):17-30.
- Utting, P. (1994) Social and political dimensions of environmental protection in Central America. In: *Development and Change*, 25 (1): 231-259. The Hague: Institute of Social Studies.
- Vayda, A.P. (1983) "Progressive contextualization; methods for research in human ecology." In: *Human Ecology*, 11 (3): 265 - 281.
- Vayda, A.P., C.J.P. Pierce Colfer and M. Brotokusomo (1980) "Interactions between people and forests in East Kalimantan." In: *Impact of Science on Society* 30 (3):179-190. Paris: UNESCO.
- Veen, A. van der (1997) *Deforestation and chemical effects of shifting cultivation. Barangay Cabua'an and Villa Gracia, Maddela, Quirino, the Philippines*. CML student report N° 70. Leiden and Cabagan, Isabela: CVPED.
- Velde, A. te (1994) *The ethnic Chinese in Cagayan Valley, Philippines*. CML student report N°33. Leiden and Cabagan, Isabela: CVPED.
- Vellema, S. (1994) *It's a deal. Transnational corporations, contract growers and Pioneer corn seeds*. Wageningen: working group on Technology and Agrarian Development, Wageningen Agricultural University. Unpublished paper.
- Vermeulen, J.C (1991) *Land degradation and farmers in Ifugao*. MSc thesis, Wageningen Agricultural University and Leiden University..
- Vidal y Soler, Don S.(1874) *Breve descripcion de alguna de las maderas importantes y mejor conocidos de las Islas Filipinas*. Madrid.
- Vincent, J.E. (1994) "The tropical timber trade and sustainable development." In: Brown, K. and D.W. Pearce (eds.):298-308.
- Vincent, J.E. (1995) "Timber trade, economics and tropical forest management." In: Primack and Lovejoy (op. cit.): 241-262.
- Vitug, M.D. (1992) "Faith in the forest. A new breed of activist priests push a green version of liberation theology." In: *Far Eastern Economic Review*, 155 (23 April ):36-7.
- Vitug, M. D. (1993) *Power from the Forest. The Politics of Logging*. Manila: Philippine Centre for Investigative Journalism.
- Wakker, E.J. (1991) *From Cane to Cory Set; the economic value and sustainability of rattan trade in Region 02, the Philippines*. CML student report N° 8. Leiden and Cabagan, Isabela: CVPED.
- Warner, K. (1991) *Shifting cultivators. Local technical knowledge and natural resource management in the humid tropics*. Rome: Food and Agriculture Organization.
- Weber, M.(1984) "Bureaucracy." In: Fisher, F. and C. Siranni (eds.) *Critical studies in organization and bureaucracy*. Philadelphia: Temple University Press
- Werf, van der I. (1994) *The administrative context of an environmental management plan. The impact of policies, policy actors and their interactions on the management of natural resources in Cagayan Valley, the Philippines*. CML student report N° 38. Leiden and Cabagan, Isabela: CVPED.
- Wernstedt, F. and J. Spencer (1967) *The Philippine island world: a physical, cultural and regional geography*. Berkeley: University of California Press.
- Wickberg E.B. (1965), *The Chinese in Philippine life*. New Haven: Yale University Press.
- Wiersum, K.F. (1997) *Normative pluriformity in forest management: professional and community perspectives*. Paper presented at FAO workshop on pluralism and sustainable forestry and rural development, Rome, 9-12 December 1997.
- Whitmore, T.C. (1995) "Comparing Southeast Asian and other tropical rainforests." In: Primack and Lovejoy (op.cit.):5-15.
- Wolters, W.G (1984) *Politics, patronage and class conflict in Central Luzon*. Quezon City: New Day.
- Wolters, W.G. (1989) *Poverty and ecological degradation in the Philippine uplands: Conflicting interests in the last frontier*. Paper presented to the fourth Passau-Symposium on southeast Asia: economy and politics in the Philippines under Cory Aquino, Passau, 15-17 June 1989.
- Wolters, W.G; V. Fitzgerald, R. Vos and H.G.T. Van Raay (1989): *The Philippines' background document; development trends and needs*. The Hague/Nijmegen (ms).
- Worcester, Dean C. (1914) *The Philippines, Past and Present (Vol 1)*. New York: Macmillan.
- World Bank (1988), *Philippines Forestry, Fisheries and Agricultural Resource Management study (FFARM study)* Report No. 7388-PH. Washington, D.C: World Bank.
- World Bank (1990) *Philippines Environment and Natural Resource Management study*. World Bank country study, Washington, D.C.: World Bank.

- World Bank (1994a) *Conservation of Protected Areas Project document*. Washington, D.C.: World Bank.
- World Bank (1994b), *Making Development Sustainable. The World Bank Group and the Environment*, Washington, D.C.: World Bank.
- WRM (1990); *Rainforest destruction. Causes, effects and false solutions*. Penang: World Rainforest Movement.
- World Resources Institute (1996) *World Resources; a guide to the global environment 1996-1997*. Oxford and New York: Oxford University Press.
- WWF/IUCN (1996) *Forests for life. The WWF/IUCN forest policy book*. Gland: World Wildlife Fund and the International Union for the Conservation of nature and Natural Resources.
- Wurfel, D. (1988) *Filipino politics; development and decay*. Ithaca and London: Cornell University Press.
- Wyatt-Smith, J. (1987) *The management of tropical moist forest; some issues*. IUCN/IIED Tropical Forest Policy Paper N° 4.
- Yoshihara, K. (1988) *The rise of ersatz capitalism in Southeast Asia*. Quezon City: Ateneo de Manila University Press.
- Ypma, D. (1994) *Dy's people of Abra and the story of a project in context*. CML student report N° 23. Leiden, Netherlands and Cabagan, Isabela: CVPED.
- Zamora, M.D. (1967) *Studies in Philippine anthropology. In honor of H. Otley Beyer*. Quezon City, Alemar Publishers.
- Zorge, R. van (1995) *Designing participation in environmental action; two case studies in the northern Sierra Madre, Philippines*. CML student report N° 50. Leiden and Cabagan, Isabela: CVPED.
- Zosa-Feranil, I. (1994) "Persisting and changing patterns of population redistribution in the Philippines". In: Herrin, A. (ed.) (*op.cit.*): 325-374.
- Zuñiga, Joaquin Martines (1973, org. 1983) *Status of the Philippines in 1800*. English translation of "Estadismo de las Islas Filipinas ó mis viajes por este pais por el padre." Manila: Filipiana Book Guild.

## Samenvatting

Het Sierra Madre gebergte in noordoost Luzon is een van de laatste grote aaneengesloten regenwoudgebieden van de Filippijnen. Nadat de Verenigde Staten aan het begin van de 20e eeuw de grootschalige, gemechaniseerde houtkap introduceerden in de archipel, ontwikkelde deze zich tot grootste houtexporteur van Zuidoost Azië in de jaren vijftig. Veertig jaar later was het land tevens de eerste producent in de regio die, door uitputting van haar eigen natuurlijke bossen voorraad, voor haar industriële hout-toevoer afhankelijk werd van grootschalige hout-importen. Van de naar schatting 16 miljoen hectare aan tropisch regenwoud die het land rijk was bij haar onafhankelijkheid (in 1946), was in 1992 nog ruim een vierde deel over, en nog slechts 3% in ongerepte staat.

De noordelijke Sierra Madre, het gebied waarop deze studie zich concentreert, beslaat in totaal 1 miljoen hectare aan natuurlijk bos, waarvan 25% uit zogenaamd 'old growth', niet uitgekapt oerbos bestaat. Het aandeel van bos met een kroondek van 80% of meer daalde van 35 naar 14 procent tussen 1950 en 1990. Het grootste gedeelte van dit oerbos, alsmede van goed hersteld uitgekapt bos bevindt zich aan de oostzijde van deze bergketen. Het aandeel van bos met een kroondek van 10 tot 60% verdubbelde van 20 tot 40% in dezelfde periode. Slechts vijf procent van het bosareaal werd omgezet in een ander landgebruik. Hoewel de Noordelijke Sierra Madre een relatief gunstige uitzondering is op de algemene ontbossingstrend in de Filippijnen, is er dus wel degelijk sprake geweest van een significante achteruitgang in natuurlijk kroondek, de variabele die in deze studie als maat voor ontbossing wordt gehanteerd. De afname in areaal ongerept oerbos volgt ongeveer de nationale trend, terwijl een relatief kleiner gedeelte van het uitgekapt bos is omgezet in een andere landgebruik.

Deze studie richt zich op de vraag welke verklaringen voor dit specifieke patroon van ontbossing er te vinden zijn in de sociaal-economische context van de Cagayan Vallei. Na een verkenning van de feitelijke en normatieve dimensies van de mondiale ontbossingsproblematiek, in hoofdstuk 1, wordt deze brede vraagstelling in hoofdstuk 2 uitgewerkt naar een aantal deelvragen, met gebruikmaking van het Problem-in-Context raamwerk van De Groot (1992). Na een korte verkenning van land en regio, in hoofdstuk 3, wordt eerst ingegaan op de zogenaamde primaire activiteiten en actoren: het menselijk handelen in de Sierra Madre dat direct tot ontbossing leidt. Het vierde hoofdstuk behandelt, achtereenvolgens, de grootschalige kap door concessie-houders, kleinschalige kap en landbouw door bosmigranten. Een belangrijke conclusie van dit hoofdstuk is dat de selectieve houtkap grotendeels verantwoordelijk is voor de teruggang in bosdek tot 1990. Overheidsvoorschriften voor een duurzaam beheer van de kapconcessies werden stelselmatig overtreden, zowel door de kapbedrijven zelf, als door andere actoren, waartegen deze bedrijven de aan hen toevertrouwde publieke bossen onvoldoende beschermden. Daar alle politieke en economische centra van de Cagayan Vallei aan de westzijde van het gebergte liggen, volgde het ontbossingspatroon de aanleg van wegen in oostelijke richting: het feit dat er tot het midden van de jaren '90 geen enkele weg geheel was doorgetrokken naar de oostkust verklaart waarom in deze context van gebrekkige overheidscontrole het ongerepte en goed herstelde bos grotendeels op de ontoegankelijke oostflanken van de Sierra Madre bevond. Bosmigratie, kleinschalige houtkap, en de

extensieve verbouw van landbouw-gewassen, alle eveneens illegaal tot het einde van de jaren '80, hadden een relatief klein aandeel in de ontbossing in deze periode.

Het vijfde en zesde hoofdstuk bieden een beschrijving en analyse van de rol van de Filippijnse overheid in het ontbossingsproces. Na een uiteenzetting van de belangrijkste beleidslijnen die de overheid sinds de jaren '50 volgde ten aanzien van de publieke bosgronden, volgt een inventarisatie van andere actoren die invloed uitoefenen op de formulering van bosbeleid, zoals niet-gouvernementele organisaties, internationale organisaties en de leden van de verschillende verkozen lagen van het publieke bestuur. Een gedifferentieerd beeld van de overheid is nodig om te kunnen begrijpen waarom de Filippijnse overheidsdienst belast met het toezicht op de publieke bossen (het Department of Environment and Natural Resources, DENR) de activiteiten van kapbedrijven en migranten niet beter wist te beteugelen. Het zesde hoofdstuk poogt deze vraag te beantwoorden aan de hand van een aantal voorbeelden van verstoorte beleidsimplementatie als gevolg van een belangenconflict tussen de nationale bosdienst en lokaal verkozen politici. Laatstgenoemden ontlenen een belangrijk deel van hun politieke legitimiteit aan de effectiviteit waarmee zij de directe economische belangen van hun achterban weten te beschermen. Door middel van zogenaamde 'mutual accomodation networks' ontwikkelen privé-actoren, hen vertegenwoordigende politici en ambtenaren opties waarmee deze belangentegenstelling op *ad hoc* basis wordt overbrugd. De samenwerking in de totstandkoming van deze vormen van geacommodeerde toegang functioneert op basis van de uitgangspunten dat zij 1) alle deelnemers in staat stellen zich tijdelijk te onttrekken aan sancties voortvloeiend uit het niet implementeren, of doelbewust onjuist interpreteren van bosbeleid en 2) dat alle deelnemers voordeel behalen, financieel of anderszins, uit hun deelname hieraan. Een ambtenaar die zich niet flexibel opstelt ten aanzien van dergelijke externe verzoeken moet, daarentegen, niet alleen in staat zijn zich de financiële en andere uit medewerking voortvloeiende voordelen te onttrekken, maar tevens rekening houden met informele sancties, zoals overplaatsing naar een andere afdeling of Regio, gepasseerd worden voor promoties, of zelfs het gebruik van fysiek geweld tegen hem of haar zelf en zijn of haar familieleden.

Hoofdstuk 7 onderzoekt de oorsprong van het gebrekkige overheidstoezicht op de toegang tot de publieke bosgronden nader, door in te gaan op de geschiedenis van de commerciële houtkap in de Filippijnen. Vanaf de oprichting van de eerste *Inspeccion de Montes*, in 1863, is het functioneren van de nationale bosdienst sterk beïnvloed geweest door leden van de nationale politieke elite. Als gevolg van het, door de Amerikaanse koloniale overheid in de Filippijnen geïntroduceerde districtenstelsel, kregen lokale politici, wiens legitimiteit traditioneel voor een belangrijk deel op patronage-diensten was gebaseerd, zeggenschap over natuurlijke hulpbronnen, in staatsbezit sinds de Spaanse koloniale periode. Dit bood hen een nieuwe mogelijkheid om middels wetgeving en contacten in de bureaucratie te bemiddelen in de privé-toegang tot deze publieke hulpbronnen. Deze diensten, alsmede een aandeel in het financieel gewin die ermee te behalen waren, boden lokale leiders nieuwe middelen om een groeiend electoraat aan zich te verplichten. Na de onafhankelijkheid van 1946 werd, op grond van de officiële doelstelling natuurlijke hulpbronnen in te zetten voor de opbouw van het land, het natuurlijke bos van de Filippijnen in versneld tempo omgezet in privé kapitaal. Het geringe tegenspel dat de bosdienst tegen deze snelle openlegging bood was niet alleen te verklaren uit de grote invloed van de politiek op de bosdienst, maar ook uit de visie waarmee de bos ambtenaren in hun opleiding werden toegerust. Door de Verenigde Staten opgezet aan het begin van de twintigste eeuw, gelijktijdig met de introductie van de gemechaniseerde grootschalige

houtkap, waren de Filippijnse bosbouw opleidingen tot aan het begin van de jaren '90 sterk technisch georiënteerd. Bosbouwers leerden oerbossen te zien als onbevolkte en economisch onproductieve climax vegetaties, die productiever konden worden gemaakt door cyclische, selectieve kap. Hierin kwam slechts verandering tegen het einde van de jaren '80, in samenhang met een bredere her-definitie van de rol van inheemse bosvolken en migranten in het bosbeheer.

Ondanks de gebrekkige bescherming van de publieke bosgronden door de overheid, en de constructie van een dichtvertakt wegen-netwerk door de kapbedrijven, had de openlegging van de Sierra Madre tot 1990 slechts een relatief beperkte bosmigratie tot gevolg. Aan de hand van de geschiedenis van de bewoning en landbouwontwikkeling in de laaglanden van de Cagayan Vallei, zoekt het achtste hoofdstuk verklaringen voor deze afwijking van het landelijke patroon. Op het eerste gezicht lijkt de relatief lage bevolkingsdichtheid van de Vallei een voor de hand liggende verklaring; met minder dan de helft van het landelijk gemiddelde van 220 mensen per km<sup>2</sup> heeft Noordoost Luzon haar historische positie als een van de dunst bevolkte delen van de Filippijnen nog altijd gehandhaafd. Met uitzondering van korte immigratie-episodes rond de jaren '30 en na de onafhankelijkheid, was er in deze regio sprake van slechts een beperkte in-migratie en een negatieve migratiebalans. De groei in landbouwareaal na 1960 was dan ook geen gevolg van in-migratie uit de omringende, dichtst bevolkte regio's van de Filippijnen, maar werd aangestuurd door intra-regionale bevolkingsgroei en -migratie. Gelet op het hoge percentage van de bevolking dat afhankelijk is van de landbouw blijkt dat de gemiddelde hoeveelheid landbouwareaal per ruraal huishouden rond het landelijke gemiddelde bleef. De beperkte bosmigratie tot 1990 is ten dele te verklaren uit de mogelijkheden die het laagland nog bood tot uitbreiding van het landbouw-areaal. Naast een aantal andere oorzaken, waaronder verwachtingen van twee ambitieuze landhervormingsprogramma's in het laagland, speelde ook de historische reputatie van de Sierra Madre als schuilplaats voor tribalen, niet-Christenen, geesten, geestbezweerders en, meest recentelijk, rebellen van de New People's Army (NPA), een rol in het beteugelen van de bosmigratie tot 1990. Het gewapend conflict tussen de NPA en het Filippijnse leger intensiveerde sterk tijdens de regeerperiode van voormalig President Marcos, toen ook de commerciële houtkap in de Sierra Madre haar hoogtijdagen beleefde. In jaren '70 en '80 bleef de aanwezigheid van laaglanders in de boslanden grotendeels beperkt tot tijdelijke werkzaamheden van arbeiders van de kapmaatschappijen. Wie zich anders dan als kaparbeider in de boslanden waagde liep een reëel risico in het conflict betrokken te raken.

De EDSA revolutie in februari 1986, waarbij President Marcos, zijn familie en een aantal door zijn bewind beschermde zakenlieden gedwongen werden het land te verlaten, had een aantal gevolgen die de integratie van de Sierra Madre boslanden in de economie van de Cagayan Valley in een stroomversnelling brachten. Het systeem van de groot-schalige privé kapconcessies, dat sterk geassocieerd werd met het Marcos regime, verloor haar politieke legitimiteit. Nationale politici en het nieuwe milieuministerie, waarin de bosdienst werd geïntegreerd, ontwikkelden nieuw beleid dat - evenals de nieuwe curricula in bosbouwopleidingen - beter aansloot bij de nationale geest van democratisch herstel. Inheemse bosbewoners en migranten werden niet langer genegeerd, en gecriminaliseerd, maar juist ingeschakeld bij het beheer van de uitgekapte publieke bossen en bos-landen; het zogenaamde 'Community-Based Resource Management' werd de nieuwe hoeksteen van het Filippijnse bosbeleid. Deze heroriëntatie werd echter onvoldoende vergezeld van aandacht voor de capaciteit die het milieuministerie nodig had om dit proces te begeleiden, of van een analyse van de oorzaken van de gebrekkige controle die de bosdienst in de voorgaande

jaren had op privé toegang tot de boslanden. Een tegenovergestelde beweging lijkt ingezet met de Local Government Code van 1991, die een deel van voormalige verantwoordelijkheden van de nationale bosdienst onderbrengt bij de provinciale en gemeentelijke overheden. Het staat te bezien of deze bestuurlijke maatregel tot een duurzamer bosbeheer zal leiden. Immers, de gekozen leiders van deze bestuurslagen, alsmede hun politieke achterban van een klein aantal rijke ondernemers en een overwegend arme, ongeorganiseerde bevolking, beschouwen de bossen en boslanden in eerste instantie als economische hulpbronnen voor de korte termijn. De NPA, tijdens de jaren van de commerciële houtkap de onofficiële wachters van de Sierra Madre, raakte met de kapbedrijven een van haar belangrijkste financieringsbronnen kwijt, en bovendien intern ideologisch verdeeld door een beleid van nationale verzoening, her-integratie en infiltratie. Tegen het midden van de jaren '90 is de hele Sierra Madre *de facto* geworden tot een zogenaamde 'open access resource': een grote, toegankelijke, onbeheerde kapconcessie, verlaten door de voormalige gebruikers, en ineffectief beschermd door de eigenaar, *c.q.* de Filippijnse staat.

In deze context komt in de vroege jaren '90 de introductie van handelsgewassen, met name hybride mais, in de boslanden op gang. In combinatie met de te verwachten groeiende bosmigratie uit de laaglanden, en uit het nabijgelegen Cordillera gebergte, moet deze ontwikkeling worden gezien als een belangrijke nieuwe bedreiging voor de bossen van de Sierra Madre. Hoofdstuk 9 bespreekt een aantal indicaties van dit proces, en poogt te verklaren waarom bosmigranten dit gewas in toenemende mate verbouwen, ondanks een zwakke prijs stabiliteit. Informele krediet relaties lijken een belangrijke rol te spelen; handelaren bieden zowel laagland boeren als bosmigranten krediet in ruil voor de verzekerde aflevering van een door hen te specificeren handelsgewas. Mais is een alternatief onderpand bij ontstentenis van landeigendom (de boslanden zijn immers staats-eigendom), of van een ander kapitaal onderpand. Daarnaast biedt het handelaren een aantal andere voordelen. Land is voor informele kredietverschaffers een relatief onaantrekkelijk onderpand, ook in het laagland. Het is noch mobiel, noch vrij verhandelbaar doordat landhervorming een maximum stelt aan het areaal per persoon. Een verzekerde aflevering van een met enige zekerheid te verwachten bulk hoeveelheid graan stelt handelaren in staat op hun beurt lucratieve contracten aan te gaan met zogenaamde 'integrators': corporaties die het gehele productie proces van hybride zaden, de kunstmest en bestrijdingsmiddelen die deze behoeven, tot en met de op basis van mais te produceren vlees en melkproducten integreren. Onder invloed van de recente economische vooruitgang in de Filippijnen is er een grote binnenlandse vraag naar mais, en herstelt de marktprijs zich geleidelijk aan na de oogstmaanden maart en augustus. Doordat kleine boeren echter veelal niet over de faciliteiten beschikken om dit bederfelijke gewas na de oogst op te kunnen slaan, hebben zij geen andere mogelijkheid dan het gewas snel naar de handelaar te brengen. Daar zij hun lening slechts in graan kunnen afbetalen, hebben ze bovendien niet de mogelijkheid het gewas op de markt aan de hoogst biedende te verkopen. Bij de aflevering van het gewas kan de handelaar eenzijdig de waarde van de oogst vaststellen, alsmede de kosten van op krediet verkregen geld en goederen. Deze nadelen wegen voor veel boeren kennelijk niet op tegen de wens toegang te hebben tot een informele bron van krediet.

De geschiedenis van de Cagayan Vallei laat een toenemende economische integratie zien van dit gebied in de nationale en internationale economie. Als gevolg van de sociale context waarbinnen deze integratie plaats vond, heeft het merendeel van de bewoners van de vallei relatief weinig baat gehad bij dit proces. Na twee eeuwen te hebben gefunctioneerd als leverancier van tabak, hardhout en graan voor de nationale economie, behoort de Cagayan

Vallei nog altijd tot de armste regio's van de Filippijnen. Vanaf de vroege jaren '90, na twee decennia van openlegging en exploitatie, verliezen nu ook de boslanden hun traditionele, voornamelijk op afschrikking gebaseerde isolement van de vallei en omliggende provincies. Een groeiend aantal migranten en inheemse bosbewoners zal de komende jaren dan ook de exploitatie van het uitgekapte bos voortzetten. De omvang van de migratiestroom is in hoge mate bepalend voor de snelheid waarmee natuurlijk bos naar andere vormen van landgebruik zal worden omgezet. De milieu-impact van dit proces wordt in hoge mate bepaald door het type landgebruik dat de huidige en toekomstige bewoners van de Sierra Madre verkiezen. Ruraal krediet speelt een belangrijke rol in deze keuze, in mogelijkheden voor kapitaalopbouw op het niveau van huishoudens, of leefgemeenschappen. Hier, alsmede in het stimuleren van horizontale organisatie, en het herstel van de politieke onafhankelijkheid van het Filippijnse openbaar bestuur, liggen de sleutels voor een alternatief duurzaam proces van economische integratie. En voor de toekomst van Luzon's laatste grote bosgebied.