Win-wins in forest product value chains?: how governance impacts the sustainability of livelihoods based on non-timber forest products from Cameroon

Ingram, V.J.

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How governance impacts the sustainability of livelihoods based on non-timber forest products from Cameroon

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Preface

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Research was conducted as part of my work with the Netherlands Development Organisation (SNV) in Bamenda, Cameroon as a Senior Adviser from June 2004 to June 2008. Capacity building work on collaborative natural resource management and value chains enabled data to be gathered on the honey, *Prunus africana* and gum arabic chains and on governance of these chains. This involved working with government organisations, traditional authorities, community organisations, enterprise, consultants, researchers, and conservation organisations, particularly the Western Highlands Conservation Network (WHINCONET).

Research was also conducted whilst working for the Centre for International Forestry Research (CIFOR) in Yaoundé, Cameroon as Scientist and Livelihoods Team Coordinator from August 2008 to August 2010 and as Senior Associate from 2010 to date. CIFOR encouraged the use and re-analysis of their NTFP market database, supported further data analysis and provided financial and logistical support to study the apiculture, *Cola* spp. and *Raphia* spp. chains. I supervised fieldwork enumerators (doctoral and master's students and consultants, see acknowledgements) who aided primary data collection as part of the following projects:

- The Mobilisation and Capacity Building of Small and Medium Sized Enterprises in NTFP Product Chains in Central Africa Project (GCP/RAF/408/EC), hereafter referred to as the 'FAO-CIFOR-SNV NTFP Project'. SNV and CIFOR, in collaboration with ICRAF, were part of this research and development project from 2007 to 2010, led by the FAO and financed by the European Union. I was responsible for project design, management, implementation and reporting both with SNV and with CIFOR, assisted and guided by colleagues and the FAO team (Ousseynou Ndoye, Sophie Grouwels and Julius Chupezi Tieguhong). This research uses data collected as part of the project on *Prunus africana*, *Gnetum* spp., *Irvingia* spp., honey and gum arabic chains, as well as data verification and data analysis.
- The Central African Forest Observatory (FORAF) Project and biennial State of the Congo Basin Forest 2008 and 2010 books funded by the European Commission and implemented by a consortium led by CIRAD with CIFOR, Forêt Ressources Management and l'Université de Louvain. This project facilitated my data gathering on governance aspects and aided data analysis.
- The 'Regional NTFP Study' (Etude Regional du PFNL), part of CIFOR's Establishment of a Forestry Research Network for African Caribbean Pacific Countries (ACP) Project (ACP-FORENET 9 ACP RPR 91#1) guided by Robert Nasi, Donald Iponga and Yves Laumonier. This project aided my data verification with stakeholders in NTFP chains and helped with data analysis.

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Further information about these organisations and author can be found in the final chapter.

List of acronyms

AfDB	African Development Bank
ABS	Access and Benefit Sharing
ACS	Adaptive Cluster Sampling
AFD	French Development Agency
AFLEG	Africa Forest Law Enforcement and Governance
AFRIMED	Société Africaine des Medicaments
ANAFOR	Agence National d'Appui au Développement Forestier/National Forestry Development Agency
ANCO	Apiculture and Nature Conservation Organisation, Bamenda
ASOFAD	Association of Afang Dealers of Nigeria
ASSOFOMI	Association of Oku Forest Management Institutions
ASSOKOFOMI	Association of Kom Forest Management Institutions
BEAC	Banque des Etat d'Afrique Central
BERUDEP	Belo Rural Development Project
BfW	Austrian Development Service
BHFP	Bamenda Highlands Forest Project
CBD	Convention on Biological Biodiversity
CBFP	Congo Basin Forest Partnership
CBO	Community Based Organisation
CCPM	Circle of Partners of the Ministry of Forestry and Wildlife
CDC	Cameroon Development Corporation
CENAHC	Centre de Naturopathie. et d'Action Humanitaire du Cameroun
CENDEP	Centre for Nursery Development and Eru Propagation
CEREP	Centre pour la Protection Durable de L'Environnement
CEXPRO	Compagnie Commerciale pour l'exportation des Produits Forestiers
CF	Community Forest
CI	Conservation International
CIAT	International Centre for Tropical Agriculture
CIFOR	Centre for International Forestry Research
CIG	Common Initiative Group
CIRAD	French Centre for International Agricultural Research for Development
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COMCAM	MINFOF Database of Commercialised Species in Cameroon
COMIFAC	Commission des Forêts d'Afrique Centrale/ Central Africa Forest Commission
CPR	Common property resource
CRPMT	Centre de Recherche en Plantes Médicinales et Médicine Tradition-nelle/Research Centre for Medicinal Plants and Traditional Medicine
CSO	Civil Society Organisation
DBH	Diameter at Breast Height
DED	German Development Organisation
DF	Department of Forestry of MinFoF
DfID	UK Department for International Development
DGIS	Dutch Department of Foreign Affairs (Directorate General Internationale Samenwerking)

DPT	Department of Promotion and Transformation of Forest Products, MinFoF
EC	European Commission
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
FCFA	Franc de la Communauté Financière Africaine/African Financial Community Franc
FLEG	Forest Law Enforcement and Governance
FLEGT	Forest Law Enforcement, Governance and Trade
FLO	Fairtrade Labelling Organisations International
FMI	Forest Management Institution /Institution du Gestion du Foret
FMO	Forest Management Officer
FMU	Forest Management Unit
FONJAK	Foundation Fritz Jacob Cameroun
FSC	Forest Stewardship Council
GDP	Gross domestic product
GEF	Global Environmental Facility
GFW	Global Forest Watch
GI	Geographic Indication
GIC	Groupe d'Initiative Commune/Common Initiative Group
GNP	Gross national product
GTBAC	Groupe de Travail Biodiversité d'Afrique Centrale/ Central African Biodiversity Work Group
GTZ	Gesellschaft für Technische Zusammenarbeit/German Technical Cooperation
GIZ	Gesellschaft für Internationale Zusammenarbeit/German Development Cooperation
HIPC	Highly Indebted Poor Country Initiative
HMRS	EU Honey Monitoring Residue Scheme
HONCO	Honey Cooperative
ICRAF	World Agroforestry Centre
IFAD	International Fund for Agricultural Development
IFAT	International Federation for Alternative Trade
IFRI	International Forestry Resources and Institutions
IIED	International Institute for Environment and Development
IMF	International Monetary Fund
IMPN	Institute de Recherche Médicales and Etudes des Plantes Médicinales
IRAD	Institute of Agricultural Research for Development/ Institut de Recherche Agricole pour le Développement
IRET	Institut de Recherches en Ecologie Tropicale, Gabon
ISSC-MAP	International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants
ITTO	International Tropical Timber Organisation
IUCN	International Union for Conservation of Nature
KFW	German Development Bank
KIWHA	Kilum Ijim White Honey Association
KMFP	Kilum Mountain Forest Project
KIFP	Kilum Ijim Forest Project
KTB	Kenyan Top Bar beehive
LBG	Limbe Botanic Garden
MCBCC	Mount Cameroon Biodiversity Conservation Centre
MCP	Mount Cameroon Project
MDG	Millennium Development Goal
MEA	Millennium Ecosystem Assessment

MIDENO	Northwest Development Agency
MINADER	Ministry of Agriculture and Rural Development
MINATD	Ministry of Territorial Administration and Decentralization
MINEF	Ministère de l'environnement et Forêt / Ministry of the Environment and Forestry (now MINFOF) (till 2004)
MINEPIA	Ministère de l'Elevage, des Pêches et des Industries Animales / Ministry of Livestock, Fisheries and Industrial Animals
MINFOF	Ministère des Forêts et de la Faune/Ministry of Forestry and Wildlife (former MINEF)
MIS	Market Information System
MISPEG	Manyu Indigenous Spice Processing Ekemco Group
MINSME	Ministry of small and medium enterprises, social economy and handicrafts
MOBEC	Modern Beekeepers of Cameroon
MOCAP	Mount Cameroon Prunus Harvesting Company
MOU	Memorandum of Understanding
NGO	Non-Governmental Organisation
NOWEBA	Northwest Beekeepers Association
NTFP	Non-Timber Forest Product
NW	Northwest Region
NWFP	Non-Wood Forest Product
OAPI	African Office for Intellectual Property
OECD	Organisation for Economic Cooperation and Development
OFAC	Observatoire des Forêts d'Afrique Centrale/ Central African Forests Observatory
ONADEF	Office National de Développement des Forêts (now ANAFOR)
OPF	Ozone Friendly People, Bamenda
PADFA	Projet d'Appui au Développement de la Filière Apicole/Support Project to the Apiculture Chain
PAFN	Plan d'Action Forestier National / National Forestry Action Plan
PAFRA	Programme d'Appui à la Foresterie Rurale et d'Agroforesterie/Support Programme for Rural Forestry and Agroforestry
PAPCO	MINADER Programme for the Support of Okok Domestication
PAR	Participatory Action Research
PAU	Prunus Allocation Unit
PD	Provincial Delegate (now Regional Delegate)
PEN	Poverty Environment Network
PFPF	Partners in Productivity Foundation
PLANTECAM	Compagnie Pharmaceutique Française du Groupe Fournier
PMP	Prunus Management Plan
PNGE	Plan National de Gestion de l'Environnement
PRSP	Poverty Reduction Strategy Paper
PSFE	Forest Environment Sector Programme
PSMNR - SWP	Sustainable Management of Natural Resources in the Southwest Province
PSRF	Programme de Sécurisation de Recette Forestier
REDD	Reduced Emissions for Deforestation and Degradation
RIFFEAC	Réseau des Institutions de Formation Forestière et Environnementale de l'Afrique Centrale/Network of Forestry and Environment Research and Training Institutions of Central Africa
RFC	Réseau Foret Communautaire / Community Forest Network
RIGC	Projet Renforcement des Initiatives de Gestion Communautaire des ressources forestières et fauniques/Capacity building for community managed forest and fauna resources initiatives
RRI	Rights and Resources Initiative

SD	Standard deviation
SFP	Special Forestry Products / Produits Spéciaux Forestièr
SIGIF	Système de Gestion de l'Information Forestière / Forest Information Management System
SLA	Sustainable Livelihoods Approach
SME	Small and Medium Enterprise
SMP	Simple Management Plan for a Community Forest
SNV	Netherlands Development Organisation
SRG	Scientific Review Group (CITES)
STR	Significant Trade Review
SW	Southwest Region
SWRSF	Southwest Regional Forest Service (prior to MINFOF Regional Delegation)
SYVBAC	Central African Bushmeat Monitoring System/Système de suivi de la filière viande de brousse en Afrique Centrale
TRAFFIC	Wildlife Trade Monitoring Programme (IUCN and WWF joint programme)
UGIPROMNAD	Djerem Union of Natural Honey Producers
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNFF	United Nations Forum on Forests
UNO	United Nations Organisation
VCA	Value chain analysis
VSO	Voluntary Services Overseas
WCMC	World Conservation Monitoring Centre
WCS	Wildlife Conservation Society
WHINCONET	Western Highlands Nature Conservation Network
WWF	World Wide Fund for Nature

A tree is beautiful, but what's more, it has a right to life; like water, the sun and the stars, it is essential. Life on earth is inconceivable without trees. Forests create climate, climate influences peoples' character, and so on and so forth. There can be neither civilization nor happiness if forests crash down under the axe, if the climate is harsh and severe, if people are also harsh and severe.... What a terrible future! Anton Chekhov. Letter to A.S. Suvorin. October 18, 1888.

Beekeepers resting in the shade of a beautiful, melliferous *Schefflera abyssinica* tree in Kilum Ijim forest, March 2007

Part I: Introduction and objectives

This section presents the topic and the study. In chapter one the research is introduced with the assumption that governance arrangements in non-timber forest product (NTFPs) value chains originating in Cameroon influence sustainable livelihoods of actors involved in these chains. The scene is set by introducing the main components of this postulation: the forest and its products, value chains, livelihoods and governance. Unpacking these further, links emerge between forests and their products (with a focus on non-timber products), the people involved and the places that these chains emerge from and travel through. A review of these major themes serves to introduce the research arena. The research objectives and questions are then presented. This paves the way for an elaboration of the conceptual orientations underpinning this research in Chapter two. Here the relevance of concepts on sustainable livelihoods, forest product values, governance, institutions and value chains are explained and linked. The research design and methodology is described in Chapter three. The choice of subjects (chains, geographic regions and actors) and multiple, mixed methods (interviews, observation and participatory action research, literature review, market surveys and information systems, trade data analysis, action research, botanic inventories and assessments) to answer the research questions are described and their limitations are discussed.

Kerbside cola nut seller in Yaoundé, Centre region, June 2010

1

Forests, products, people, places and poverty – an introduction

This thesis explores the premise that governance arrangements in non-timber forest product (NTFPs) value chains originating in Cameroon impact the sustainability of livelihoods of people and organisations (termed 'actors') involved in these chains. This chapter sets the scene by first introducing the main components of this assertion: the forest and its products, value chains, livelihoods and governance. Unpacking these further, links emerge between the forests and their products (focussing on non-timber products), the people involved and the places that these chains emerge from and travel through. A review of these major themes serves to introduce the research arena. The research objectives and questions are then presented.

Photo 1.1 A walk in the forest, Lobeke, May 2010

Let's start by taking an imaginary hike to the study location: the Congo Basin, a region with more forested land (71%) than any other region worldwide, both currently and in the last two decades (FAO 2011). Conrad (2001: 107) (in)famously helps set the seemingly timeless scene: "The reaches opened before us and closed behind, as if the forest had stepped leisurely across the water to bar the way for our return. We penetrated deeper and deeper into the heart of darkness". In Cameroon, our walk is dominated by 16,467,570 hectares of continuous, dense, humid forest, wrapping 35% of the country. We continue, passing through light-filled, dry and hot mosaics of savannah, dense deciduous forest and croplands covering 126,294,186 hectares, covering 13% of the land. Climbing we find, clinging onto 1% of the country's mountains, 7,285,392 hectares of misty, luxuriant montane forests (de Wasseige *et al.* 2009). Deforestation and degradation is visible, with the drivers discernible during this walk: many people, expanding urban areas, fresh agricultural fields and plantations increasingly encountered (DeFries *et al.* 2010; Robiglio *et al.* 2010). The tensions of sustaining growing numbers of peo-

ple's livelihoods whilst these forests become increasingly degraded are also evident during the saunter: with widespread poverty obvious. Forests support livelihoods by providing security, basic materials for life (goods, food and shelter), contributing to peoples' freedom of choice and action.

A livelihood comprises the capabilities, assets and activities required as means of living and is termed sustainable when people can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets, both now and in the future, while not undermining the natural resource base (Chambers and Conway 1991). Also noticeable are the many people creatively offering goods and services, and after ubiquitous checkpoints, colourful markets selling a range of forest products. Table 1.1 summarises what is apparent at the time of the stroll.

Table 1.1 Poverty, forest and governance indicators for Cameroon

	Indicator	Rating
Poverty	Country classification [D]	Lower middle income
	Population (millions) [B, D]	19.1
	Population in poverty[O]/living below US$2/day [D]	39.9%/44.1%
	Population density / km^2 (2008)[F](2005) [B]	39
	Urban population 1975[A]	26.9%
	Urban population 2010 [D]	58.4%
	Urban poverty % urban population [N]	20
	GDP per capita 1987/1980 (US$ 2008 PPP) [D]	600
	GDP per capita 2007 (US$ 2007 PPP) [D]	2,979
	GDP (US$ billions 2007 PPP) [D]	39.4
	Overall HDI rank 2009 [D]	95
Forests	Total forest area (ha) [H]	27,351,387
	Forested landscapes (all types)% [H]	59
	Annual national net deforestation rate% [H]	0.03
	Annual savannah net deforestation rate% [I]	1.0
	Annual montane net deforestation rate% [J]	0.4
	Annual national net forest degradation rate% [H]	0.07
	Public forest ownership [C]	86%
	Contribution forest exports to GDP (2008)	6%
	Annual fiscal value timber (million $) [H]	84
	Annual exports timber (m^3 thousands) [K]	600
	Contribution forestry (timber) to GDP [H]	6%
	Domestic sales value timber (million $) [K]	58
	Annual domestic timber exploited (m^3 thousands) [K]	900
	% fuelwood as domestic energy source [M]	82
Governance	Inequality measure (Gini index)[D]	44.6
	Ease of doing business [E]	168
	Averaged rank worldwide governance indicators [L]	19
	Governance ranking in Africa[P]	25
	Corruption ranking [G]	146

Sources: [A] (UNDP 2007)(177 countries), [B] Population Census 2005(Government of Cameroon 2010), [C](MINFOF *et al.* 2005), [D](UNDP 2009) (182 countries) (World Bank 2009a; b), E (World Bank 2010b) (out of 183 countries), [F] (United Nations 2008), [G] (Transparency International 2009)(out of 180 countries), [H] 2000 to 2005 (de Wasseige *et al.* 2009) [I](UNDP/ARPEN 2006), [J](Solefack 2009), [K](Lescuyer *et al.* 2009),[L](Kaufmann *et al.* 2010) (average 6 indicators, rank for 213 countries 3 = high 1= low, 1996-2009), [M](Trefon 1994; Camos Daurella *et al.* 2009) [N] (Ministry of Planning Programming and Regional Development 2007), [O](National Institute of Statistics 2007), P (Ibrahim Foundation, 2009) (out of 48 countries). Indicators cover study period. See Appendix 12 1 for exchange rates used

These forests have shaped the region economically, socially and politically, affecting social relations and development (Millennium Ecosystem Assessment 2005), and have an important impact on climate change, both causal and in mitigating the impacts (FAO 2011). The International Year of Forests in 2011 symbolised the culmination of two decades of increasing international recognition of the critical role of forests in providing a multitude of supporting, provisioning, regulating and cultural services, with a Cameroonian from the Highlands celebrated as a 'forest hero'[1]. Their importance is increasingly recognised regionally, with the 2005 Central African Heads of State Summit initiating a biennial State of the Forest process to observe, monitor and manage these forests more integrally (de Wasseige *et al.* 2009). Attention has increased as these forests have become progressively threatened and their quality degrades, measured in terms of resource extraction and disturbance (Topp-Jørgensen *et al.* 2005). Peering closer through the green forest light, many of the provisions from these forest ecosystems become more visible. Looking through the trees, resources termed non-timber forest products (Box 1.1), can be distinguished.

Box 1.1 Non-timber forest products (NTFPs**)**

The word product is interchangeable with a good or commodity, denoting a thing of use or advantage, produced by or resulting from a natural, social or historical process. In economics a product is commonly a thing of profit or commerce, an exchangeable unit of economic wealth, especially as a primary or raw material. NTFPs are defined here as products of biological origin (plants, fungi and animals) other than timber, derived from natural, modified or managed forested landscapes and other wooded land and trees outside forests. All parts can be used: for plants this includes fruits, nuts, seeds, leaves, stems, bark, essences, fibres, resins, exudates, roots, flowers and wood. For animals flesh, hides, hair, horns, hooves and feathers are commonly used (Ros-Tonen *et al.* 2005b). Excluded are exotic species such as rubber (*Hevea brasiliensis*) and quinine (*Chinconia* spp.), planted and also now growing wild in the Congo Basin, NTFPs are often classified by their use: food, forage, fuel and energy, materials, utensils, construction, medicines, aromatic products, dyes and colorants, fuelwood and its derivatives; and objects of ornament, art and cultural value. NTFPs are denoted in legal frameworks in the Gabon and CAR but are not clearly defined in Cameroon. Although the FAO (Walter 2001) prefers the term Non-Wood Forest Products (NWFPs), using it to exclude all woody raw materials, fuelwood and small woods used for domestic tools/equipment. In Cameroon species producing fuel and tools have not been regulated as timber products and are thus classed in this thesis as NTFPs. Timber denotes trees grown for their wood, and wood suitable for building, carpentry or other uses (i.e. large squared, dressed wood ready for use or as part of a structure). Wood refers to the hard fibrous substance consisting largely of xylem, which constitutes the majority of stems, branches and roots in trees and shrubs, and to a limited extent in herbaceous plants. A second meaning is that it is suitable or prepared for use (i.e. burning or building).

The term NTFP has multiple meanings depending on who is asking, their motives and understanding. An NTFP thus needs to be put in the context of its source and use. The negative terms used for these products ('non' timber and 'non' wood) appear to relegate them to secondary importance as the anti-thesis of timber. It also refers, for some, to the product's physical characteristics (i.e. a product that is not timber). This catch-all term illustrates the paradox of how short-term and economic factors prevail in the lan-

[1] Paul Mzeka, Forest Hero award winner (URL: http://www.un.org/en/events/iyof2011/forests-for-people/awards-and-contests/award-winners. retrieved 20 January 2012.

guage used for products. NTFPs possess broader and longer-term social, cultural or environmental values, often not expressed in monetary units. NTFPs are however now increasingly being presented more positively, using terms such as 'gifts' (ITTO 2009a), 'wealth' (van Dorp *et al.* 1998) and 'riches' (López *et al.* 2004). NTFPs have progressively featured higher on the agendas of academics, conservation and development practitioners, following on from pioneering publications in the late 1980s (Peters *et al.* 1989).

To understand NTFPs, the term forest needs to be clear, as in Cameroon it has many and very different meanings (Turnbull 1961; Sharpe 1998). *Bush* is the Pidgin term in general for forest (*ladde* in Fulfulde, *la brousse* in French), which can include long fallowed forested areas. The pidgin term *black bush* refers to spatial, biophysical and implicit governance aspects, indicating dense expanses of humid lowland and highland forest, far from habitation, uninhabited, not owned or cultivated in recent memory. It is a place of potential (for hunting and gathering) and/or realm of the fantastical, mythical and magic (Fardon 1991). In English, the term forest is used mostly by foreigners, often located far from forests and with little daily experience. In French speaking areas, *forêt* can, as in the Anglophone western of Cameroon, refer to commercial forest reserves and plantations set up in colonial times (Hédin 1930), as well as protected areas, known as forest reserves. This study uses a broad definition presented in Box 1.2, which encompasses Cameroonian and Western understandings of a forested landscape with a continuum from fields with trees, to fallow, to secondary and primary forest that is spatially and temporally dynamic.

Box 1.2 Forests

A forest is an ecosystem or assemblage of ecosystems dominated by trees and other woody vegetation. It is an area where living organisms interact among themselves, with the non-living environment and people. FAO (2000) characterises forests as an area of at least 0.5 hectare with a tree canopy cover of over 10% and determined both by the presence of trees and absence of other predominant land uses. They include natural forests and forest plantations. The trees should be able to reach a minimum height of 5 m and young stands are expected to reach a crown density of 10% and tree height of 5 m, as are temporarily unstocked areas. The term includes forests used for production, cultural, protection, multiple-use and/or conservation (i.e. national parks, nature reserves and other protected areas) and forest stands on agricultural lands. Excluded are tree stands primarily for agricultural production and trees planted in agroforestry systems (FAO 2000).

NTFPs were seen as a panacea to integrate development and conservation objectives – as one of the dominant dialogues concerning forests and rural poverty in the 1990s (Ros 1995; Wunder 2001). Practical challenges to realising both forest conservation and development goals have increasingly highlighted the governance and 'good governance' (Mayers *et al.* 2002; Brown *et al.* 2003) – see Box 1.3 – and sustainable management of forests and their products. Studies on common resources since the 1960s have led to a body of work on forest and product governance (Ostrom 1999b; Agrawal *et al.* 2008). Continuing our walk through the forests, a *juju*[2] may be encountered, tied onto a partic-

[2] The supernatural or magical power ascribed to an object fetish or charm, and the use of such objects by Central and West African peoples (Valentin 1980). Examples include grass and leaves twisted into a knot, indicating a claim to a particular resource and/or warning not to enter or interfere with it.

ularly ripe tree full of fruits, or a battered sign seen next to a path indicating this is a particular community's forest. This is a physical sign of governance, visualising the link between the place, its forests and products, with people and their livelihoods. If and how forests are governed can have far reaching resource related outcomes, particularly depending on who governs, why, the rights and rules, which have implications for the sustainability of livelihoods (Mayers *et al.* 2002; Laird *et al.* 2010). Rights are authorised demands to a resource and decision-making about that resource, a socio-technical relationship of political inclusion and exclusion that embodies, shapes, and is shaped by power relations (Boelens 2009).

Box 1.3 Governance

The term governance has multiple meanings. As an analytical concept it is used to refer to public, civil society and private interactions, initiated to solve societal problems and create opportunities (Kooiman and Bavinck 2005) and to make and implement decisions in economic, political and social affairs. It is the way a society organises itself to make and implement decisions – achieving mutual understanding, agreement and action. It comprises the mechanisms and processes for citizens and groups to articulate their interests, mediate their differences and exercise their legal rights and obligations (UNDP 1997). It includes the systems, formulation and applications of values, principles, policies, the mechanisms and processes guiding those interactions and practices, and the institutions (Kooiman and Bavinck 2005). The latter are defined as the "rules of the game"; humanly created formal and informal mechanisms that enable and shape individual, group and social expectations, interactions, and behaviour (Ostrom 1990). It also refers to the state of being governed and the act or process of governing (Kooiman 2008). Governance is also used to indicate a government or administration, and the specific ways in which a system is ruled; the state of being governed and implies accountability for consistent, cohesive policies, processes and decision rights. Governors, also known as stewards or custodians, are thus the people and organisations (groups of people with a common purpose to achieve objectives, such as councils, enterprises, associations, cooperatives and unions) carrying out acts of governance. A normative use of governance is a value laden expression of 'doing things right'.

This tropical stroll emphasises the different links between forest, people, products, places and poverty. The following summaries of these linkages serve to set the broad scene for this research.

Forests, products and poverty

People, the products of forests and poverty have complex links. The many people who live within or adjacent to forests in the Congo Basin depend upon forest products to a high degree for subsistence and income (de Wasseige *et al.* 2009; FAO 2009d) and forest services, such as fertile soils (Gibbs *et al.* 2010), as the majority of inhabitants depend on small-scale slash-and-burn shifting agriculture for subsistence, a farming practice which uses the forest as a land reserve for expansion (Sadio 2009).

The link between forest dependence and poverty – defined in Box 1.4 – has been much discussed in the last decade (FAO 2008; IUCN 2008a), pushed by the Millennium Development Goals setting a poverty reduction agenda and the high levels of spatial coincidence between tropical forests and the majority of the world's rural poor (Sunderlin *et al.* 2008b). Whilst difficult to quantify and largely 'guesstimates', global estimates of the correlation between poverty and forests abound. About 70 to 75% of the world's poor live in rural areas where they depend directly on ecosystem products

and services for their livelihoods, food, water, energy, shelter, medicine, income and clothing (FAO 2007). Not only those living near the forest, but millions of people worldwide from a local to global scale, also benefit, directly and indirectly, from the products and services provided by forests (Louman 2009). Forest resources have been estimated to directly contribute to the livelihoods of 1.6 billion people worldwide (World Bank 2001). In particular they contribute to the livelihoods of some 90% of the 1.2 billion people living in extreme poverty, with an estimated 25% of the world's poor depending fully or partly on forest products for subsistence needs, and indirectly support the natural environment that nourishes agriculture and the food supplies of nearly half the population of the developing world (World Bank 2004). Depending upon the location, community and cultural and economic practices, forests may be the major source of livelihood, or make an important contribution. For example, 60 million indigenous people are almost wholly dependent on forests and almost 70 million people – many of whom are also indigenous – are estimated to live in remote areas of closed tropical forests (World Bank 2004).

Box 1.4 Poverty

Poverty is defined as the state of pronounced deprivation in well-being (Haughton and Khandker 2009) and is relative to place, time and level specific (individual, household and geographic). A conventional view of poverty primarily links well-being to command over commodities, characterising the poor as those without enough income or consumption to place them above an often arbitrary but easy-to-measure minimum income threshold. Relative income is thus one of the most common measures of poverty, such as the Millennium Development Goal's extreme poverty threshold of US$ 1.25 a day in 1990 (in 2005 prices). The first Cameroon Poverty Reduction Strategy used a US$ 1.50 benchmark and defined poverty in terms of material deprivation, food insecurity, lack of access to social services (health, education and basic training), decent employment, safe drinking water, social protection, reliable information, housing, transportation, and the lack of involvement in decision-making. (International Monetary Fund 2003), Other measures of deprivation take into account living standards, including material deprivation and social exclusion from 'the ordinary patterns, customs and activities' of society (Haughton and Khandker 2009). The broadest approach to poverty embraces well-being and focuses on the human capability ('capital') to function in society, and how they have access, rights and entitlements to use natural, physical, social, financial and political capital. This understanding is at the core of the Sustainable Livelihoods Approach (Scoones 1998, Widner *et al.* 1998, Bebbington 1999), and is how poverty is understood in this thesis. Adverse incorporation and exclusion from access and rights to capitals, such as natural resources and markets, underpin chronic poverty (Hickey *et al.* 2007).

In Africa over 66% of the population is estimated to rely directly or indirectly on forests for livelihoods (Anderson *et al.* 2006). Whilst the major beneficiaries of forest revenues, particularly timber exports, have been companies and states, for timber sold in domestic markets, benefits accrue mostly very locally and have only recently been quantified (Lescuyer *et al.* 2011). For NTFPs, their role in alleviating poverty is more pervasive than timber, given the large numbers of people using and being dependent upon them for subsistence (Hoare 2007). NTFPs also contribute to household energy and food security, providing nutrition and medicinal products (Wunder 2001), as well as a host of other uses. Forests and their products can act as safety nets in times of stress, shock and crisis (Shackleton 2005) and increase household resilience (Yemiru *et al.* 2011).

The distinctiveness of forest-based poverty, relative to rural and urban poverty is highlighted by Sunderlin and partners (2008b). They contend that forests are important for the poor, not just because of the goods and services they provide but also because they tend to be located where the poor are, with a significant positive correlation between high natural forest cover and high poverty rate. They differentiate the spatial coincidence of poverty and forests by quantifying the patterns, distinguishing poverty by type (i.e. rate and density) and distance from urban areas. Measuring poverty as the proportion of people who are poor in a given area and poverty density as the absolute number of poor per unit area (individuals/km^2) in a given area, they make a strong case that remoteness and forests are positively related to poverty rate and inversely related to poverty density. However Chomitz *et al*. (2007) argue that many factors muddle this relationship. Whilst agreeing that remote areas tend to have high forest cover and high poverty rates, they also usually have low absolute numbers of poor people. These forest dwellers can prosper when they can profitably access forest resources – or suffer when those resources are meagre or controlled by others. A strong negative correlation has been found between forest reliance and household income (Vedeld *et al*., 2004). Hence the poorest appear to be more dependent than the non-poor in relative terms, while in absolute terms better-off households tend to use the forest more. Preliminary data (Angelsen *et al.* 2011b) indicate that this relationship is less pronounced with forest income important not just for the poorest, but also the wealthier.

There have also been long ranging, heated and inconclusive debates on the sustainability of people's livelihoods based on NTFP trade. On the one hand, the contribution of NTFPs to and sustenance of livelihoods of people living close to forests has been promoted as fulfilling dual objectives of poverty alleviation and development, and triggering forest conservation (de Beer *et al.* 1989). In cases from 17 countries (Vedeld *et al.* 2007) forest incomes were found to contribute significantly to the production of goods and services and to welfare, with a relatively 'small' contribution being critical for survival. A positive association between forest income and total income was found, and only a weak trend of dependence (declining relative forest income as total income increased). Wild food and fuelwood accounted for an average of 70% of a household's forest products. A clear pattern in the distribution of forest income is visible with the poor being more dependent on forest income, and forest income having a strong equalizing effect on local income distribution (Wunder 2001; Sunderlin *et al.* 2003). Trade in NTFPs provides income and economic and employment generating activities, in rural and urban areas. For many poor people, using NTFPs is a way of life and necessity. It is often accessible to marginalised members of communities, with low start-up costs or barriers and requires little land or labour. Trade can lead to unsustainable extraction, reduce biodiversity and, given certain market conditions and actors, even exacerbate poverty (Ndoye 1994; Ambrose-Oji 2003). NTFP trade can equally act as a poverty trap - the difference being highly circumstantial and temporally specific (Shackleton *et al.* 2004; Delacote 2009; Völker *et al.* 2010). Poor, marginalised and forest-based or adjacent people are often disadvantaged in trade. This is particularly so if they are without rights to access forest resources; are remote with poor access to markets, information, infrastructure and capital, capacity or resources; have limited opportunities for product transformation; are poorly educated; and have inappropriate or low levels of social organisation. They may also be further disadvantaged by being marginalised ethnic or religious groups (Oberndorf *et al.* 2007; van den Berg *et al.* 2007). Trade in many NTFPs has led to higher levels of exploitation than the natural carrying capacity (Kusters *et al.*

2006). This has led to concerns biodiversity loss and subsequent need for conservation (Cunningham 1991). In the Congo Basin fears that some NTFPs may become extinct as national and international trade lead to possible over-extraction of wild stocks, combined with low levels of domestication and cultivation (Sunderland *et al.* 1998; Tchatat *et al.* 2006). These tensions lead to conflicting interests amongst individuals, private and public organisations and states concerning conservation versus immediate subsistence needs and long-term livelihood needs based on their trade. Despite the initial enthusiasm, it has been increasingly realised that conservation and livelihood trade-offs are inevitable and that win-wins are rare (Arnold *et al.* 2001; Kusters *et al.* 2006). The opportunities to create significant and sustainable livelihood benefits from commercialising NTFPs and break out from a vicious circle of poverty thus often remain out of reach, unless interventions in chains are specifically pro-poor. This thesis contributes to fill this knowledge gap by indicating the benefits from commercialising NTFPs and implications for household livelihoods.

Forest products, people and places: value chains

People and forests and their products and places are intricately linked. Value chains bring together products, people and places. The large numbers of forest-dependent people include not only those living near the forest, but also those people worldwide who use forest products to satisfy a diversity of human subsistence, every day and luxury needs (see Box 1.1). Value chain analysis (VCA) is becoming increasingly popular in development circles and conservation rhetoric (Merlin 2005; DFID/SDC 2008; SNV 2008). The approach has gained ground since the new century, particularly for products with a global trail to consumers. It has recently been applied to forest products and is defined in Box 1.5. An example is chains of custody, used to ensure and monitor good governance and law enforcement in the timber trade (Brown 2006). For NTFPs, VCA has been mainly used as an entry point for initiatives by development organisations to intervene and redress inequities and increase sustainability, with stakeholders making conscious choices about difficult poverty-conservation trade-offs (ILO 2006; SNV 2009a). Value chain analysis is a conceptual framework for mapping and categorizing the economic, social and environmental processes in product value chains: understanding how and where enterprises and organisations are positioned in chains, and identifying opportunities and possible leverage points for upgrading. It encompasses the organisation, coordination, equity, power relationships, linkages and governance between organisations and actors (see Chapter 2) (Helmsing *et al.* 2011). Emphasising the integration of economic and social development with conservation, the notion of sustainable forest-based enterprises emerged in the mid-1990s (Macqueen *et al.* 2009), focussing on timber and non-timber products.

The increasing presence of NTFPs in market economies has emphasised how the ‘livelihood value’ of a product and the forest can change dramatically. NTFPs may be harvested and consumed by the same person at the same location, but equally may be exchanged, processed, traded and consumed in another location and known as a different product and by another name. The term now commonly used for this range of activi-

ties – the value chain, reflecting that often (but not always), the economic and financial[3] value of a product changes and increases once it is sold. Social and cultural values may also change.

Box 1.5 Forest product value chains

The term value chain (also known as market, supply or commodity chain, production to consumption system, and *filiére*) uses the interlinking connections of a chain to symbolise activities involved in bringing a product from the forest, through processing and production, to delivery to final consumers and ultimately disposal (Kaplinsky and Morris 2000), such as harvesting, cleaning, transport, design, processing, production, transformation, packaging, marketing, distribution and support services. A chain can range from a local to global level. This range of activities may be implemented by various actors for example harvesters, processors, traders, retailers and service providers. The relations between actors and control of chains have been termed chain governance (Gereffi *et al.* 2003, Helmsing *et al.* 2011). Chains and products embody multiple relations of value – often explicitly economic but also social, cultural and environmental. A forest product value chain concerns tree, timber and non-timber forest products, and refers to the full series of value-generating activities in a value chain from the products origin as a tree or from the forest. Being based on natural resources, often wild sourced, sustainability is a core aspect that differentiates forest product from agricultural commodity chains. The sustainability of a forest product value chain depends to a large part upon how sustainable the product is, which in turn depends on factors such as (1) the abundance (in the wild and cultivated) of the species from which a product originates, (2) threats and vulnerabilities to species populations, both anthropogenic and natural, (3) inherent species vulnerability which depends on the part(s) harvested, and (4) a species' tolerance to harvesting (Cunningham 2001; Ticktin 2004). The second core differentiating aspect is how chains are governed, in terms of arrangements regulating access to species and the forest in which they originate, and regulating access to markets. In contrast to harvest for subsistence use, there are generally negative associations between commercialisation and species sustainability and conservation (Arnold *et al.* 2001; Kusters *et al.* 2006) unless institutions effectively avoid, control and if necessary, mitigate unsustainable exploitation. These two aspects of sustainability and governance have not been explicitly addressed in literature forest product chains to date. A third aspect is the link between forest product commercialisation and poverty, due to high levels of spatial coincidence between tropical forests and the world's rural poor (Sunderlin *et al.* 2008b) and millions of poor people worldwide benefitting from forest products (Louman 2009).

Thus when NTFPs move from subsistence use to commercialisation, the economic and social livelihoods of actors become interlinked through demand and supply interactions. Hence, there is a growing recognition that traded forest products can be seen in terms of chains. This has widened the view that forest livelihoods concern only rural, forest edge harvesters and that there are other activities and actors involved in getting a product to the final consumer. NTFPs often form the basis for a wide range of urban-based activities with actors being involved in transformation, processing, transportation, wholesaling, export and retailing (Belcher 1998; Ribot 1998; Shively *et al.* 2010). Certain actors and processes in chains appear key to spreading success and offsetting potential negative consequences, such as the negative exploitation of actors upstream (e.g. collectors and processors) (Shackleton *et al.* 2004). There are often wide variations in income generation, profit margins and access to consumers and information between

[3] Financial value denotes the market price of a product or service. Economic value **i**ncludes non-market incomes (such as foraged food) and opportunity costs for which no market price mechanism may exist.

rural, forest edge collectors and those operating nearer the consumer end of chains. Globalisation, opening up new niche markets, combined with increased access to information and traceability of products strengthens this trend (Ros-Tonen 2004; OECD 2007). It also presents challenges, with distance creating information gaps between actors with many not knowing how the product they harvest ends up being used, in what form or price, beyond the next stage in the chain (Donovan *et al.* 2006). As forests shrink, populations increase and poverty continues, understanding chain dynamics becomes increasingly important. Additionally, demand and supply interactions in different markets and along chains also have differing effects on the sustainability of extraction. Understanding these interrelationships and drivers of NTFPs chains with differing uses is important to understand their sustainability.

The modest number of value chain analyses of forest products, and paucity of comparative studies of products makes it difficult to generalise the arrangements which contribute to sustainable trade and livelihoods or prove that sustainable chains are possible in the longer term. Whilst guidelines and standards have been developed, such as the International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP) (Medicinal Plants Specialist Group 2007) and FairWild Standard (FairWild Foundation 2010), and a handful of products such as Brazil nuts (*Bertholletia excelsa*) have received Fair Trade certification (Vantomme 2010), none have existed long enough to be proven sustainable. In examples of value chain interventions, indirect actors' emphasise sustainability heavily. Perspectives on indigenous systems which create sustainable chains are lacking. There are no such examples from Central Africa. This situation is far removed from the well-developed sustainability standards for timber such as Forest Stewardship Council certification. This thesis addresses this knowledge gap by providing comparative eight value chain analyses of forest products common in the Congo Basin. The analyses include participatory analysis with Cameroonian and international actors on their perceptions of sustainability and on the process of developing certified chains.

Places, poverty and forest products

Value chains bind places, products and people. There has been a preoccupation in economic, development and livelihoods agendas and literature with the importance of place in determining wealth, or, at the opposite end of the continuum, poverty**,** and many links have been proposed (e.g. Sunderlin *et al.* 2005 and 2008)**.** The multitude of measures of wealth and poverty reflect geographical spaces, from global to national to local. The classical economic labour theory of value (espoused by Ricardo, Smith and Marx in the late nineteenth century), postulated that the value of products is related to the labour needed to produce them. The price of labour differs according to time and place. For a long time, developing continents such as Africa have provided cheap and plentiful supplies of largely unskilled labour, resulting in competitive raw and semi-processed materials, largely based on natural resources (Lewis 1954). Globalisation and the increased integration of macro-regional economies has resulted in changes in labour costs, the production, appropriation and allocation of value, and different economic organisations (Smith *et al.* 2002). Cheap labour alone has become insufficient to create competitive advantages in the face of economies of scale and vertical integration (Gibbon *et al.* 2005), refuting Smith's theory of labour. Labour is also often either undervalued or unvalued in developing economies (Cavendish 2002), such as in Cameroon. It is problem-

atic to measure labour when it is not directly paid, but nonetheless contributes to increase product value, as in the process of harvesting NTFPs. From a non-capitalistic and traditional Equatorial African perspective, the value of labour also had a different connotation as 'wealth in people'. Productivity was increased by organising and controlling people and accumulating human dependants, as a sign of wealth and power. The remnants of this practice are still visible today in politics and culture (Geschiere 2007). Aside from labour, many commodities in traditionally non-capitalist economies such as in Cameroon, have not been valued monetarily or were used as currency. These include well known NTFPs such as ivory and cola nuts, which played important roles till the mid nineteenth century. It is notable that classical economic concepts of growth do not apply to such commodities, which tend to maintain continuous values over time (Guyer 1993).

On a commodity and consumer level, the economic value of forest products is reflected in measures such as retail prices and retail price indexes, which measure the cost in a given period of goods and services purchased by a typical household or consumer in a base period. On a national level, gross national product (GNP) is a comprehensive economic comparison measure that is applicable to monetary amounts of all types – commodities, services, income, property, wealth and expenditures both within the country and those held by a country's nationals abroad. Gross domestic product (GDP), is an index of the economic condition: the market value of all officially recognized final goods and services produced within a country within its borders in a given period of time. Sachs and colleagues (2000), using GNP per capita as a single indicator of prosperity, highlight the huge geographical gap between rich and poor nations: with great majority of the poorest countries in the geographical tropics and majority of richest countries in the temperate zones. A disadvantage of these measures is that informal and unrecorded products and services are not included in such measures, such as NTFPs (Cunningham 1991; Campbell *et al.* 2002c; Shackleton *et al.* 2007; Tieguhong *et al.* 2008b; Roitman 2005; RRI 2009a, WIEGO 2011).

By defining regions by climate rather than by latitude, among the 28 high income countries categorised by the World Bank (with populations of at least one million), only 2% of people in high-income regions are in the tropics. Almost all temperate-zone countries have either high-income economies or middle-income economies. There is a strong temperate-tropical divide within countries straddling both climates types such as Brazil and India. The importance of access to the sea is also evident, with landlocked regions considerably poorer than their coastal counterparts. In contrast, Bloom *et al.* (2003) reject such geographic determinism in favour of a poverty trap model. Thus while geography is highly correlated with poverty and wealth, with geographical concentrations of persistent poverty (Brons *et al.* 2007), it remains unclear when it is a cause or an effect, and exhibits characteristics of both.

Geography – the how and where (Pattison 1990) – has important implications for forests, poverty and the product value chains. Physical-geographical variables are major factors determining ecoregions and forest types, and thus the species providing NTFPs originating from any specific place. Three broad phytogeographic regions cover the Congo Basin (Brenan 1978), within which 23 ecoregions: large biogeographic land areas containing distinct assemblages of natural communities and species, have been recognised (WWF & Saundry 2008) and seven major forest types occur (de Wasseige *et al.* 2009). Those relevant to this study are the Guineo-Congolian dense, lowland humid forests, the Sudano-Zambezian phytogeographic region savannah forests and mosaics

and Afromontane forests. These determine the availability, distribution, abundance and density of species providing NTFPs. The implication for this study is that the forest type is a major determinant of species and thus of potential products.

People also influence the places where species are found, altering natural distribution patterns, density and species composition, by unknowingly or consciously domesticating useful plants. Examples are *Irvingia gabonensis* groves found along major footpaths from the forest to villages around Takamanda in Cameroon (Sunderland *et al.* 2009) and the spread of *Cola* spp. across Central and West Africa tracing major trade routes (Tachie-Obeng *et al.* 2001). The opportunities thus presented in any particular location, in terms of potential products and their quantity, are thus highly people dependent, spatially variable and geographically specific. Not all species are used as products in different places, and of those used only a proportion has commercial value. This is the result of the interaction of physical-geographical variables with economic factors. These include access to infrastructure, information and markets (Schreckenberg *et al.* 2006; Macqueen *et al. 2*009), socio-cultural associations and history of forest use (Focho *et al.* 2009).

As a product moves along the chain towards consumers, a strong spatial link is created between products, people and wealth. Whilst an NTFP has an innate value, its value is strongly influenced by its place of origin and location of each stage in a chain. Value chains (see Box 1.5 for definition) are embedded in economic, social, cultural and political relations and operate over different geographical scales (Helmsing *et al.* 2011), highlighting the importance of the considering the spatial dimension in any assessment of the relations between people and forest products. The importance of geographical origin is also enshrined in trademarks and schemes which seek to guarantee the origin as a sign of quality (Vandecandelaere *et al.* 2009). That the physical geography of a region influences its economic performance has been known for centuries (Smith 1776), such that the economies of coastal regions, with easy access to sea trade, usually outperform the economies of inland areas. Cameroon has a 402 km Atlantic coastline on its western border. Hausmann (2001) reiterates that geography continues to be a pervasive influence, above market and development policies, and remains the determining factor in the economic development of tropical, landlocked nations. Whilst the implications of geography for timber value chains have been touched upon (Smith 2006), the relation between geographical factors and NTFP chains has not been researched with the same depth as in Chapters 7 to 10.

Poverty has been traditionally defined geographically, by classifying countries according to aggregated average per capita income and GDP levels. In the last decade more holistic measures such as Human Development (HDI) and composite Human Poverty Indexes (HPI) have emerged (UNDP 2009). Using these classifications for 182 countries, 41 fall into a medium HDI category (34% of which are African, including Cameroon), and 13% of countries are categorised by ‘low’ HDIs. The low and medium categories are dominated (84%) by African states. Both non-tropical ends of Africa are much richer than tropical Africa (Bloom *et al.* 1998). The world’s poor live in four places: 12% in low-income fragile states, 16% in stable low-income countries, such as Cameroon, 61% in stable middle-income countries, and 11% in fragile middle-income countries (Sumner 2010). That the ‘new bottom billion’ of poor people (72% of the world’s poor) live in what are classified as middle-income countries, when in 1990, 93% lived in low-income countries, raises major questions for aid and development policy (Summer 2010). Two lines of thought about poverty have thus arisen: one focusing

on income-related categories such as poor and middle-income countries. The other focuses more on politics (Kharas *et al.* 2012), distinguishing between poverty in fragile and stable economies, seeing governance as the main pathway out of poverty by ensuring that public spending is equitably distributed to the poorest, wherever they live. Collier (2007) argues that a new development narrative is needed, focussing on poor people, rather than poor places and going beyond the Millennium Development Goals to address inequality as much as the lack of resources. Widening these measures and creating new metrics of wealth and economic performance that include social progress and environmental aspects (Stiglitz *et al.* 2009), has become the recent mantra guiding policymakers. Major overhauls of national environmental and forestry frameworks and policy in Central Africa were implemented in the 1990s, increasing recognition of the many values of NTFPs, including livelihoods. This has recently led to revised national and regional policies (FAO 2009a). Other livelihood measures seek to capture wellbeing, happiness and sustainability (Zidansek 2007; Frey 2011). However overcoming cultural interpretations of these measures to allow comparisons geographically, across ethnic groups and between rural and urban lifestyles is difficult (Reyes-García *et al.* 2011).

Factors influencing Africa's poverty are many. They include colonial legacies and manipulations, the dependency upon a small number of primary exports with volatile trade markets, internal politics characterised by authoritarianism, corruption[4], instability, economic policies characterised by protectionism, statism and fiscal profligacy, rapid demographic change and social conditions characterised by ethnic divisions, ethnolinguistic and religious diversity and conflict, and low levels of social capital (Meredith 2006; Konings 2009; Dietz 2011). Bloom and colleagues (1998) put the prime cause for poverty in Africa on the 'extraordinary disadvantageous geography' which shapes societies and their interactions with the world. Sachs *et al.* (2004) agree, adding that governance is a problem, but that the challenges run much deeper, proved by countries that are well governed but remain stuck in poverty. Their explanation is that tropical Africa's poverty trap means it is too poor to achieve robust, high levels of economic growth and, in many places, simply too poor to grow at all. Policy and governance reform alone are deemed insufficient to overcome this trap. Bloom (1998) proposes that a 'big push' in public investments is needed to produce an increase in Africa's productivity, both rural and urban. Dietz (2011) provides a more optimistic view of 'the Dark Continent' moving forward and surrounded by a silver lining, drawn from African perceptions and statistical data. Thus commentators have found diverse causations of poverty and wealth, making it difficult to untie cause and effect but highlighting that geography has a strong influence. Focussing further on people and places, the geography of where an actor in a value chain is located in an urban, rural or forested area also has been shown to impact livelihoods and prosperity. The population of the developing world is still more rural than urban: around 55% of the total population lives in rural areas. Although poverty in urban areas is substantial and increasing, global poverty remains predominantly a rural phenomenon. Forecasts estimate a 50% population increase by 2050, with most growth expected in developing countries. Between 2020 and 2025, the total global rural population is expected to peak and then start to decline, when the developing world's urban population will overtake its rural population (International Fund for

[4] Defined as the misuse or abuse of entrusted power for private gain (Transparency International, 2011).

Agricultural Development (IFAD) 2010). Rural ecosystems include forests (see Table 1.1), many of them public commons (see Box 1.6), provide the majority of goods needed for survival, provisioning both urban and rural residents, rich and poor. It is also in these areas where forest governance happens in practice.

Box 1.6 Common goods

A public good – also referred to as commons, common goods, common property, common pool resources, public goods and open-access regimes – is an economic and social concept. It indicates goods which are non-rivalrous and non-excludable, according to criteria of whether their consumption by one person precludes consumption by another (rivalrousness) and whether it is possible to exclude others from consumption of the good i.e. it is available for everyone to use (excludability), exemplified by forests (Hardin 1968). The following definitions are used to distinguish between the terms: a property right is an enforceable quality recognised by an authority to undertake particular actions in specific domains. Rights of access, withdrawal, management, exclusion and alienation can be separately assigned to different individuals and viewed as a cumulative scale from the minimal right of access to possessing full ownership rights. All of these rights may be held by single individuals or collectively. Some attributes of common pool resources are conducive to communal proprietorship or ownership and others are conducive to individual rights to withdrawal, management, exclusion and alienation. Open access property regimes (where no one has the legal right to exclude anyone from using a resource) can be distinguished from common property regimes (better termed common pool) (where the members of a clearly demarked group agree to a right to exclude non-members of that group from using a resource and to limit their individual claims to a resource). These regimes share two economic attributes: (1) it is costly to exclude individuals from using the good either through physical barriers or legal instruments and (2) the benefits consumed by one individual subtract from the benefits available to others. These enable the identification of problems facing individuals when more than one person uses such resources for an extended period of time. Using 'property' to refer to goods reinforces the impression that goods sharing these attributes share the same property regime. For common pool resources and public goods, it is difficult to develop physical or institutional means of excluding beneficiaries (Ostrom 1999a).

The intimate connections between urban and rural spheres continue, with much urban poverty beginning as rural poverty, exported from the countryside through rural-to-urban migration. Equally, rural and urban economies are intertwined through flows of remittances from diaspora in cities both in the same country and internationally, back to family members in the country, up to an approximately 5% share of GDP in 2007 in Cameroon (UNDP 2009). The massive scale of such remittances has been recognised in the last decade, and thus the influence of diaspora on foreign direct investment, markets, technology transfer, philanthropy, tourism, political contributions, knowledge flows, new attitudes and cultural influence. The ability to tap into such remittances has been seen to create a dividing line between poverty and sufficiency (Campbell *et al.* 2002b). Tabuna (2000) highlights how diasporas create new value chains for NTFPs in urban Europe. There is however little data of their precise impacts upon national, urban and rural economies (Sander 2003). This thesis contributes to this gap by quantifying and characterising the urban and rural locations of actors involved in the chain and quantifying their incomes and product turnover.

Mobility between rural and urban areas can help mitigate the worst effects of increasing poverty. In Cameroon, poverty alleviation programmes disproportionately favour rural and semi-urban areas, ignoring rural-urban interplays (Baye 2006). Forest-rural-urban links mean that a neat geographical distinction between forest, rural and urban

poverty can never be completely disentwined. Even when significant proportions of a population move to and live in urban areas and urban-ward migration continues, although these people may be counted as urban residents, they are often still 'present' in rural areas. They remain members of multi-sited households, continuing to participate in rural-urban networks and in rural land-use decisions, and in harvesting NTFPs. Despite their general poverty, such migrants also affect urban markets for forest products for energy, food and construction materials, maintaining rural patterns of consumption and knowledge and affecting the areal extent of forests and forest composition (Padoch 2008). The persistence of such consumption patterns in cities results in increased demand for forest products, creating and maintaining value chains for these products.

High levels of urban migration have, counter-intuitively, been associated with lower pressure on tropical forests. However forest loss has been positively correlated with urban population growth (Robiglio *et al.* 2010), international demand for agricultural products (Ndoye *et al.* 2000; DeFries *et al.* 2010), such as palm oil and cocoa (German *et al.* 2010). These may negatively influence supply but also rural and urban demand for forest products. This suggests that policies to reduce deforestation concentrating on rural populations will not address the main cause. A focus on industrial-scale, export-oriented agricultural and agroforestry production is needed, concomitant with efforts to increase yields in non-forested lands to satisfy demand for agricultural and forest products. These tensions highlight the 'loggerheads' between forest, urban and rural interfaces (Chomitz *et al.* 2007, Ingram 2012a). Chomitz *et al.* distinguish three interfaces (i) forest-agriculture mosaics with forest dwellers, with high production and ecosystem services values, (ii) frontier and disputed areas characterised by agricultural expansion, increasing land values, conflicts over forest use, intensive rural development and access to off-farm employment, and (iii) forests beyond agricultural frontiers, containing, with a low number of forest dwellers and many indigenous people, providing essential services and products for forest, rural and urban populations.

Justification, research objectives and questions

The foregoing section illustrates how the interactions between forests and poverty lead to people taking products from Cameroonian forests – forming a value chain, and that the places where activities in the chain occur are intricately linked, also with the forms of governance arrangements controlling forests, products and people.

Relevance

The persistent and grave issues outlined in this introductory chapter and the numerous proposals in practice and in the literature to address these "wicked problems" by policymakers, development organisations, politicians, business and academics, justify the need for the study of how governance arrangements influence the sustainability of livelihoods based on forest products from Cameroon. This study seeks to be relevant to the theoretical, societal and policy arenas outlined in this chapter. These arenas have driven the objectives of this study and how the research questions have been formulated.

From a theoretical perspective, this study seeks to advance knowledge on forest product value chains, their governance and their values. Whilst theoretical frameworks are well developed for value chains, governance and forest-based livelihoods, the livelihood impacts of non-timber forest product value chains and their governance have not been specifically addressed. The impacts of governance arrangements have not been

explicit in the conservation-livelihoods-development debates concerning NTFPs, except for Ros-Tonen and Kusters (2011). There is no tried and tested holistic valuation methodology for forest product value chains.[5] This research seeks to fill these gaps. Its innovativeness is in taking an interdisciplinary, historical and contemporary approach to forest product values and addressing governance arrangements along the chains. It is the first study to describe and compare governance and market arrangements in NTFP value chains from a major forest region. This study thus attempts to contribute to social science theory by:

- Presenting empirical data on NTFP value chains and their values from economic, environmental and social perspectives.
- Providing a tested methodology for the holistic valuation of NTFP chains.
- Assessing how governance arrangements influence NTFP chains.
- Incorporating development and sustainability further into the value chain concept.

From a societal perspective, concerns have been raised about the over-extraction of some NTFPs, negative impacts on forest ecosystems and sustainability of NTFP trade and livelihoods. As noted earlier in this chapter, there are currently only a few practical, scientifically-credible guidelines for sustainable NTFP harvesting worldwide and none for the Congo Basin. Information enabling chain actors, policymakers, enforcement agencies, development and conservation organisations to improve livelihoods and reduce the environmental impacts of NTFP trade is lacking for Cameroon. This study helps to fill this void, specifically by providing information on:

- Who, how many, and where actors are involved, how they benefit and the values of NTFPs and how these differ for actors and chains – enabling a policy focus;
- If NTFPs provide sustainable livelihoods;
- How governance arrangements affect livelihoods of actors in NTFP chains.

From a policy perspective, the research topic is topical and highly relevant to forestry and development policies in Central Africa and Cameroon. This is demonstrated by the Resolution on Forests for People, Livelihoods and Poverty Eradication adopted at the United Nations Forum on Forests (UNFF9) in February 2011. This resolution called for action to foster the role of forests in contributing to poverty eradication based on sustainable forest management. The 2011 International Year of Forests was used to raise awareness, promote additional government commitments to sustainable forest management and implement a non-legally binding 'Forest Instrument'. Governance is a major concern of governments and NGOs in the region, particularly regarding the transparency, equity and fairness of trade based on indigenous knowledge and biological resources, and their fair compensation. These concerns are exemplified in multi-stakeholder initiatives such as the Forest Governance Facility in Cameroon, the EU Forest Law Enforcement and Governance ministerial processes and Trade Action Plan, and the Convention of Biological Diversity. The United Nations Food and Agriculture Organisation (FAO) and the Central African Commission on Forests (COMIFAC) have lobbied for more coherent links between enforcement regimes for NTFPs. NTFP governance is the subject of policy-focussed work by the Centre for International Forestry Research (CIFOR), World Agroforestry Centre (ICRAF), International Institute for

[5] CERUT-AIDEnvironment (1999) developed a simple methodology but did not test it.

Environment and Development (IIED) and the Netherlands Development Organisation (SNV). This study seeks to inform such decision- and policy-makers, by providing information on:

- The importance of (sustainable) forest products to livelihoods;
- The challenges and opportunities for creating conservation and livelihoods win-wins;
- Governance and policies resulting in sustainable livelihoods and chains.

Objectives

Considering increasing concerns about the sustainability of NTFP trade and livelihoods and its contribution to poverty alleviation, the objectives of this thesis are to enable insights into how governance arrangements and geographical dimensions affect sustainable livelihoods; to contribute to global and national knowledge on forest governance; and to inform stakeholders about constraints and opportunities to improve sustainable livelihoods based on forest product chains.

Research questions

The primary question this research seeks to answer is how governance arrangements in non-timber forest product value chains originating in Cameroon influence sustainable livelihoods. This question is divided in the following sub-questions:

1. In which environmental, livelihood and governance contexts are the NTFP value chains embedded and what trends can be observed?
2. How are NTFP value chains originating in Cameroon configured in terms of products (uses and sources), actors, activities and values?
3. What arrangements are used to govern NTFP chains?
4. How do these governance arrangements impact the livelihoods of actors along the chain and their sustainability?
5. How do these governance arrangements impact chain and product sustainability?

To answer these questions, the value chains of three products originating in Cameroon were selected as cases for in-depth study: eru (*Gnetum* spp.), apiculture products (from *Apis mellifera adansonii* and pygeum *(Prunus africana*). A further five NTFP chains were also analysed: cola (*Cola* spp.), raffia (*Raphia* spp.), bush mango (*Irvingia* spp.), bamboo (*Yushania alpina* and *Oxytenanthera abyssinica*) and gum arabic (*Acacia* spp.). These five allow triangulation of the three cases, add breadth and understanding of the chains and products and allow the influence of contextual factors to be contrasted and compared.

Thesis structure

Part I of this thesis provides an introduction: Chapter 1 has set the scene and objectives, paving the way for the conceptual orientation underpinning the study in Chapter two and research design and methodology in Chapter three. Part II presents the contextual analysis: the results on the context of the study area in which the value chains are set and which shapes governance arrangements and their outcomes. Chapter 4 analyses the forest capital base and Chapter 5 livelihood aspects in terms of socioeconomic and entrepreneurial context. In Part III, the results of the empirical research are presented. Chapter 6 analyses the governance contexts, currently and from a historical perspective. The three in-depth value chain analyses are presented in Chapter's 7 to 9, covering the

Gnetum spp., apiculture and *Prunus africana* value chains respectively. Chapter 10 provides summaries of the analysis of the five additional value chains. Part IV presents the conclusions, comparison and synthesis. The final chapter analyses and summarises how governance arrangements have shaped these chains, answering each research question in turn, presenting the key findings and reflections.

2

Conceptual framework

This section presents the multi- and interdisciplinary embedding and conceptual framework. The concepts used to examine the research themes and subjects (Table 2.1) are introduced and discussed. The main concepts are the sustainable livelihood framework, forest product valuation, governance and institutions and value chains. The connections between these concepts concerning forests, goods, people and places over time and space are explored. A *bricolage*[1] of multiple methods of inquiry and diverse theoretical and philosophical social sciences concepts (Kincheloe 2001) allows an exploration through different lenses, reflecting the reality of the research subject, with different concepts guiding the methods used as well as quantitative and quantitative analysis. Bricolage is also a line of thought on institutional governance (Cleaver 2002), in philosophy and a**n**thropology (Lévi-Strauss 1966), referring to spontaneous action or borrowing of concepts from a heritage: all relevant for this study.

Table 2.1 Disciplinary embedding

Discipline	Themes	Subjects	Research concepts	Research question
Human geography	Poverty alleviation Development	Sustainable livelihoods	Sustainable livelihoods, pro-poor markets, value chains, place-space, social context	1, 4, 5
Economics	Institutional economics	Development, globalisation	Trade-offs, institutions, markets, value chains, capital valuation	1, 2, 3
	Environmental economics	Ecosystem services	Natural & social capital valuation	1, 4
Political science	Governance Political ecology	Governance	Governance, power relations, tenure, commons theories, institutions	3, 4, 5
Law	Pluralism	Law, governance	Legal pluralism, governance	2, 3
Anthropology	History, cultural anthropology	NTFP use, trade	Cultural values, commodification	1, 3
Ecology	Conservation biology	Ecosystem goods, Inventory	Valuation trade-offs conservation & development, forest inventory	1, 4, 5
Botany	Economic botany, Ethnobotany	NTFP use and trade	Product use, socio- cultural values, botanic assessment	1, 4

[1] French for 'fiddle tinker' or do-it-your-selfer making creative use of whatever materials are available to complete a task, regardless of their original purpose.

These foreign expressions and the diverse understandings of concepts depending on the disciplinary background justifies why definitions of the key terms used in this study are provided. Whilst a bricolage approach does not do justice to the disciplines it is necessary, as no one concept or discipline sufficiently embraces all the research questions.

Understanding sustainable livelihoods

To answer the second research question concerning the values of forest products and the fourth and fifth question on livelihoods and sustainability, the sustainable livelihoods approach (SLA) (Scoones 1998) is used. This integrates assets, vulnerability contexts, structures and processes to allow poverty at a household[2] level to be understood holistically (Figure 2.1). A livelihood comprises the capabilities, assets, entitlements and activities required for an acceptable means of living (Ibid.). The SLA originated in the concept of sustainable development, and sees a livelihood as sustainable when it can cope with risks and recover from stresses, shocks and maintain or enhance its capabilities and assets, both now and in the future, while not undermining the natural resource base (Chambers and Conway 1991), building on Brundtland (1987). The SLA is a conceptual analytical framework, a goal and a set of principles guiding interventions of development and conservation actors which makes understanding the philosophy of their approach important. This dual role makes the approach attractive for participatory action research. At the core of the SLA six material and intangible 'capitals' or 'assets' can be distinguished (Scoones 1998; Widner *et al.* 1998; Bebbington 1999):

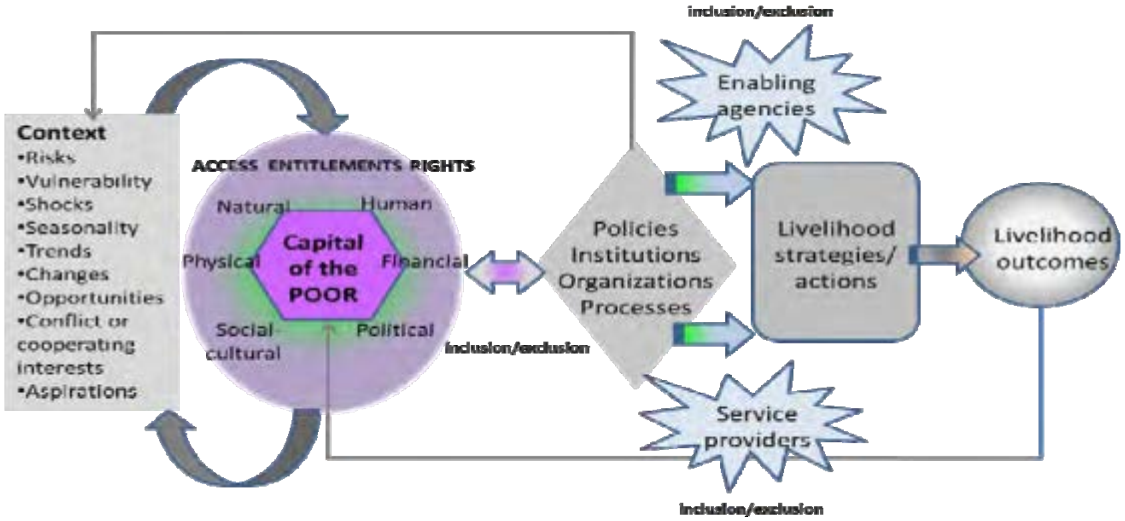
- Human (education, knowledge, skills, labour opportunities, nutrition, health abilities, knowledge, skills, and employment opportunities);
- Natural (forests, water, soil);
- Economic/financial (earnings, money, credit, and financial security (including access to financial provisions from governments such as pensions);
- Social-cultural (community sense, family and social networks, trust, cultural norms);
- Physical (human-made assets such as roads, markets, transportation, schools etc.);
- Political (rights of participation and political empowerment).

These capitals represent building blocks and are to an extent, substitutable. However, this implies an element of choice often not possible in practice. Capital use is a dynamic process, with often unpredictable changes in context, constraints and opportunities, varying across time and space (Farrington *et al.* 1999). The choice of activities and capital building are driven by multiple factors, preferences and priorities, vulnerabilities, shocks, price and resource trends, seasonal variations and access to capital types. NTFPs are forms of natural capital. Many NTFPs are common pool resources (CPRs) (Box 1.6), which are often used as capital by the poor (Ambrose-Oji 2003; Ros-Tonen *et al.* 2005b; Timko *et al.* 2010). This implies that knowledge of the capitals, their abundance or scarcity, and use, is essential to understand the links between poverty and wellbeing. A commodification process (defined as the ways in which 'things' (sic) and social relations are affected by the market) affects values (van Binsbergen 2005) occurs when NTFPs move from subsistence use to commercialisation. The livelihoods of chain actors thus become interlinked through demand and supply interactions. The SLA con-

[2] A household is defined as a group of people (normally family members) living under the same roof and pooling resources (labour and income) (adapted from (CIFOR 2007: 21).

cept provides an alternative view of 'adding value' from the traditional economic perspective, corresponding with a holistic view of 'value' in the concept of value chains. Value is not only economically increased by harvesting, but may change: a product (and the ecosystem it originates from) acquires new and multiple types of capital values derived from the processing, trade and use of the product, for direct and indirect actors.

Figure 2.1 Sustainable livelihoods approach



Source: Adapted from de Haan *et al.* 2005; Townsley 2007.

Policy and institutional arrangements (the central diamond in Figure 2.1 play a transforming role in relationships, determining strategies used, access to capitals, decision-making bodies and power. They affect the terms of exchange between capital types and outcomes of livelihood strategies. They operate at all levels and in all spheres, public and private, and influence how livelihood strategies are achieved. Despite the critical role of these arrangements, the "methods for conducting cost effective, linked policy and institutional analysis at multiple levels are not well developed in the SLA" (DFID 1999). Access to opportunities is governed by socio-cultural relations, institutions and organisations and so rights and entitlements to power are important but often overlooked explanatory variables in the strategic or unintentional exclusion from capitals or inability to optimise them (Dietz 1996; de Haan *et al.* 2005). Analysis of the macro-micro links, formality and institutional factors influencing livelihood outcomes is important (Scoones 1998). An explicit focus on institutions is thus needed to overcome this weakness, which is addressed in the section on Examining institutions.

Understanding and tackling poverty is at the core of the SLA. The many dimensions of poverty highlighted in Chapter 1 indicate the need for a multi-dimensional approach. Focussing on the forest-dependent poor[3] provides insights into how forest products relate to multiple dimensions of poverty (health, education. income, physical safety, em-

[3] Dependence meaning reliance on forests and their products that is difficult or impossible to replace, for a portion of environmental services, subsistence needs, safety net, gap-filler functions and poverty elimination (Sunderlin *et al.* 2005).

ployment and empowerment). For example, material deprivation can be addressed directly by increasing income through access to harvesting, processing and markets. Increased income at the household or community level can in turn improve access to education and health services, enhancing economic opportunities and well-being and reducing vulnerability to social change and environmental stresses. Participatory processes supporting poor people's involvement in decision-making on managing and using forests and NTFPs can foster political empowerment and opportunities for marginalised voices to be heard more broadly (Oberndorf *et al.* 2007). Health is also impacted as forest products are used to meet nutritional and healthcare needs (Colfer 2008; Arnold *et al.* 2011).

Measures of poverty over time in absolute or relative terms commonly use predefined poverty lines to measure and compare composite aspects of poverty such as the human development index (HDI), gross domestic product (GDP) per capita in purchasing power parity US dollars (PPP US$), and the Human Poverty Index (HPI). Human development is broader than any single composite index can measure, making measuring and comparing poverty across geographical populations difficult (Sumner 2010). Nonetheless such measures have been the driving force for assessing the outcomes of SLA interventions. In 2010, the World Bank called for a profound "change [in] how we conduct development research".[4] This reflects a turnaround from assessing development-oriented aid and its effectiveness in addressing persistent poverty. New indicators to meet this challenge have emerged that go beyond classical economic and social measures to embrace wellbeing and livelihoods (Zidansek 2007; Stiglitz *et al.* 2009; van den Bergh 2010; Reyes-García *et al.* 2011), and are relevant to this study.

Assessing the sustainability side of the sustainable livelihoods equation requires an evaluation of the effect of using the natural capital, and if and how the resource is undermined by this use. Such frameworks have developed from the disciplines of economic botany, ethnobotany and forestry in the form of guidelines for the sustainable harvest of wild species (CITES Scientific Authorities 2000; Medicinal Plants Specialist Group 2007). These highlight that the first step is to understand the resource, its population biology and availability (Secretariat of the Convention on Biological Diversity 2001; Newton 2008). A standardised inventory or survey provides a baseline benchmark of the status of the resource at a particular point in time. There is no one universally accepted or used inventory methodology for NTFPs, unlike timber (Baker 2000; Wong 2003b). This is due to the particular characteristics and global diversity of NTFPs and their uses. Such an absence makes it difficult to provide comparable data across ecosystems, cultures, regions and countries and leaves any NTFP inventory open to critiques about its appropriateness and rigour (Ruíz Pérez *et al.* 1999; Tewari 2000; Marshall *et al.* 2003). The participation of local forest-based communities and users in inventories has been advocated (Baker 2000; ETFRN 2000; Lynch 2004; Lawrence *et al.* 2008). This can increase knowledge and ownership of the resulting course of action (Lawrence *et al.* 2001; Lynch 2004; Mbile *et al.* 2005). The second step is to understand how an NTFP is harvested, using observation, mapping, surveys and focus groups (Lawrence *et al.* 2008). The effects of harvesting on a species population depend indirectly on social, economic, ecological and institutional factors and directly on the part(s) harvested,

[4] URL http://www.economist.com/world/international/displaystory.cfm?story_id=17155748&CFID=154527261&CFTOKEN=51027732. Retrieved 31 September 2010.

method, quantity, intensity, frequency and timing of harvesting (Medicinal Plants Specialist Group 2007; Lawrence *et al.* 2008). Ethno-botanical research provides further data on use and the effect of harvesting in a given geographical and cultural context, such as for *Prunus africana* (Stewart 2003; Cunningham 2006a; Stewart 2007a) and *Irvingia* spp. (Ayuk *et al.* 1999; Ainge *et al.* 2001). The third step is to interpret and analyse this data to assess the impact upon the species and possibilities for sustainable harvest and production. The definitions of sustainable forests, products and chains used in this study are provided Box 2.1.

Box 2.1 Sustainable forests, products and chains

Sustainable forest management is the stewardship and use of forests for economic, ecological and social ends, at local, national, and global levels (SMCPF 1993) and refers to "the process of managing forest to achieve clearly specified objectives of management, with regard to the production of a continuous flow of desired forest products and services, without undue reduction in the forest's inherent values and future productivity, and without undue undesirable effects on the physical and social environment", implying continuously satisfying the needs for goods and services provided by forests, supporting the food security and livelihood needs of forest-dependent communities and assuring an equitable sharing of the benefits from forest uses (Blaser *et al.* 2011).

Products are economically sustainable if the value, adjusted for inflation, increases or remains constant. Economic sustainability may not be consistent with ecological sustainability. Over-harvesting may lead to continuing population decline while persistent demand keeps market value constant. As NTFP species populations become depleted and products scarcer, economic returns can increase even when demand remains constant. Scarcity may increase extraction costs, further driving prices upward and reducing demand (Homma *et al.* 1992). With complete resource depletion, there is no sustainability, only local population extinction and eventually species extinction. Economically, the effects of unsustainable extraction take a long time to be detected, especially for long-lived species. Ecologically, extraction is sustainable if the harvest has no long-term deleterious effect on the reproduction and regeneration of populations being harvested in comparison to equivalent non-harvested natural populations and if there is no discernible adverse effect on other species in the community, or on ecosystem structure and function. These effects can be determined by comparing harvested to un-harvested systems ((Hall *et al.* 1993). Going further than extraction, a product can be deemed sustainable when the species from which it is derived can be extracted without undermining the natural resource base (ecosystem) and the resulting products have either neutral or positive environmental, social and economic benefits through its life cycle or value chain.

For sustainable chains, the focus is on sustainability throughout a product's life cycle. Different interpretations of sustainability are apparent. From an enterprise's perspective, a sustainable chain is the strategic, transparent, integrated, systemic coordination of key inter-organisational business processes to improve the long-term economic, social and environmental performance of a company and its chain (Carter *et al.* 2008). In contrast, Kaplinsky (2000) suggests that chains, particularly global ones, are sustainable when they provide for sustainable and equitable income growth – referring to financial capital. Ponte (2004) and Vurro *et al.* (2009), although not explicitly defining the term, indicate that sustainable chains are those where sustainable practices taking account of ethical, economic, social (labour, contractor, and community) and environmental impacts are integrated into the management and governance of a chain by enterprises and/or on a sectoral or industry level. These may be demonstrated by standards and codes.

These definitions highlight two main disciplinary perspectives: sustainability of natural, social and financial capital, and that sustainability can be interpreted from a product, firm, sectoral, or chain viewpoint, as well as from the direct and indirect chains actor's (i.e. state, development organisations, standard or certification organisations and communities) viewpoints. There may also be implicit trade-offs at policy level between livelihood needs, where normative, political judgements of equitable benefit sharing are inevitable.

The SLA highlights that to achieve sustainability, stocks of the various capitals need to be maintained (Adams 2009). In practice trade-offs are made, explicitly and often implicitly, particularly in the short term. In situations where populations are vulnerable to poverty, such as in mountainous (Ellis-Jones 1999) and forested areas (Ndoye *et al.* 2004), trade-offs between natural capital use can lead to increases in poverty and decreases in biodiversity in the long term. Much debate has focused on how to limit the degradation of natural capital whilst increasing, or at least not constraining, economic growth (Barbier 2000). Studies on the trade-offs between conservation and development based on NTFPs have highlighted that it is extremely difficult to achieve a balance, known as a 'win-win' (Kusters 2009; McShane *et al.* 2011). Only in 9% of 55 NTFP cases were positive livelihood outcomes also equated with positive conservation outcomes (Kusters *et al.* 2006). The indictors and variables used in Kusters' study provide a starting point for exploring the interactions between development based on NTFP trade and sustainable livelihoods. The complexity of the outcomes of interactions depends not only on individual strategies and market conditions, but also on strategies chosen by others to maximise the rewards of group(s) of interacting decision makers.

The term win-win situation, derived from economic game theory, is a situation by which cooperation, compromise, or group participation leads to all participants benefiting. The rational outcome of a game is phrased in terms of 'win' and 'loose' and the institutional, socio-economic or policy factors associated which affect outcomes (Persha *et al.* 2011). Laboratory-based 'games' popular in testing common pool natural resources are impractical for value chain studies given the dispersed geographical nature of actors and institutions in the 'game'. However, exploring the 'rules of the game' (Ostrom *et al.* 1994) is practical for value chains**.**

The SLA acknowledges the importance of politics and policies in shaping livelihoods of the poor. However, how policies and politics condition opportunities is poorly understood, because the SLA reflects livelihoods at a micro level (Pasteur 2001). This limits a full understanding of NTFP chains, as these extend from individual and household level to collective and macro levels. To resolve this gap an analytical approach incorporating livelihood pathways, policy and politics as a dynamic and iterative process can be used (Pasteur 2001; Blaikie *et al.* 2001; Brons *et al.* 2007). This highlights the importance of analysing policy and people/policy interactions. Political ecology explicitly politicises environmental issues and phenomena, and can be used to examine the relationships between political, economic and social factors and actors with environmental issues and changes (Bryant *et al.* 1997). By analysing conflicts over resources and their links to the larger political-economic processes and environment-development discourses, control over natural resources on various scales can be shown (Dietz 1996). Although local livelihood strategies are given special weight in the SLA, forest uses cannot be understood within narrow boundaries. This is particularly relevant when a value chain approach is used to examine livelihoods, as global practices affect local forest use practices. Political ecology's broad scope, interdisciplinary nature and attention to multi-scalar linkages are suitable for this study. Bryant & Bailey's (1997) thoughts on relationships provide a useful guide. These are threefold: that costs and benefits associated with environmental changes are unequally distributed, affecting society in a heterogeneous way such that political, social and economic differences (between people, over nature, over other people) account for uneven distribution of costs and benefits. This unequal distribution inevitably reinforces or reduces existing social and economic inequalities with any change in environmental conditions affecting the political and economic status quo.

The unequal distribution of costs and benefits and the impact on pre-existing inequalities has political implications in terms of the resulting altered power relationships. Thus the relationship between poverty and environmental degradation can be seen as a function of uneven access to environmental resources. Multi-level connections between local and global phenomena, with causes at multiple levels of scale are highlighted (Adams 2009). Political driving forces at various scales have been found to play a significant role in local level institutional functioning. In particular, inappropriate state-led interventions into land-use planning can weaken local level institutions and reduce the ability of the linked social-ecological system to cope with change and uncertainty (Cundill *et al.* 2010). Thus for this study, perceptions of power and access to it, and control over resources by actors at different levels in value chains and resulting costs and benefits, is relevant. Mixed methods (see Chapter 3) help triangulate results to produce narratives capturing differences in access to, control over and local knowledge of resources particularly for sensitive and marginalised groups (Nightingale 2003).

Unpacking forest product values

To answer the second question about configurations of activities and values in chains, the nature of forest product values can be unravelled using different concepts. The term forest product has multiple meanings. Economic metrics are one of the most common ways to measure value. However, the value of a product may also be, social, cultural and/or environmental and can be understood holistically in terms of its contribution to people's livelihoods and wellbeing.

The Millennium Ecosystem Assessment (MEA) provides a framework explaining the provisioning functions of forests and how these are linked to wellbeing (Millennium Ecosystem Assessment 2005) and incorporates many of the livelihoods capitals mentioned in the SLA. The MEA posits that people are integral in ecosystems (as emphasised in the definition of forests in Box 1.2) and that a dynamic interaction exists between people and ecosystems. The changing human condition drives, directly and indirectly, ecosystem changes and thereby causes changes in human wellbeing. In parallel, social, economic and cultural factors unrelated to ecosystems alter the human condition and many natural forces influence ecosystems. Despite this explicit link between products from ecosystem (such as NTFPs) and well-being, the MEA does not provide methods for evaluating these apart from economic values, although intrinsic, spiritual and cultural non-market values are mentioned. It does however advocate that non-market values are incorporated into resource management decisions (Millennium Ecosystem Assessment 2005).

Economics provides a range of concepts to value products. The most well-known are product prices and margins, calculated at the stages of when value is added. These allow monetary valuation of a product, its market or chain, of product profitability and fixed, variable and labour costs (Marshall *et al.* 2006a; Jensen 2009). Economic value is related to market type (defined in Box 2.2), which is related to power and control (and thus governance) of chains, and implies that understanding the market structures in chains is essential (ILO 2006). Forest products values have been mainly measured by their actual or potential economic value (Peters *et al.* 1989; Angelsen *et al.* 2011b). In Central Africa, values have been largely unrecorded in national statistics because their subsistence (non-market value) and local market value is difficult to determine and measure (Vantomme 2003). The MEA emphasizes that many non-market values contribute to

well-being by maintaining health (e.g. medicines and food), providing a wide range of basic materials, resources and rents (e.g. access rights and income from forest products); increasing forest production values (e.g. payment for environmental services); and maintaining social relations – for example cola nuts used during religious and significant life events (Sunderland *et al.* 2004c). The trade-offs between provisioning services – from which NTFPs result – and regulating and cultural ecosystem services have been highlighted (Raudsepp-Hearne *et al.* 2010).

Box 2.2 Markets

A market is defined here in the broad sense as to offer for sale or to sell and as verb, meaning;

- A public gathering held for the transaction (buying and selling) merchandise or services i.e. *Marché Central, Yaoundé.*
- A physical or non-physical place (i.e. internet) where products are offered for sale.
- A shop selling a particular type of merchandise i.e. The Body Shop.
- The business of buying and selling a specified commodity: i.e. the honey market.
- A geographic region considered as a place for sales: i.e. safou for the foreign market; the Central African market.
- A subdivision of a population considered as buyers: i.e. honey cosmetics for the upscale market.
- The opportunity to buy or sell and demand for products: i.e. *a* big market for organic foods.

For a potential transaction to take place, buyers must offer something in exchange (usually money, but can be goods or services (i.e. barter or exchange) for there to be a transaction. Market value is thus the actual monetary price that a buyer pays a seller for a product.

A monopoly refers to a situation in which an individual or enterprise has sufficient control over a particular product to determine the terms on which others have access to it and the selling price. They are characterised by a lack of economic competition to produce the good and a lack of viable substitute goods. A monopsony is a single entity's control over a market to purchase a good or service, and an oligopoly is where a few entities exert considerable influence over an industry and its products.

Source :http://economics.about.com/cs/economicsglossary/g/market.htm. Retrieved 10 September 2010.

Four types of NTFP markets in the humid forest zone of Cameroon have been characterised (see Box 2.3). Prices are important economic measures, but may say more about particular market dynamics than the product or its importance to livelihoods. Other ways of valuing products include consumer preferences (Bishop 1998; Bush *et al.* 2004; DEFRA 2007), substitution alternatives (van Dorp *et al.* 1998; Ruiz-Pérez *et al.* 2004; Riisgaard *et al.* 2008) and access to alternatives to determine the safety-net function (Paumgarten 2007). Market values can be understood not simply as momentary quantitative measurements of opportunity costs, but also as social processes in which people continually assess present circumstances and options in terms of their understandings of the past. As history can be read in more than one way, market values can be ambiguous. Economic history however can be used to chronicle the responses to local and global forces and human needs over time, with taking an anthropological perspective, allows reflection on how people and events come together in economically enabling or destructive ways in particular times and places (Berry 2007).

Box 2.3 NTFP markets

The spatial characteristics of buying zones and selling areas and associated with volumes, prices, product types and dependence have been classified as follows (Ruíz Pérez *et al.* 2000):
Type I: Small, local markets with a high level of self-sufficiency and proximity to supply zones, high levels of local supply and exchange, suppliers for regional and national markets.
Type II: Medium-sized markets of regional importance, medium level of self-sufficiency, secondary nodes for type I and intermediate markets and bulking points for type III markets.
Type III: Large urban markets with national projection, large product range, weak self-sufficiency, reliance on close and far supply areas, type I & II hubs.
Type IV: Frontier markets with small to high value transactions, high dependence on supply from other areas and specialisation in high volume products.

Financial value includes market-priced costs and returns from activities, while economic value includes non-marketed returns (i.e. household consumption) and opportunity costs which may impact capitals. Chapter 1 highlighted that different interpretations of value make it impossible to provide a single measure of the worth of a product to livelihoods. However, different measures of social-cultural, economic and environmental value provide a broader framework to understand values (van Dorp *et al.* 1998; Donovan *et al.* 2009; Shayoh *et al.* undated). Sheil & Wunder (2002) reinforce this, stating that value is not the inherent property of an entity, but a measure of a relationship between a subject and the object of valuation within a specific time frame and geographical context. This implies balances between individual versus societal perspectives and normative judgments about which outcomes are socially preferable (Costanza *et al.* 1997). NTFPs often have multiple parts, uses and processing routes, resulting in different products, values and chains originating from the same species and ecosystem source. In classical value chain analysis, processing adds value. However a high level of transformation does not always result in a higher product value, as value can be added by consumer perceptions based on historical, cultural and religious significance and origin (Jensen 2009).The implications for this study are that while economic indicators of value remain important, composite measures of NTFP values by the research subjects are also needed. Examples of such indicators are the Poverty Environment Network (PEN) methodology (Lee 2012), the NTFP conservation-development trade-off model (Kusters *et al.* 2006) and the Institutional Analysis and Development Framework (IFRI 2008). These consider different capitals and link individual and household levels to community and society level.

The ability and desirability of compensating for degraded natural capital depends on how capitals are valued, as trade-offs can be made explicit if the values are comparable and external environmental costs are explicitly included in the price of a good. This is difficult for some intrinsic values, which are essentially philosophical, and for non-substitutable values of some natural capitals. While economic value can be used for products subject to monetary exchange, it does not realistically capture barter or exchange, or the value of products auto-consumed. Economic values may also not take account of other costs even though they have a monetary value – such as labour (Luckert *et al.* 2002). Economists' attempts to capture natural capital values have used potential value based on inventories (Peters *et al.* 1989). Padoch & de Jong (1989) emphasise that realised production is a more realistic indicator of economic value, and is generally much lower than potential production. The Peters *et al*. study also highlighted that sample location and extrapolation needs to be carefully delineated, with assump-

tions made explicit. Local markets often have highly elastic prices related to demand and supply – caused by seasonal product availability, such that unit prices and extraction revenues habitually fall with an increased supply of forest products, which does not necessarily reflect problems with decreasing resource availability, often until too late. An example is the economic value of threatened NTFPs[5]. Levels of threat can be based on local perceptions or scientific assessment, such as the IUCN Red Data listing, CITES status or national schemes of protected species. Threat may – or may not – be reflected in market prices, for example, the costs of complying with permit and monitoring requirements and enforcement activities. Products without a market value due to autoconsumption or bartering can use proxies such as distance to the market – which affects how people use forests now (Godoy *et al.* 2002). Financial value is generally stated in only the local currency (Ndoye *et al.* 1997/98; Ruiz-Pérez *et al.* 2004), saying little about value in comparison to other countries or regions, or relative value to other products. When converting to a common currency, exchange rates and value fluctuations over time need to be made explicit (Smith *et al.* 1998; van Dorp *et al.* 2001; Sheil *et al.* 2002). Values also need to be placed in a local economic and social context (Kambewa *et al.* 2007) and the allocation, scale and distribution of resource flows clarified (Daly *et al.* 1996).

Getting to grips with governance

To answer the third research question about governance arrangements and subsequently the fourth and fifth questions of how they affect livelihoods and sustainability, concepts on governance are used. Governance is a multidisciplinary, multi-faceted normative and subjective concept which has emerged over the last 15 years, with theories (Pierre 2000) and practice grounded in development and politics. For this research, the definition used (Box 1.3) emphasises that governance embraces the decisions and processes that define expectations, grant and exercise power[6], and/or verify performance. It stresses the role of the state, private sector and civil society as a multi-stakeholder practice and process, moving away from equating governance only with government, in all its manifestations. Governance occurs at different policy and administrative levels, embracing stakeholder diversity in interests, perceptions and ambitions (Kooiman *et al.* 2008). Government, particularly at meso and micro levels can strongly influence daily lives, particularly of poor people (Cleaver *et al.* 2005). Remote highland and forest areas, and fragile states in contrast are marked by state absence (Scott 2009). This broad definition reflects the realities of the research subject and area.

The term governance arrangement, used in preference to Kooiman & Bavinck's (2005) 'governance system' (the semantic difference highlighting that an arrangement may not always be an integrated whole, as the term system implies), describes the interplay of interactions, institutions, actors, principles, policies, mechanisms and processes. Explanatory variables of governance outcomes include the characteristics of the resource and of products, users, institutional arrangements, the external environment, availability of necessary information, ability to deal with conflict, compliance with

[5] NTFPs from species which are, or could be, threatened with extinction at a population or national level, in particular because of their nature, the frequency of their exploitation or an ecological factor.

[6] Power is defined as the possession of control, authority or influence over others and the ability to enforce wishes when opposed, including when livelihoods are threatened.

rules, provision of technical, institutional and physical infrastructure, and ability to adapt and change (Agrawal 2007). Links between governance, sustainable development and poverty alleviation were made at the 1997 International Conference on Governance for Sustainable Growth and Equity and subsequently to forests (Kaimowitz 2003; Ros-Tonen *et al.* 2011). Kooiman *et al.* (2008) reiterate the growing consensus about how governance impacts sustainable livelihoods and that societal change through 'learning to adapt' plays an important role in improving governance. Thus creating and maintaining institutions are not 'given', with sudden or planned events acting as change agents. The governors managing the rules are key figures whose function and relationship need to be considered. The norms, values and principles shaping institutions mean that these need to be examined, including the legitimacy of the institutions, principles guiding the acceptability of institutions and coherence between the three 'orders' (i.e. day-to-day management, institutions and norms and values that shape them) (Kooiman *et al.* 2005). The interaction process involves a 'system-to-be governed' and a 'governing system' or arrangements. The relationships and interactions between the two constitute the governance interactions affecting the natural system and setting limits to resource users' potential (Kooiman *et al.* 2005).

Governance consists of separate processes and/or as part of management or leadership processes. Often used as a synonym for management, it is different: management is the act or art of managing (conducting or supervising) something and the judicious allocation of resources to achieve specific objectives. It involves decision-making processes related to resources, carried out within administrative boundaries by specific groups (for example, managers of an enterprise). Management requires interaction by managers with stakeholders to achieve outputs, whilst governance describes the interactions between stakeholders to achieve outcomes. Management can be planned and implemented; governance evolves from political relationships of different societal groups. Governance sets out the framework in which management can thrive (Ros-Tonen *et al.* 2008).

Recognising the impact of governance on development and for sustainable natural resource management, 'good' governance has often (implicitly) been assumed to be pro-poor governance (Brown *et al.* 2003). Good governance assumes that development objectives such as the millennium development goals can be attained as a way of 'doing things better' (Cleaver *et al.* 2005). This normative expression has led to principles reflecting the value-laden norms and judgements of stakeholders from specific cultural settings (Box 2.4). Kishor and Rosenbaum (2012) offer a framework with a sample set of many of these indicators and guide for how to measure them. Good governance principles have been promulgated by influential political and development organisations such as the United Nations, World Bank and OECD. Principles have focused on ensuring respect for human rights and the rule of law, democracy and the representativeness of governments, and the (in) efficiency of non-market systems (Weiss 2000). Though generally accepted by many countries and organisations – highlighted by the consensus of terms used – these principles remain ambitious and have been contested. A contention is that the good governance agenda is based on am incomplete or partial understanding of governance, using an abstract set of principles lacking contextualisation and localisation to understand how governance processes are shaped and influenced (Cleaver & Franks 2005).

Box 2.4 Governance indicators

- *Accountability:* individual or collective actor(s) who have account to other actor(s) or institution(s), who dependent upon their appreciation, can impose negative or positive consequences on the former. Involves democratic accountability, human rights and civil liberties, government censorship, institutional permanence and representativeness.
- *Voice/citizen/private sector participation/voice/engagement:* influence in decision-making that affects livelihoods – built on concepts of freedom of association and speech, civicness (right to vote & be voted) and the right for all to have a voice in decision-making, either directly or through legitimate intermediate institutions representing their intentions.
- *Political stability and absence of violence:* Degree of decline of central political authority threatening to political stability and degree to which armed protest/unrest/conflict/terrorist threat/extremism or political protest/rebellion threatens political stability, including extent of which conflict management mechanisms are in place (World Bank 2009).
- *Government effectiveness*: competence of the bureaucracy and the quality of public service delivery. It also covers efficiency, i.e. the extent to which limited human, financial and natural resources are allocated without unnecessary waste, delay or corruption.
- *Regulatory and policy existence and quality:* incidence of market unfriendly policies, burdensome administrative regulations, unfair competitive practices, tax effectiveness and riskiness of investment and regulatory enabling environment, inclusion of non-market and socio-cultural (including indigenous) values and resource assessment requirement in policies and regulations, extent of conflicts between legal (and informal) rights.
- *Safety and rule of law:* consistency, clarity, strength and impartiality of the legal system, popular observance of the law and perceptions of the state as legitimately representing its citizens, levels, losses and costs of crime, legal safeguards, quality of contract enforcement and performance of police and courts (including the independence of the judiciary). It covers fairness (degree to which rules are applied equally in society) and decency (degree to which formulation and stewardship of rules avoids humiliating or harming people).
- *Control of corruption:* severity of corruption within state and business systems, public trust in financial honesty of politicians, levels of red tape, losses and costs of corruption.
- *Sustainable economic opportunity:* Public and private management of the economy including quality of management, currency, inflation and debt ratios, competitive environment, investment climate, quality and access to infrastructure, environmental sustainability including role of environment in policy, regulatory framework resources for rural development and dialog between government and rural organisations.
- *Human development:* extent to which leaders and public have a 'strategic vision' a broad and long-term perspective on good governance and human development, along with a sense of what is needed for such development, specifically relating to health, welfare, education, taking account of historical, cultural and social contexts.
- *Fairness & equity:* the degree to which societal groups have access to needed resources/decision-making to improve their well-being. Equity refers to rights and duties and infers that states undertake necessary measures to realise rights to development and ensure equality of opportunity for all in the access and control of basic resources and livelihood assets. The historical context is critical in determining equity.
- *Transparency:* the degree of clarity and openness in decision-making, in political parties, information provision by the government and freedom of the media.
- *Decency:* encompasses human rights and freedom of expression, peaceful competition for political power, personal security of citizens, mutual respect between citizens and civil servants and government's respect for property rights.
- *Legitimacy:* the moral grounding of power, involving social and cultural norms and expectations concerning behaviour of those governing, the social relationship between rulers and the ruled, trust, reputation and force and balance between authority and obeisance. Legitimate institutions enable voice in decision-making and representation.
- *Efficiency and effectiveness:* processes and institutions produce results that meet needs while making the best use of available resources. Implies a legislative function affecting policy, merit based systems in government and efficient judicial systems.

Sources: (Graham *et al.* 2003; Hyden *et al.* 2008; Ibrahim Foundation 2010; Kaufmann *et al.* 2007; Kishor and Rosenbaum 2012; Ribot *et al.* 2008; World Bank 2010a).

Grindle (2004) criticises the 'good governance' agenda as unrealistic, overly demanding and lacking priority setting. She suggests instead 'good-enough' governance, where governance is a learning process sensitive to existing capabilities and contexts. Jabeen (2007) argues that good governance is not universal and needs to be embedded in its cultural context. Governance outcomes can be 'bad' as well as 'good' for certain groups in society (Cleaver *et al.* 2005), indicating that a focus on the impact of outcomes for different actors of interventions is important. Bodegom and Klaver (2007), Klaver (2009) and Wollenberg (2001) show that local good governance definitions however can be developed by multiple actors to embrace diverse perspectives and norms. Bodegom and Klaver asked the Central African Forest Commission's (COMIFAC) Task Force on Forest Law Enforcement, Governance and Trade (FLEGT) to formulate good governance principles. They included being accountable at all levels; transparency and legitimacy towards constituencies; equity and equitable sharing of forest revenues and costs; respect for all stakeholders and promotion of the public interest; justice, sanctions and fighting corruption; information, education and communication; decentralisation of forest management and decision-making; respect for the rights and traditions of local and indigenous people; enforcement of laws and other rules and regulations; and improving forest monitoring and control systems.

Forest governance combines notions of process with resource characteristics and can be defined as the informed and faithful representation by decision makers (both government and non-government) of their constituency interests towards the efficient allocation and use of scarce forest resources for both the local, national and international good (Macqueen *et al.* 2004). Although rather top-down and hierarchical, this definition highlights three related elements of the processes through which governments, custodians and representatives are informed about and interpret the priorities of their constituency (including conflicts of interest); the process by which forest resources are securely and transparently distributed and used in line with local, national and international priorities (including negotiated trade-offs); and the process by which the agreed distribution of economic, social and forest goods and services are monitored and reviewed (including what is and is not enforceable). Kooiman & Bavinck's (2005) definition of interactive governance applied to forest governance stresses that other, non-government actors in forests can also take a lead in governance (Derkyi 2012).

Tenure consists of bundles of rights that include access, withdrawal, management, exclusion and alienation (Schlager *et al.* 1992), which may be held by different people at different times and relates to land but also to NTFP species and the products derived from them. Fortmann (1985) distinguishes between rights to own or inherit trees, to plant and use trees and tree products and to dispose of them. While influencing each other, land and tree tenure do not always coincide (Fortmann *et al.* 1988). Tenure is also important in determining who benefits or loses in competition for the goods and services provided by forests. Tenure systems can determine the outcomes of governance arrangements (Larson *et al.* 2010b), including in Central Africa (ITTO 2009b). Tenure signifies who owns and can use what resources for how long, and under what conditions. Customary tenure systems are determined locally and often based on oral agreements. Statutory tenure systems are applied by governments, codified in law. Secure forest tenure can provide a foundation for social identity, personal security and cultural survival of forest–based indigenous peoples and ethnic minorities. Tenure security can be a prerequisite for (formal) capital investment, while conversely conflicts over tenure can discourage investment, undermine management and may constrain capital accumu-

lation and returns. Duration, assurance, robustness and exclusivity have been identified as the main legal elements for secure tenure arrangements (Baye 2008). Clarifying tenure rights can mitigate insecurities impinging on poor people's access to forest resources (Wiersum *et al.* 2005). The reasons for insecurity vary: people may have customary and statutory tenure rights, but be unable to oppose claims made by outsiders. Customary arrangements may be clear and accepted locally, but contradicted or nullified by statutory arrangements, or unable to serve their function (outdated, unenforced etc.). This implies that tenure holders have assurance that they can benefit from returns on their investments without interference. Tenure security can also motivate forest protection, destruction or conversion. Evidence shows that devolving tenure and management authority to local communities and households, under certain conditions, can foster improved forest conditions (Sunderlin *et al.* 2008a; Larson *et al.* 2010b). An understanding of tenure issues and trends is thus an essential component of sustainable livelihoods (Alden Wily 2006). Kusters (2009) also showed that perceived (rather than factual) security promotes investments in agroforestry hence sustainable practices. Decentralisation, devolution, privatisation and community-based forest management have induced rapid changes in forest ownership patterns and increasingly complex stakeholder relations (FAO 2009c; Hatcher *et al.* 2009).

The echelons of rights concept (Boelens 2009) stresses how rules and rights cannot act on their own but are enforced and shaped by social forces, beyond the formal, creating practice and process, highlighting the often pluralist nature of rights. Sustainable forest management (see Box 2.1) has been associated with institutions fitting the local context, monitoring and enforcement and secure rights (Tucker 2010). As formal forest ownership in Cameroon is largely vested in the state (shown in Table 1.1), this raises questions about the tenure, regulation of access to and control of resources – all of which have been shown to influence how product chains are arranged and values derived (Barry *et al.* 2008; Larson *et al.* 2010b). They also influence the sustainability of the product and ecosystem it originates from and ecosystem resilience (Dietz *et al.* 2003; Weiland *et al.* 2010). Four resource-related rights have been emphasised: rights to access, infrastructure and materials; rules (the formulation and contents of rights, obligations and operational rules regarding management of the resource; regulatory control); authority and legitimacy to establish and enforce rules and rights; and regimes of representation (the discourses and ontologies that inform or challenge resources). The echelons of rights concept highlights how conflicts occur over the material control of resources and rights to define, politically organise and discursively shape their existence. Struggles over rights may simultaneously concern resources and the legitimacy to formulate and enforce rights as individuals or organisations. This political ecology approach and attention to conflicts echoes Tsing's work on how friction shapes change (2004).

Collective action concerns the combined efforts of more than one person in order to achieve a common goal (Ostrom 2004). Different organisational structures are possible such as cooperatives, informal organisations, associations and private companies (Penrose-Buckley 2007; Bernard *et al.* 2008). In forest exploitation and management such organisations have been shown to be feasible when people can cooperate and develop rules, incentives and sanctions, monitoring and enforcement mechanisms (Komarudin *et al.* 2006; Ostrom 2009; Rustagi *et al.* 2010; Singh *et al.* 2010). Cooperation and conflict shape these interactions, with the level of conditional cooperation within groups correlated with an increased likelihood of successfully managing forest com-

mons, including ‘costly’ cooperation enforcement (Rustagi *et al.* 2010; Vollan *et al.* 2010). Participation rights for local forest users in rulemaking is a key factor in getting win-win trade-off outcomes, with greater likelihood of a forest being below average for both subsistence livelihoods and biodiversity when local forest users do not have this right (Persha *et al.* 2011). Collective action can empower individual and group chain actors to ensure and assert control over resources, resulting in higher profits, property and access (Mwangi *et al.* 2007; Donovan *et al.* 2008; Seixas 2010). Collective action and cooperation is not a given: the prisoner's dilemma refers to the paradox that individually rational strategies lead to collectively irrational outcomes, challenging the notion that people will cooperate on natural resource management and are rational creatures (Ostrom 1988). Factors such as reciprocity, trust and shared knowledge structure appear critical to overcome such dilemmas (Ansell *et al*. 2008; Ostrom 1988; Vollan & Ostrom 2010).

However, creating the conditions that facilitate self-organisation and particularly cross-scale institutional linkages is a major challenge, particularly when co-management or pluralistic governance arrangements prevail. Factors such as community perceptions of support from outside agencies, access to long-term funding for adaptive decision-making, access to reliable information about changes in resources and legal options for forming decision-making bodies with long-term and well-funded social facilitation are important (Cundill *et al.* 2010). Exploring these features in the interactions by individuals and organisations is thus important.

Examining institutions

To answer the third research question about governance arrangements and subsequently the fourth and fifth questions of how they affect livelihoods and sustainability, the SLA, collective action and governance concepts are used, all of which focus on the role of institutions. Theories of institutions (Hayek 1945; Schmitt 1996) have disciplinary underpinnings in anthropology, economics and political science and have been applied to environmental resources increasingly in the last two decades (Ostrom 1999, Young 2007). In the absence of one universally accepted definition, this study refers to an institution as the formal and informal norms, rules, procedures and processes defining how individuals interrelate, act and make decisions within and outside of organisations. Institutions may not be clearly defined or static in terms of time or space, can be formal or informal and are interlinked with issues of knowledge, power and control. Leach *et al.* (1999) emphasise that informal institutions are upheld by socially shared usually unwritten rules, created and enforced among the actors involved (Arnold and Perez 2001). Formal institutions include rules enforced by outside third parties, such as laws. Informal and formal institutions guide interactions, assign roles and influence rights and access to resources and resulting livelihood strategies (North 1990, Scoones 1998, Young 2007). Institutions shape access to resources, the demand for resources in rural (and urban) livelihoods, the dynamic interactions between social and natural systems, and interactions between social and natural systems across scales of analysis (Agrawal *et al.* 1997). Institutions are critical in regulating uses and trade-offs between capitals and key to achieving sustainability (Levin 2009). They also shape access for different actors at different scales to markets (Gereffi *et al.* 1994; Raikes *et al.* 2000). Operative norms,

incentives, rules-in-practice and representations such as organisation charts can help identify an institution[7]. Institutions are important in perpetuating or changing insecurity and inequity. The combination of institutional arrangements, market forces, political change and demographic pressures on natural resource management 'matters', as people, ecosystems and species can become (more) vulnerable when these overlap:

> The manner in which communities create, follow, and break formal and informal rules regarding the resources they control, the extent to which their autonomy of action is constrained, modulated, and facilitated by their interactions with the state, and the internal differentiation within communities along gender, case, and class dimensions are critical to understanding how resources will be used. (Agrawal *et al.* 1997-7).

Institutions are different from organisations. The term organisation is used here to refer to a group, association, agency or firm as a structure of recognised and accepted roles or positions ordered in some relationship to each other to achieve specified goals. In an organisation, the structure of positions can influence or reinforce operative norms or practices. Government, donor policies and customary norms can change organisation structure. Thus organisations provide a framework in which processes and procedures are played out, but these processes and procedures can also change the structure of organisations (Bingen 2000). Organisations matter in sustainable livelihoods. For example, government services – whether decentralised, de-concentrated or devolved – determine the autonomy and authority with which organisations act, and thereby directly impact people's livelihood strategies. There are dynamic interrelationships that exist between organisations and institutions. They can be seen as both enabling (providing means through which people negotiate their ways through the world) and constraining (providing rules for action) (Bingen 2000).

The SLA stresses processes and dynamics and institutions as the products of social and political practices (Mehta *et al.* 2001). Institutions can favour or constrain sustainable livelihoods, as they embrace two important elements: the rules and normative frame conditions that govern social interactions and the way in which organisations operate in both the public and private sector, based on explicit and implicit values. Political participation, market systems, concepts of social orders (such as tribes, clans, etc.) belong to this field of investigation. Institutions – their policies and processes – are however not stand-alone factors either supporting or constraining livelihoods, as they are embedded in the context: risks and vulnerabilities, opportunities and enabling agencies and services and service providers, shown in Figure 2.1. This highlights that an understanding of these the contexts (presented in Chapters 4 and 5) is as important as understanding the institutions. How institutions are designed impacts the many management and governance challenges posed by common pool resources as social spaces where local values attached to resources are institutionally mediated, politically nuanced, economically interpreted and historically situated. Ostrom's (1990) work has resulted in eight empirically well-supported institutional design principles. They however miss local and external socio-economic contexts and the polycentric, multi-level dynamics between local institutions and other governance scales (Andersson *et al.* 2008). Other factors influencing institutional outcomes include the size of user groups, heterogeneity within or between user groups, the government regime within which users operate and interactions between biophysical and institutional variables (Cox *et al.* 2010). Dietz *et al.* (2003)

[7] As these norms endure over time an 'organisation' becomes 'institutionalised'.

also emphasise the impact of variety and mixture of institutional types, highlighting that connections are needed to inform, deal with conflict, provide physical, technical and institutional infrastructure and encourage change. Agrawal *et al.* (2008) add that the strength and durability of institutions is significant in explaining the success of institutions governing commons. Summarised in Box 2.5, these ten principles provide a framework for analysing institutions. Complying with all, to have robust institutions, is however virtually impossible, indicated by the difficulties in achieving good governance and proposition for 'good enough governance' (Grindle 2004).

Box 2.5 Institutional design principles

1. Clear, well-defined boundaries of legitimate individual/household/collective users, their rights and of CPR boundaries.
2. Congruence between appropriation and provision rules and conditions, with rules adapted to local social and environmental conditions and benefits proportional to inputs.
3. Collective-choice arrangements: most interested and affected parties can participate in developing and modifying operational rules.
4. Present and active monitoring of users' compliance with appropriation and provision rules by accountable monitors, with resource monitors being accountable to users
5. Appropriators violating operational rules likely to be assessed against context-dependent graduated sanctions by appropriators, accountable to these appropriators, or both.
6. Rapid, low cost, accessible conflict-resolution mechanisms/arenas exist among appropriators or between appropriators and officials.
7. Minimal recognition of rights to organise and devise their own institutions.
8. Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organised in multiple layers of nested enterprises.
9. Strength and resilience of institutional enforcement.
10. Durability and longevity of the institution.

Source: adapted from (Ostrom 1990; Scott 2001; Agrawal *et al.* 2006; Cox *et al.* 2010).

The concept of bricolage has been used to look beyond formal social relations to examine organisations (Baker *et al.* 2005) and institutions (Wollenberg *et al.* 2001; Cleaver 2002). People draw on existing mechanisms (social, cultural, symbolic resources and relationships) to form new institutions under conditions of 'stress' on an ad-hoc basis or by combining existing institutional and organisational activities and interactions in novel ways. Institutions may be shaped historically by previous 'needs', borrowing from different cultures, incorporating rules and meanings from one area of life to another, and drawing on the repertoire of local forms of decision-making. They can also be created, sometimes from nothing, using physical, social and/or institutional inputs (i.e. capitals) in alternative configurations. Forest practices have been noted specifically to be subject to processes of institutional bricolage in which actors (individuals, organisations and institutions) construct their own institutional frameworks by aggregating, altering or articulating elements of existing disparate institutions, whether introduced by government, non-governmental organisations (NGOs) or other already existing organisations: these processes of institutional bricolage can be either conscious and strategic of nature or less conscious and unintentional (de Koning 2011). Institutional bricolage can be a process something people do, which cannot be managed and institutional bricolage as the patchwork of institutions. The multi-scalar aspect of bricolage is emphasised by Cerny (2010) who sees a 'thorny problem' of how international regimes, institutions and other forms of so-called global governance with ad hoc, trial-and-error

and issue-specific character interact. The result is fundamentally uneven and very often inefficient quasi-superstructures for both top-down tackling of global or transnational challenges, and the bottom-up pursuit of those interests and values most highly prioritised by transnational, as well as domestic and local, interest and value groups.

An anthropological lens provides a valuable alternative view of institutions, focusing on traditional and localised practices in fulfilling modern 'development' functions and overcoming problems of collective action. Roitman (2005) provides a rich perspective on bricolage and pluralistic governance, relevant to the study area. Pressures of economic crisis and austerity programmes promoted by international financial institutions have given rise to 'shadow states' and 'shadow economies' characterised by informality. These economic activities are typically found in marginal, border and 'bush'[8] areas, require and establish highly organised trade modalities and are based on distinct hierarchies of authority relations and may be linked to international financial networks and private strategies for capital accumulation. Semantics are clarified with the term 'unregulated' preferred: this avoids common binary oppositions such as legal-illegal, formal-informal or official-unofficial, which do not reflect the complexity in which the informal economy operates. These activities can be at the heart of productive economic life, one of the few means available of accessing hard currency and producing wealth in times of austerity. They can serve to mediate between the state and global economy, providing important resources for (state) representatives, providing new rents and redistributing national politics and power. This theoretical perspective underpinning the realities in the study area resonates strongly with the context and operation of informal and unregulated NTFP chains in Africa (Campbell *et al.* 2002c; Shackleton *et al.* 2007). The distinctions made between state power and regulatory authority, and modalities in which power manifests itself are useful for this study, as is the stress on understanding the present by looking at the historical context.

Such unregulated economies have been demarcated from the official economy and state administration by referring to a particular shared characteristic: how they circumvent state economic regulation and institutions. Distinguished by this absence, institutional voids can be characterised by an absence of institutional arrangements and policies that regulate market exchange, mobilise economic resources and coordinate social activities (Hajer 2003; Burki 2012). Countries (such as Cameroon) which have experienced civil unrest, patrimonial politics or long periods of colonial or dictatorial rule, often have weak or eroded state institutions regulating economic activities and transactions in terms of enforcing contracts, protecting ownership and promoting development. In remote rural areas, the absence of the state (Scott 2009) affects the delivery and availability of services and people's awareness and knowledge of their rights and their ability to exert pressure for changes that affect their livelihoods. Such institutional voids can be filled by unconventional actors/organisations that, in the process of negotiating rules, resources and discourses with formal and informal circuits of power, contribute to the emergence of alternative governance arrangements. A growing number of empirical studies of emerging markets with entrepreneurial actors – public, NGO and private, organisational and individual – show the trespassing of formal rules and institutions to create formal and informal governance arrangements which also perform development functions (Teegen *et al.* 2004; Mair *et al.* 2009). Management and organisation studies

[8] *Bush* is the Pidgin term for the forest, also known as *ladde* (Fulfulde) and *la brousse* (French).

on firm-level governance (Khanna *et al.* 2006) highlight how enterprises use institutional voids as opportunities, effecting organisational transformation, overcoming bureaucratic barriers and replacing public institutions to govern resources and coordinate development.

The concept of regulatory pluralism provides insights into this phenomenon, by seeing laws as an instrument of power and authority and integral part of governance. Drawing on von Benda-Beckmann (2002), legal pluralism means the co-existence, interaction and duplicatory character of legal forms or mechanisms, conflicting in context, rationale and orderliness. The result can be a gap between the intention of the law and its outcomes, common in post-colonial African states. By acknowledging pluralism, normative complexity in interactions can be better appreciated. This is especially so for conflicts of interest that hinders or facilitates social interactions. Legal pluralism can result from the co-existence of imported European and prevailing customary laws. The concept of pluralism stresses that where social life is not the focus of law enactment, but the state is, legal complexity increases. Legal complexity increases uncertainty that may have a negative impact on behavioural incentives aimed at by laws (Awafong 2003). Pluralism recognises the inevitable existence of differing, often conflicting, positions where groups may be autonomous and independent, sometimes interdependent, with legitimate claims and different positions on substantive issues (Anderson *et al.* 1998). These differences are based on separate values, perceptions, objectives and knowledge and result in a dynamic interplay – sometimes conflict – between different ideologies, interests and organisations. Tamanaha's (2008) six-pronged framework for analysing this complexity, uses categories of official legal systems and normative customary, religious, economic/capitalist, functionalist and community/cultural systems. These distinguish the social spaces that regulations originate from, when and how they clash, what fuels them based on power and heterogeneity (between groups and individuals), relations and strategies for conflict resolution.

Multi-level governance concerns increased complexity, proliferating jurisdictions and increased rise and participation of non-state actors. These phenomena make decision-making a process of 'complex overlapping networks' rather than 'discrete territorial levels' (Bache *et al.* 2004), with transformations in the role of the state challenging conventional ideas of democratic accountability. Globalisation and decentralisation as related processes mean that linkages across different spatial scales and governance levels need to be understood. Multi-level governance looks at the links between humans and their environment, which may occur vertically (from local to global) and/or horizontally (at the same level), leading to collaboration and contestation among parties with a stake in forests (Mwangi *et al.* 2012). Thus 'multi-dimensional linkages', including multiple scales, multi-level institutions and other types of multiples, are important in offering a broad perspective which is less likely to overlook important institutions, elements, relationships, or processes (Poteete 2012).

Institutional and regulatory pluralism and multilevel governance with their diverse and multiple dimensions, linkages, levels, scales, overlaps and voids have given rise to a corresponding diversity of economic and political spaces and new policies that address these gaps, explicitly paying attention to collaborative governance (Ansell *et al.* 2008). When deliberate, this process aims to replace adversarial and managerial policymaking and implementation by bringing public and private stakeholders together to engage in consensus-oriented decision-making. Critical variables influencing successful collaboration include histories of conflict or cooperation, incentives for stakeholder participation,

power and resource imbalances, leadership and institutional design, face-to-face dialogue, trust building, and the development of commitment and shared understanding (Ansell *et al.* 2008). A virtuous cycle of collaboration can develop when collaborative forums focus on small wins that deepen trust, commitment and shared understanding. Collaborative governance is not however always harmonious, with the shift from state governance to a more fluid, evasive geo-governance[9] creating new challenges (Paquet 2005). This is a new and subversive game, argues Paquet (2003), where geographical space plays a lesser and different role, where the state has lost (or never had) a grip on governing, the game is without a master and collaboration is the new imperative. This can lead to an expropriation of power from traditional and well-established institutions. Conflict can occur when groups recognise they cannot be rid of systems, partners or opponents or compromise. The appearance and effects of friction and conflict in inducing change and new dynamics in governance arrangements, particularly resulting from commodification, are echoed by Tsing (2004). Institutional bricolage, institutional voids, legal pluralism and multilevel governance can be seen as related concepts and together provide a multi-faceted view of institutions.

Connecting the views on value chains

Value chains (see Box 1.5) and value chain analysis (VCA) offer frameworks to map, categorise and analyse activities, and understand who are actors and why and how they are positioned in the process of taking a product from the forest, production, transformation and processing to delivery to final consumers. VCA highlights that situation-specific geographical scales, from households to a global level and territoriality are important factors in the activities, nodes and flows within a chain and have implications for actors at different locations (Gereffi *et al.* 2003). Territoriality influences the relative share and perception of value (Rammohan *et al.* 2003). Once a product becomes commoditised, the actors involved increase the network of governance relationships, introducing agents affecting value and motivated by economic and non-commercial objectives (Le Heron *et al.* 2002). Societies have been shaped and transformed by such processes – shown by the long histories of trade networks, with globalisation and commodification increasingly resulting in unexpected and unstable interactions (Tsing 2005).

Value chain governance links the division of labour along a chain with resource allocation and the distribution of benefits (Kaplinsky and Morris 2000). Regulating institutions and rules determine the playing field and how a chain is regulated and enforced. These define access and control to capital, creating opportunities and constraints (Raikes *et al.* 2000; Larson *et al.* 2007). Governance arrangements are critical in influencing who controls what along a value chain, determining power between actors and institutions, and affecting cost and benefit distribution (Ribot 2005). The configuration of a chain can also have significant effects on access to and the value of products for different actors in the chain (te Velde *et al.* 2006), illustrated by the timber sector (Dykstra *et al.* 2003; Nasi *et al.* 2006). Power relations in value chains (Gereffi *et al.* 2005; ILO 2006), can be viewed along a continuum: (a) market-based, where enterprises deal with each other in 'arms-length' exchange transactions, there are many customers and suppliers, repeat product transactions are possible, information flows are limited

[9] The ways in which effective coordination is effected in a world where resources, knowledge, and power are distributed though geographical space such as territorially based jurisdictions.

and there is no technical assistance; (b) balanced network, where enterprises form networks in which no one exercises undue control over others, suppliers have various customers, there is an intense information flow in both directions, and both sides have capabilities and commitment to solve problems through negotiation; (c) directed network, in which enterprises form networks directed by a lead enterprise (for example a buyer-driven chain with one major buyer of at least 50% of output), the customer defines the product and provides technical assistance, and there is imbalance of information; and (d) hierarchy, where firms are vertically integrated and the parent company controls its subsidiaries who have limited autonomy to take decisions. Highly governed chains can reduce production costs, increase quality and production speed and provide information to improve skills and production flows (ILO 2006). They may not however be equitable. Chain governance arrangements can be changed by identifying opportunities, entrance and leverage points, and using change agents to influence external and internal (product-specific) factors in time and space, processing and management (Kaplinsky and Morris 2000; Keane 2008). Inclusion and/or exclusion conditions (Bush *et al.* 2007; Smith 2009) determine whether actors who wish to participate and benefit from a chain can do so. Changes can improve the distribution of gains along the chain (Humphrey *et al.* 2001).

Pro-poor development has been area of explicit intervention and study in value chains (Grieg-Gran *et al.* 2005; van den Berg *et al.* 2007; Will 2008; Webber *et al.* 2009). Development may be pro-poor when it has impacts beyond income increases, strengthening economic, social and organisational capacities – leading to increased control and power in chains by the poor and capacity to upgrade their position and increase or appropriate a greater share of profits. The increase of control *and* capacities is conceptualised in the term economic rent (KIT *et al.* 2006), referring to the ability of actors to appropriate value and compete with others in a chain (Kaplinsky & Morris 2000). Liberalisation and globalisation mean that sustainable income growth in less developed countries is based on the efficient use of resources, as competitive forces continually drive down terms of trade. Pro-poor, sustainable development depends on the capacity to identify and appropriate value. Economic rents arise when scarce attributes are created or possessed creating (temporary) entry barriers. New configurations can create profit and competitive dynamics. As innovations occur, profit is whittled away and prices fall, leading to renewed innovations, either by the same actor or others, in pursuit of profit (Kaplinsky & Morris 2000). Profit can also be gained by competitive advantage – through innovations in governance arrangements such as access or control of (scarce) resources and infrastructure, controlling technologies, access to capital, better marketing capabilities and/or brands, possessing superior knowledge and information systems, better human capital than competitors, superior organisation, better relationships with suppliers and customers, creating and operating efficiently or due to entry barriers for competitors. Pro-poor chains can be conceptualised by assessing changes in actor's positions and activities, the involvement of (poor) actors in governing chains, value, transaction costs, benefits and profits over time (KIT *et al.* 2006). Pro-poor focuses have in practice focused on those at the beginning of chains such as farmers and harvesters (Koch 2005; Lecup 2006), ignoring non-rural actors and demonising intermediaries and traders as bad guys profiting at the expense of the poor (KIT *et al.* 2008). A robust classification of 'poor' actors, drawn from Chapter 1, however goes wider than financial capital alone, embodying the capital types referred in the SLA. Vurro and colleagues (2009) model indicates that centrality (the extent to which an organization occupies a

central position in a network or chain) influences enterprises attentiveness to stakeholder concerns and willingness to accommodate requests. This leads to integrated approaches and increasing interconnectedness, progressively creating attitudes aimed at joint value creation among chain partners.

As chains are temporally dynamic, understanding their historical context is important (Wardell 2005; Boomsma *et al.* 2011). This allows insights into the causes and drivers of change, values and configurations of rent over time, actors, how traditional knowledge has been used, and environmental and economic sustainability (COPLA 2009; Boomsma *et al.* 2011). Ethno-botany and anthropological approaches (Burham 1980; Cunningham 2001; Goheen 1996) can provide of historical information by using participant observation, interviews and surveys. Harilal *et al.* (2006) stress the importance of going beyond a specific production location, micro or project level, to examine the contexts influencing chains. The economic context includes sources of demand, supply, alternatives and scale (Donovan *et al.* 2008). Comparing NTFP-related income with other sources and livelihood characteristics provides the socio-economic context (Jensen *et al.* 2008), particularly when products are seasonal and labour is uncosted (Tewari 2000; Belcher *et al.* 2005; Jensen 2009). Culture influences value, with social constructs – traditional and modern, influencing governance arrangements and value (Harilal *et al.* 2006; Hughes *et al.* 2008). Social contextual factors include how NTFPs relate to other products auto-consumed and traded to understand substitution and seasonality (Purnomo *et al.* 2009). These allow value and product availability over time and in relation to incomes to be assessed. Fluctuations occur over time when abundance changes. Measuring these variables can be achieved through empirical fieldwork, recall, diaries and triangulation with trade data (Campbell *et al.* 2002a). Gender aspects have also been highlighted as important in chains (Bolwig *et al.* 2008; IFAD 2008). The political context on different scales affects values and livelihood strategies (Gibbon *et al.* 2005; Bernstein *et al.* 2006) as do the policy and legal arenas (Geldenhuys 2004; Ndoye *et al.* 2009).The sources of forest products – the ecological context – has been recognised as critical for long-term livelihoods (Marshall *et al.* 2006b). Values have been shown to change significantly over time as harvesting methods and market arrangements affect the abundance of NTFP species (Zapfack *et al.* 1999; Lawrence *et al.* 2000; Ngobo *et al.* 2004, Geschiere 2007) and scarcity affects value (McLain *et al.* 2004). Evaluations of resource availability and harvesting have tended to lack systematic quantitative data over time (Jensen 2009) or focus predominantly on economic valuation, largely ignoring environmental costs and benefits, with occasional exceptions (Kambewa *et al.* 2007). Using appropriate inventory methodologies to assess specific NTFP resources has been stressed (Baker 2000; Wong *et al.* 2001), with participatory approaches incorporating indigenous resource knowledge adding context and information (van Dijk 1999).

Linking the concepts

Meeting Elinor Ostrom, one of my academic ‘heroes’ at the 2010 International Union of Forest Research Organisations (IUFRO) Conference in South Korea, I asked how she might approach the governance of value chains with an eye on sustainable livelihoods. Her response confirmed that bricolage was an appropriate concept: that a multifaceted cocktail could give a rounded perspective. Also that using interdisciplinary research methods and concepts for common pool resources such as forest products was im-

portant. Ostrom's response reinforces that bricolage is appropriate as no one theory or concept completely embraces the subjects of forest products, value chains, governance, sustainability and livelihoods.

So, how to '*bricole'* something useful from this inter and intra-disciplinary assortment of concepts that is relevant to the research questions? The Sustainable Livelihoods Approach (SLA) provides a key framework to examine the livelihoods of those involved in forest product value chains, superimposed with VCA. VCA provides an analytical tool to operationalize and compare chains, but it is insufficient to examine institutional interactions. Political ecology and the Institutional Analysis and Development framework allow the interactions between politics, policy, institutions, organisations and actors to be incorporated into the SLA and VCA and assessed. Trade-offs between different types of capital can be examined using the SLA, measured primarily in economic terms using monetary units. As there is no such common denominator for non-monetary capital, actors' perceptions of social and environmental capital are used. This draws on social and livelihoods indicators generated from the disciplines of human geography, anthropology, ecology and economic botany. Forestry and economic botany guidelines provide inspiration for evaluating sustainability, using surveys, inventories and participative approaches, combining local and scientific knowledge. Trade-offs can thus be framed in terms of political decisions between capitals. Political ecology provides a framework to examine explicit and implicit outcomes. The importance of context is stressed by all the concepts in varying degrees. To understand the ecological, cultural, economic, political and legal contexts in which the chains operate, anthropology, concepts from human geography, political sciences and law are used.

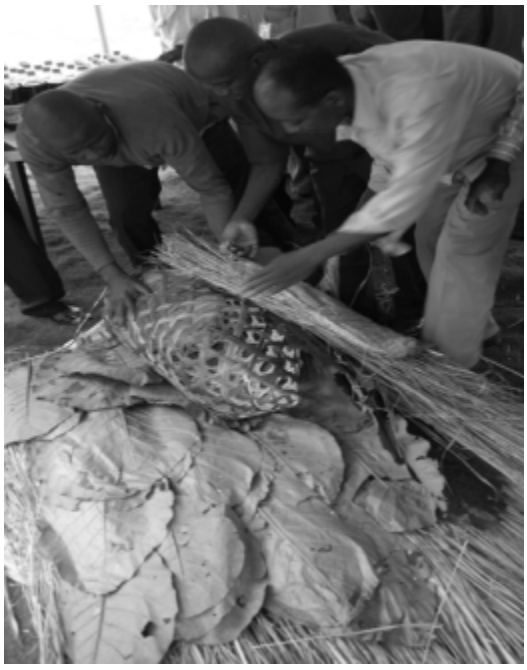
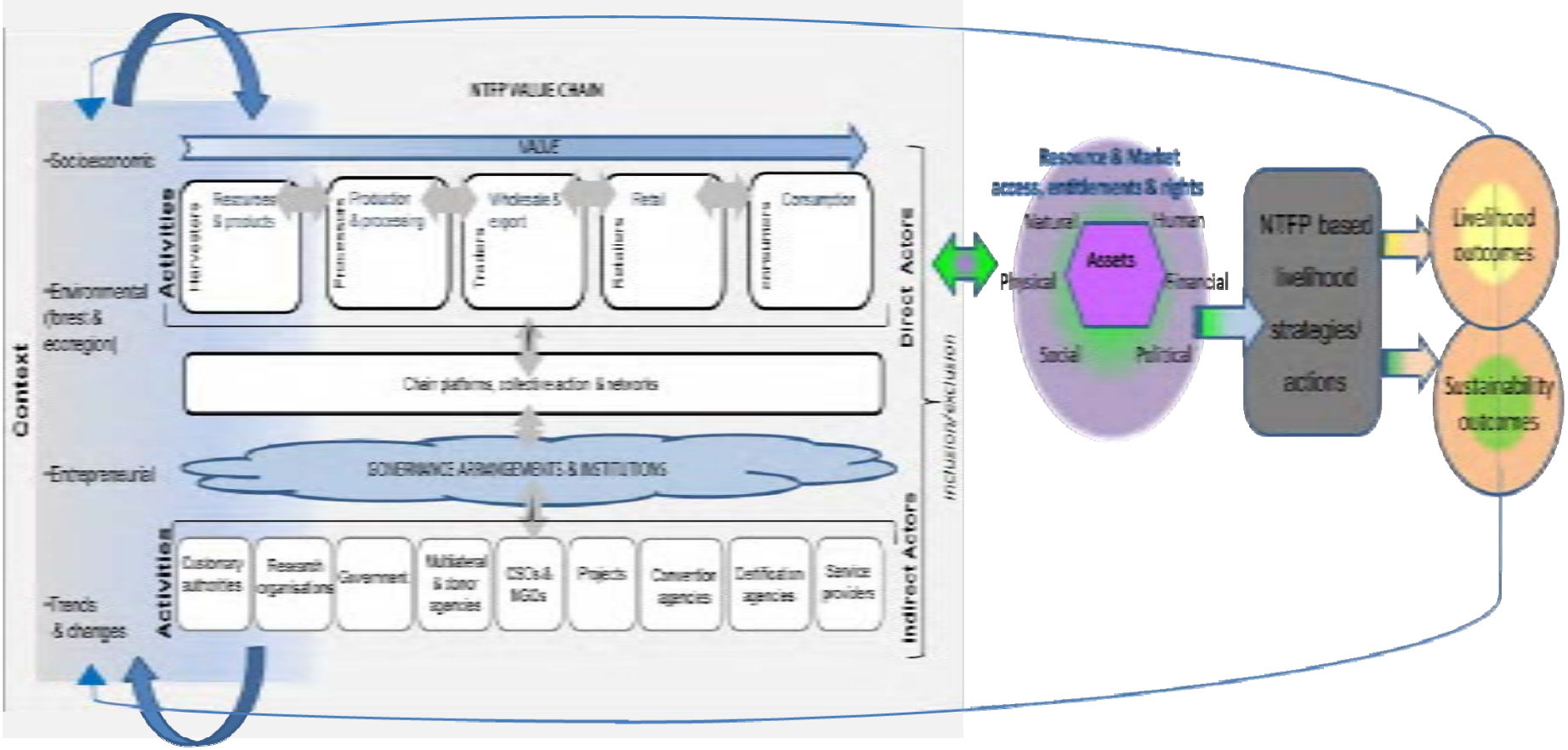


Photo 2.1 Bricolage in action!
Making a beehive from raffia, grasses, leaves and bamboos,
Yaoundé, December 2008

Figure 2.2 Conceptual scheme



3

Methodology

This chapter explains the research methodology. It first describes how the conceptual framework was translated into a methodology. The research design is then outlined and the choice of subjects (chains, geographic regions and actors) justified. The methods used to answer the research questions are described and their limitations discussed. The overall limitations of this study are also deliberated.

From conceptual framework to research methods

The methods used to gather and analyse data were guided by the conceptual framework in Figure 2.2. They combine the sustainable livelihood framework (DFID 1999; Farrington et al. 1999) with value chain analysis (ILO 2006; Kaplinsky & Morris 2006; Lecup 2006). Putting value chain analysis at the core implies an analysis of (i) actors along the chain (harvesters, processors, traders, retailers, consumers) (Chapters 7 to10) and (ii) governance arrangements and institutions, acknowledging that multiple governance structures (customary authorities, statutory government, projects, etc.) set their own 'rules of the game' (Ostrom *et al.* 1994, Ostrom 1990). Also that hybrid arrangements (chain platforms and networks) emerge from collective action. Governance arrangements and institutions are analysed in Chapter 6, and chain-specific arrangements in Chapters 7 to 10. Methods inherent in value chain analysis include content analysis of policy documents and literature, interviews and observations of governance arrangements; literature and secondary data analysis for the analysis of product values and trade data; interviews and observations of interactions between actors and stakeholders and the impacts of changes in the chains; and interviews and participatory action research to collect data on product use and social-cultural perceptions of values.

Using the sustainable livelihoods framework implies that livelihood and sustainability outcomes are analysed for the actors involved in the chain, based on an analysis of context (Chapter 5) and how actors combine assets and capitals (Chapters 7 to 9). Attention to sustainability aspects implies an analysis of environmental aspects, with a focus on the resource base (Chapter 4) and the sustainability of extraction (Chapters 7 to 9). Literature review and situational analysis (Dietz 1999; Ostrom 1988; van Kersbergen & van Waarden 2004; Wollenberg *et al.* 2001) provided contextual information on the ecoregions and forest capital (Chapter 4) and the socioeconomic context of livelihoods (Chapter 5). Resource assessments were conducted to determine chain-specific

forest product values (Chapters 7 to 9). Household surveys and interviews provided data on livelihood outcomes and perceptions of chain sustainability. Further details of the research methods are provided after the outline of the research design, which is summarised in Table 5.4.

Research design

The research subjects were selected by defining the subject, spatial and temporal cadre, drawing on the conceptual framework presented in Chapter 2. The reasoning behind the choices is presented, with the selection criteria and results summarised in Table 3.1.

Country selection
Cameroon was selected as the study country. It is one of the most stable and peaceful countries in Central Africa with high levels of forest cover, low development, significant poverty and inequality levels, high corruption, difficult business operating environments and shift from predominately rural to urban habitation, with many ethnic groups having traditionally forest-based livelihoods. Cameroon faces increasing pressure (differing by ecoregion) from shifting cultivation, population growth, extractive and plantation industries affecting land and forest-use and degradation. Its colonial past, similar to other Congo Basin countries, has resulted in overlays of customary tenure and many local variants of land tenure, regulation, policy, politics and administration. This allows a comparison of different contexts. These ingredients make the country relevant for a societal and developmental perspective, meeting the research objectives. Living in Cameroon for over six years also made this selection a very pragmatic choice, enabling in-depth empirical data collection on the context.

Selection of forest phytogeographic regions and ecoregions
Three ecoregions in which the NTFP value chains originate were selected. This enabled a contextual comparison of the geographic, political, ecological, economic and social similarities and differences to be explored and governance arrangements to be compared. They also provide a boundary for the analysis of governance.

Selection of NTFP chains
Using the literature review, stakeholder interviews and situational analysis, a long list of NTFPs used and traded in Cameroon was prepared (presented in Appendix 2). The economic, social and environmental contexts in which the chains operate were analysed, the results of which are elaborated in Chapters 4 to 6. Each NTFP was scored using the value scoring system in Table 3.2, based on the criteria in Box 3.1. The results are presented in Chapter 4, Appendices 2 and 3. From this long list, eight high value chains (i.e. with a value score of three or higher as explained in Table 3.2) originating in the three selected ecoregions were selected for further research. Three chains were studied in-depth, as examples of the initial three types of governance arrangements anticipated (Table 3.3). The results are presented in Chapters 7 to 9. Five chains provide a broader, representative view of products, actors and governance arrangements, presented in Chapter 10. It is notable that all chains are plant-based. High value animal-based chains, such as bushmeat and forest fish, did not meet all the selection criteria in Table 3.1. Data was collected on these chains and analysed partly through the opportunities presented by the organisations and projects mentioned in the Preface.

Table 3.1 Overview of selection criteria and research subjects

Target population	Selection criteria	Variables selected
Non-timber forest products	**High value** • Significant consumption • Significant trade • Multiple use/products species • Multiple parts of species used • Ecological status (abundant or vulnerable) • Unsustainable extraction	**Priority NTFPs** (Chapter 4) Priority NTFPs Ecoregions
Ecoregion	**Origin by forest type** • Humid Guineo-Congolian • Afromontane • Sudano-Zambezian savannah	**Ecoregions/forest capital** (Chapter 4) Honey, *Prunus africana*, bamboo, *Cola* spp., *Raphia* spp. *Gnetum* spp., *Irvingia* spp., bamboo Honey, bamboo, *Acacia* spp.
NTFP chains	**Technical** • Valuable and sizable chain • Sustainability issues apparent • Gender, participation & equity issues apparent • Production area and markets known **Logistical** • Support partners present in area • Accessible production zone • Support requested by actors	**NTFP value chains** (Chapters 7 to 10) (See Table *3.3*) *Prunus africana*, *Gnetum* spp., *Irvingia* spp., honey, *Cola* spp., *Raphia* spp., bamboo, *Acacia* spp.
Governance	**Type of governance arrangements** • Statutory regulations • Customary regulations • Unregulated	**Governance arrangements (**Chapters 6 to 10) Formal: *Prunus africana*, *Gnetum* spp., *Acacia* spp. Customary: *Prunus africana*, *Gnetum* spp., *Raphia* spp., *Cola* spp., *Acacia* spp., honey Unregulated: Honey, bamboo
Location of chains	**Location of chain activities** • Major production zones • Major markets	**Production and market areas** (Chapters 7 to 10**)** *Gnetum* spp. – SW, Littoral, Douala & Yaoundé markets, cities in Cameroon, Nigeria, Europe *Prunus africana* – NW, SW and Adamaoua, cities in Cameroon, Europe, USA, China *Irvingia* spp. – SW, Centre, South East, Yaoundé & Douala markets *Honey* – NW, SW, West, Adamaoua, 5 markets in cities in Cameroon & in Europe *Bamboo* – Centre, South, Littoral, NW, SW, East, Adamaoua and markets *Cola* spp. – Centre, NW, East, West, markets *Raphia* spp. – Centre, NW, East, West, markets.
Actors in chains	**Main actors per value chain** • Directly involved in chain	**Actor groups livelihood context** (Chapters 5, 7 to 10) Harvesters, processors, traders, wholesalers, exporters, importers, retailers, consumers
Timing	**Time span of study** • Seasonal production & main sales periods	**Timing** (Chapters 6 to 10) Peak of high season and market offer

Box 3.1 A definition of priority NTFPs

The selection logic of the 'key' or 'major' plant NTFPs identified by Wilkie (1999) was unclear: the nineteen 'major' species include those with low trade volumes and own use. The criteria do not appear to be based on current economic, social or environmental values. Two studies subsequently reiterated existing key NTFPs (FAO 1999; Mbolo *et al.* 2002), embedding these in popular development and forestry mind-sets and being repeated verbatim (Noubissie *et al.* 2008). 'Priority' or 'key' NTFPs have also been defined (Zapfack *et al.* 1999; Clark *et al.* 2004) as those:

1. Which have a high economic trade value or are important for auto-consumption (i.e. value for livelihoods);
2. Where demand for the product exceeds supply i.e. unsustainable exploitation. This is a function of in-situ conservation priority status and domestication.

Adding to this list, other criteria drawn from the conceptual framework (see Chapter 2) are:

3. Species which have multiple uses, including conflicting uses;
4. Species from which multiple parts are used;
5. Species' ecological status: classified as vulnerable or protected (for example, on the Red Data list, CITES listed and/or protected by national laws) due to either their rarity or to threats to their ecosystem.

These five criteria together address economic, social-cultural and environmental values.

Table 3.2 Value scoring system

Score	Value and use
1	Minor consumption (for cultural, medicinal, food, tools, construction use)
2	Multiple use species (own consumption) Limited trade (local trade or barter/exchange)
3	Multiple use and local regional trade
4	Wide-scale trade (important revenue source, regional, national and international trade) Multiple use species (own consumption and trade) Major consumption (important cultural, medicinal, food, tools and construction uses) Species ecological status – classified as protected or vulnerable
5	Major consumption and wide-scale trade nationally and/or internationally and/or protected

In the value scoring system in Table 3.2, scores were allocated derived from the conceptual framework. Environmental, social and economic values were scored in parallel, reinforcing the holistic and multidimensional values of NTFPs for well-being and livelihoods. Social value was inferred if the product is consumed or used by harvesters, is bartered, or was indicated as important by local populations in the literature and situational analysis. Social and economic value was scored as higher if a species has multiple uses, and if multiple parts of a species are used (Ingram *et al.* 2012b). When multiple uses or social or economic importance were not indicated, a 'minor consumption' score was given. Environmental value was assessed based on the level of threat or vulnerability to a species. This was derived if demand for a product exceeds supply, if extraction methods are unsustainable, if there are low levels of cultivation or domestication, and/or if the species is classified as protected under national laws[1], or is a CITES or Red Data

[1] For wildlife under the 1994 Forestry and Wildlife Law, Section 78 (1) and Order No. 0648/MINFOF of 18 December 2006 classifying animal species into three protection classes, and for flora under Section 9.2 of the 1994 Law as a Special Forestry Product (SFP) and Decision N° 0336/D/MINFOF of 2006.

listed threatened species. If a value assessment was indicated in the literature, this was used. To compensate for the predominance of data on economic value, a scoring system was developed. This builds upon studies (Wilkie 1999; Clark *et al.* 2004) shown in Table 3.2. Species with multiple uses and from which multiple parts are used, were scored higher (Zapfack *et al.* 2001b).

Selection of chains demonstrating alternative governance arrangements
The number of chains was narrowed from the eight shown in Table 3.3 to three for in-depth case study: *Gnetum* spp., apiculture and *Prunus africana*. These chains have different types of governance arrangements (shown in Table 3.1) but have major production areas in the same geographical region, providing similar ecological, cultural, social and political contexts. At the time of selection, honey was not regulated and customary regulation unknown. *Prunus africana* was highly regulated by projects, markets, national and international regulations and customs. The *Gnetum* spp. chain was known to be governed by some formal and informal regulations. A further five chains were selected: Cola nuts (*Cola* spp.), bush mango (*Irvingia* spp.), raffia products (*Raphia* spp.), bamboo (*Yushania alpina* and *Oxytenanthera abyssinica)* and gum arabic (*Acacia* spp.). These products and chains originate from the same three ecoregion study areas. They provide both complementary and contrasting views on chains configurations (the products, location, actors, activities and values), their governance arrangements and sustainable livelihood outcomes. They allow a broader view of products and chains, representatively reflecting the range of NTFPs used and traded in Cameroon. The common geographical area reduced costs and fieldwork time, maximised stakeholders interactions and efficiencies of scale in participatory action research (PAR) interventions.

Selection of value chain actors
The selected populations were the people and organisations (hereafter termed ‘actors’) involved in chains. Although each chain has specific actors and terminology, similar populations of direct (harvesters, processors, intermediaries/wholesalers, exporters, retailers and consumers) and indirect actors (such as support, development, regulatory and other organisations governing the chain) were selected to aid comparability. Only consumers in Cameroon were interviewed. Snowballing and situational analysis was used to estimate the type and number of actors at each stage of the chain. The 2,195 actors selected and interviewed, shown in Table 3.4, represent an estimated 25% sample (except for consumers) of actors in each chain from the main production zone of study.

Selection of research locations
Using the literature review, interviews and situational analysis, chains were traced from the main harvest areas to retailers in Cameroon and Nigeria and consumers in Cameroon. This allowed the selection of research sites shown in Figure 3.1. Within the harvest areas, villages were selected by stratified purposive sampling to include those with easy and difficult access to markets.

Timing
To aid recall for the seasonally harvested NTFPs (*Irvingia,* honey and *Cola* spp.), interviews were timed to coincide just after production and peak market or sales periods. When not possible, observations and trade data gathering coincided with subsequent peak seasons. Respondents were asked to recall a period of three subsequent years.

Table 3.3 Overview of NTFP value chains studied

Species scientific name	Common product names[1]	Vernacular product names	Life form	Ecoregion & forest type	Parts used	Uses
Gnetum africanum *G. buchholzianum*	Gnetum	Eru, okok, koko	Climbing vine, 10 m height	Guineo-Congolian Primary, secondary and farm bush	Leaves, stem	Food, medicinal
Apis mellifera adansonii	Honey, *miel* wax, *cire* propolis	Honey, *D'or des abeilles*	Insect	Afromontane Sudano	Secondary products honey, wax, propolis	Food, medicinal, cosmetic, material
Prunus africana	Pygeum, African cherry, red stinkwood	Pygeum, kanda stick	Evergreen tree to 40 m height, 150 cm diameter	Afromontane, primary & secondary forest, on farm	Bark, seeds, leaves, timber	Medicinal, carving, timber, fuelwood, forage
Cola acuminata, *C. nitida,* *C. anomala*	Cola nuts	Abel, cola, goro, Bamenda cola, ehbe, ebii	Evergreen tree 20 m height 50 cm diameter	Afromontane Guineo-Congolian	Seeds, bark	Stimulant, medicinal
Irvingia gabonensis, *I. wombulu*	Bush mango *mangue sauvage*	Ndo'o, andok	Evergreen tree to 40 m height, 100 cm diameter	Guineo-Congolian Primary, secondary, on farm	Fruit, seed, bark, timber	Food (condiment, oil), dye. medicinal, construction fuelwood
Raphia farinifera, *R. vinifera,* *R. hookeri*	Raffia	Raffia, cane Indian bamboo, mimbo	Palm 10 m tall 30 cm diameter	Afromontane Guineo-Congolian riverine gallery, planted	Stems, sap, leaves, seeds	Materials, construction tools, crafts, wine, food
Yushania alpina, *Oxytenanthera abyssinica*	Bamboo, Chinese bamboo, cane	Intomtom ebtotom, tomtom kehweh kok-ko, men-tomtommba-setutuy	Grass to 10 m height, 10 m clump diameter	Afromontane Sudano Primary, riverine, planted	Stems	Materials, construction tools, crafts, fuelwood, forage
Acacia senegal, *A. polyacantha,* *A. laeta, A. seyal,* *A. sieberiana*	Gum arabic	Gum, gum acacia, *gomme arabique*	Deciduous tree 5-12 m height, 10 m diameter	Sudano, cultivated	Resin, bark, leaves, timber	Cosmetic, food, medicinal, material, forage, timber

[1] In English and in *French. Source*: Research results

Figure 3.1 Map of research sites

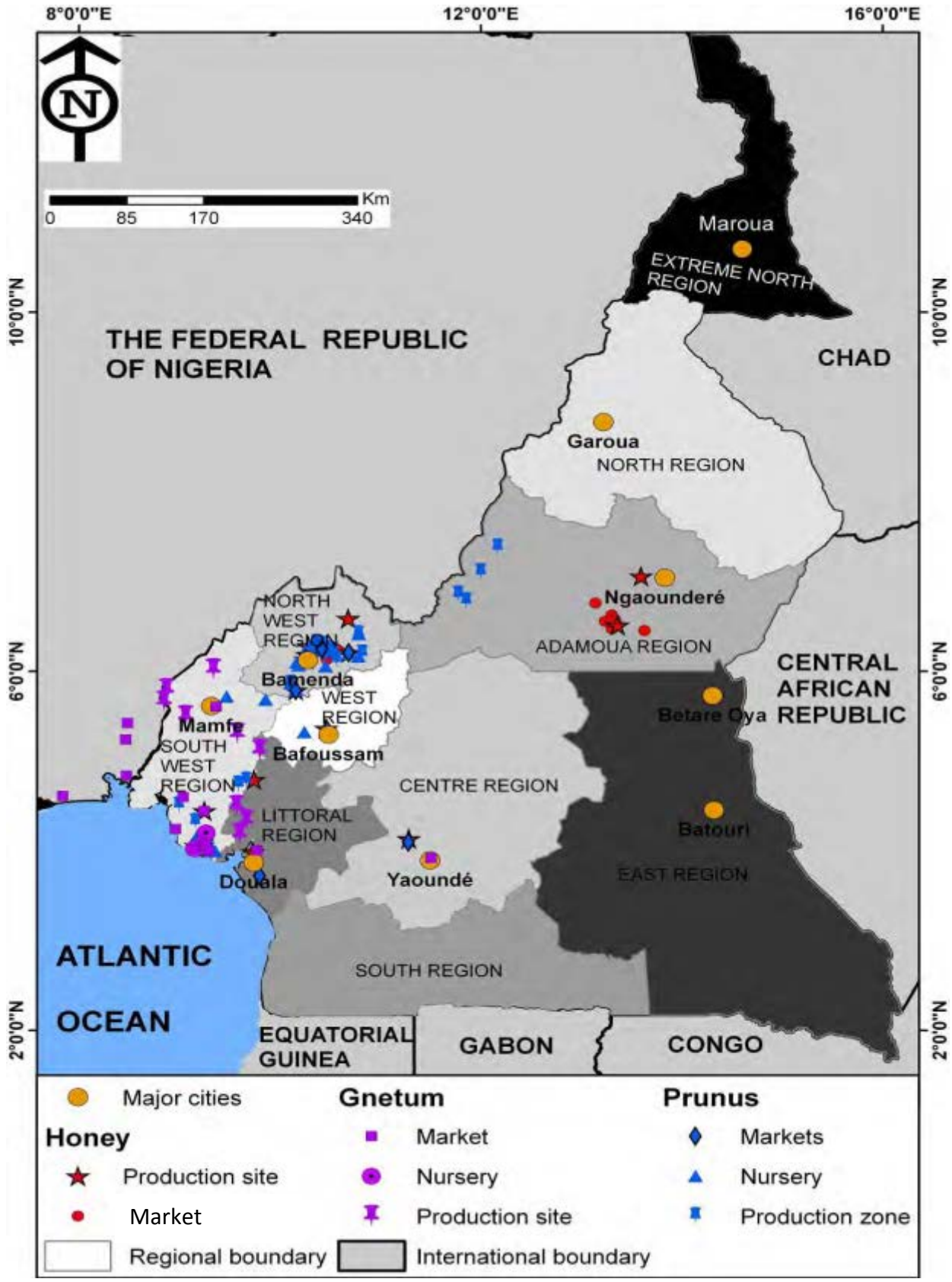


Table 3.4 Overview of NTFP value chain actors interviewed

Value chain	*Gnetum*	*Honey*	*Prunus*	*Irvingia*	*Acacia*	*Bamboo*	*Cola*	*Raphia*	Total
Region[1]	SW, L	NW, Ad	NW, SW	SW,C, S,L,E	N, ExN	NW,W SW, E	NW	NW	
				Number of interview sites					
N° of villages	21	46	9	36	16	16	28	33	205
N° of markets	9	6	5	27	2	4	30	31	130
N° of nurseries	4	9	36	1	5		1		56
N° of plantations		3	22		18		2		45
				Value chain actor interviews conducted					
Harvesters	76	340	132	203	24	39	91	77	475
Processors	3		8		5	38			82
Intermediaries	6	40	9	2					39
Retailers	66	70	4	193	3	31	63	45	73
Wholesalers	14	6		60	2				5
Exporters	12	10	4	11	2				8
Consumers		30	2			41			16
Restaurants	5								25
Community forests			8						86
Importers	10	4	2						232
Support/NGOs	4		6		15				61
Nursery workers	3	1	36		44		2		475
Indirect stakeholders			98	10	12	112			82
Focus groups	11	17	13	19		1			39
Total	*210*	*518*	*322*	*498*	*107*	*262*	*156*	*122*	*2,195*
Year of VC inter-views	2009/ 2010	2006/ 2010	2006/ 2009	2007/ 2009	2007	2010	2010	2010	

[1] Regions: Ad=Adamaoua E=East L=Littoral S=South SW=Southwest N=North W=West ExN=Extreme North NW=Northwest

Research and analysis methods

This section justifies the methods chosen to translate the research questions into an applied enquiry drawing on the interdisciplinary conceptual framework outlined in Chapter 2. This approach meant that a range of data sources and collection methods were used to obtain quantitative and qualitative data, illustrated in Table 3.5.

The main approach was to use comparative, field-based case studies of the selected NTFP value chains. Case studies allow tailoring of the design and data collection procedures to research questions, enabling the contextual nature of contemporary phenomena in real-life contexts and the presentation of holistic, in-depth investigation (Tellis 1997). Case studies are a conventional but good method for multi-level analysis (Agrawal 2007), but are subject to significant criticism in terms of their statistical conclusion, external and construct validity. Meyer (2001) therefore recommends that case studies are explicit about the choices made and decisions on design, data collection, analysis, validity and reliability. Yin (2009) highlights that an average case is often not the richest in information but that extreme and different cases are more revealing. For this reason, different and similar products that met the selection criteria were chosen. This allowed a clarification of the causes of different governance arrangements and their impacts. Three chains were researched in-depth to increase internal and construct validity. Literature reviews, trade data and observations were used to increase external validity. Given the paucity of official data, recall sensitivities and the sensitivity of questions

Table 3.5 Overview of research methods used per research question

Methods used	Research question
Literature review: to describe and understand the status of the NTFPs, actors, activities, processes and interactions in chains.	1, 2, 3, 4, 5
Stakeholder interviews: to understand how, where and when the actors, activities, products, processes and interactions in value chains occur and why.	1, 3, 4, 5
Situational analysis: describe and understand the contexts in which the chains exist and explain arrangements.	1, 2
Value chain analysis (VCA): to analyse how and why interactions between actors, products and processes occur in chains. Included interviews and observation.	1, 2, 3 ,4, 5
Trade data: to identify actors, processes and interactions in chains. Understand demand and supply interactions over time, provide current and historical livelihood value.	1, 2, 4
Participatory action research (PAR): to understand how actors interact, how activities in chains are conducted.	1, 2
Resource assessment: to inventory *Prunus africana*, bark regeneration and harvest methods to assess impact of harvesting on resource sustainability. Apiculture forage source inventory to explain sources of bee forage. Identification of *Gnetum* species harvested and harvesting methods to identify vulnerabilities and threats.	1, 5

concerning governance, wealth and household, income and markets (van Dorp *et al.* 1998) which are notoriously difficult to obtain reliable data on (Campbell *et al.* 2002c), a triangulated approach was necessary. To also compensate for data weaknesses and obtain primary and secondary data on NTFP values, a significantly large-sized sample and multiple data sources and methods were used. The selection of actors also involved a balance between data quality, cost and time restraints and so value chain interviews were limited to direct actors (harvesters, processors, traders, retailers, consumers and their associations, shown in detail in Table 3.4) in the chains. Gaps in findings from the value chain analysis raised the need for resource assessments to determine sustainability, address weaknesses in construct validity and increase internal validity. An overview of methods used per chain is shown in Table 3.6, with the methods used described in detail in the following section.

Table 3.6 Overview of methods used per NTFP value chain

Chain	Literature review	Stakeholder interviews	Situation analysis	VCA	Trade data	PAR	Governance arrangements	Resource assessment
Gnetum spp.	X	X	X	X	X	X	X	X
Apiculture	X	X	X	X	X	X	X	X
P. africana	X	X	X	X	X	X	X	X
Gum arabic	X	X	X	X	X	X	X	
Bamboo	X	X	X	X	X	X	X	
Irvingia spp.	X	X	X	X	X	X	X	
Cola spp.	X	X	X	X	X		X	
Raphia spp.	X	X	X	X	X		X	

Literature review

A review of literature was conducted concerning NTFPs used and traded in Cameroon. This included scientific and local names, uses, parts used, values and volumes, levels of

domestication, harvest impact and the main production (phytogeographic regions and ecoregions). This secondary data provided information on the contexts and helped verify and triangulate primary data. The majority of the publications used were grey literature, due to a paucity of scientific articles (Pouris *et al.* 2009). From 500 grey publications, 92 were retained, including recipe books to provide an insight into food uses. About 600 peer-reviewed scientific journals and books were reviewed, 242 of which were retained. Academic theses and reports from research institutes in Cameroon (the Cameroonian Institute for Agricultural Research (IRAD), the French Centre for International Agricultural Research and Development (CIRAD), the French Institute for Research and Development (IRD), Tropenbos International-Cameroon and the World Agroforestry Centre (ICRAF)) were also reviewed. The detailed results are presented by species (Appendix 3), subject (Appendix 4) and region (Appendix 5). A content analysis of policies and regulations was conducted to provide advice on the revision of the 1994 Forestry law. This was conducted first alone, supported by CIFOR and presented through their contribution to the Circle of Partners of MINFOF (CCPM). It was further developed as part of FAO-CIFOR-SNV-ICRAF NTFP project guidance for a national Prunus management plan and a national, participatory review of the law. In 2013, recommendations for revisions of the law and implementing texts on NTFPs were further elaborated upon the request of the Ministry of Forestry and Wildlife through the GIZ-managed ProPSFE. This resulted in recommendations presented to MINFOF (FAO 2010, FAO 2010a, 2010b, 2010c; FAO *et al.* 2008), and published recommendations (Laird *et al.* 2010; Ingram *et al*. 2009).

Stakeholder interviews

Stakeholders are defined as groups of people and organisations with a right, mandate and/or interest in the NTFP and their value chains. These indirect actors included customary authorities; regulatory authorities; research organisations; NGOs and CSOs; project, donor, multilateral, and bilateral organisations; convention and certification agencies and service providers. ‘Constellations’ were drawn up to cluster and identify stakeholders and indicate their interactions, authority, roles and activities in the chain. These constellations were verified with stakeholders, enterprises, associations of NTFP actors and researchers. These were further elaborated into maps, pinpointing the locations of actors at each stage of the chain, the locations of markets, consumers and stakeholders. As these stakeholders can also be information gatekeepers, people in different stakeholder groups were asked the same questions about numbers and types of actors in chains – including main characteristics of stakeholders such as age, gender, ethnic group. This aimed to avoid bias, verify and triangulate the target population and enable representative sample sites to be selected. Further interviews, discussions and correspondence were also held with stakeholders and with knowledgeable informants working in the NTFP sector. This yielded additional literature and helped gain a further understanding of the chains and products. Interviews were written up and both qualitative and quantitative data were triangulated with data from value chain questionnaires and quotes presented as personal communications. The results were incorporated into Chapters 7 to 10.

Situation analysis

To define the context of each specific value chain, seven situation and problem analysis workshops were held with multiple stakeholders. These were held in Yaoundé, Buea

and Bamenda from 2006 to 2010. Building on the literature review for each chain, situation analysis (IUCN 2008b) was used to understand the individuals and organisations in chains, the contexts they operate in and their perceptions. This allowed institutions and arrangements influencing the chains to be understood and identify key issues and trends affecting people's livelihoods, the chains they operate in and ecosystems in the region. It also helped further identify and refine stakeholders. The results of the situation analyses were incorporated into Chapters 7 to 10.

Value chain analysis

Based on the conceptual framework concerning value chains described in Chapter 2, for each selected NTFP a value chain analysis was conducted as a case study. Specific activities carried out as part of the value chain analysis are detailed in Appendices 6 and 13. The analysis was built up in the following stages:

1. Structured questionnaires were developed based on the value indicators (detailed in Appendix 7). These were drawn from the conceptual framework, inspired by Tewari's (2000) argument that a classical economic evaluation does not address changing markets and currencies, externalities, indirect, optional and existence values. Also recognising the need for a holistic livelihoods approach (van Dorp *et al.* 1998; Sheil *et al.* 2002; Hiremath 2004; Bennett 2006), incorporating environmental aspects (Bush *et al.* 2004), political, socio-economic and cultural factors (Hiremath 2004; Ticktin *et al.* 2011). The questionnaire elicited data on economic value (production, costs, prices, profits and household incomes), social aspects (socio-economic data, values, household and NTFP incomes and expenses, wellbeing, happiness), cultural aspects (ethnic, gender and cultural use and value of a product) and environmental aspects (species source, harvesting methods, perceptions of sustainability, abundance, scarcity and vulnerability) for the previous three years of activities. The questionnaires were adapted to each chain and to actors (producers, trader, wholesalers, retailers, exporters/importers and consumers), tested and revised to produce a final version for each chain and actor group.
2. Teams of multilingual, mainly student enumerators, seventeen in total[2], were recruited and trained to conduct the interviews using the appropriate questionnaires for each chain and actor group (see Appendix 7). At the start of each round of interviews, the enumerator's comprehension of the questions and answers was verified. In most of the chains, the enumerators also acted as translators if respondents did not speak (or did not like to use) English, French[3] or Pidgin, the main fieldwork languages. However, the ethnic diversity of interviewees meant that local translators were also used to ensure accuracy when specific groups were encountered in the production areas (Baka, Fulani and Peul in the *Irvingia* spp. and *Acacia* spp. chains).
3. Interviewees were selected using non-probability sampling techniques, including convenience sampling (for example, being approached during chain activities) or snowball sampling (where other actors in the chains suggested appropriate respondents) (Henry 1990). A total of 2,195 one-to-one interviews were conducted in the

[2] See Acknowledgements for details.

[3] Cameroon is officially bilingual, but in practice people in the Southwest and Northwest are mainly Anglophone and speak pidgin, the rest of the country is Francophone. Local languages are commonly spoken, particularly among the elderly, illiterate and in remote areas.

field with actors in the chain using the appropriate questionnaires (see full questionnaires in Appendix 7). Interviews were mostly conducted early in the morning or late in the afternoon or at night, either in households, forest-farm edge or in public places (meeting houses, markets, bars etc.) to avoid conflicts with other activities and ensure that children and women were also available for an interview. In markets, some traders and wholesalers were extremely busy and were interviewed whilst on the job. Importers and exporters were interviewed by telephone, email and in person, mainly at their offices or warehouses. Random interviews with 673 consumers (including restaurants) were conducted in markets. Limitations of the interview method included poor memory recall and an almost complete absence of written records by most actors. Where possible people were interviewed during or just after the main harvest season (if applicable), as some actors are present in the production areas and markets only during the season. This aided recall and provided a larger population sample for random selection. Some of the products have biennial peak and low years, and for products with short harvest seasons (notably *Cola* spp. and *Irvingia* spp.), and with irregular harvests (bamboo and *Prunus africana*), it was not always possible to coincide fieldwork precisely. Data for these products may thus have a lower degree of representativeness.

4. A total of 61 focus groups were held in villages and markets, facilitated by myself and the enumerators, guided by a questionnaire (see Appendix 7). Focus groups were usually held after a day or so of interviews in the village, upon explaining the study and seeking permission of traditional and/or local authorities. They allowed further populations to be targeted and met, and actors not previously interviewed to be questioned, such as women, youths and different ethnic groups. They were used to facilitate group discussion, enable data triangulation and clarification of points raised in interviews. Meetings were also timed to include as many actors as possible. In the villages and markets selected, the total population of potential target actors were never all available.
5. Data analysis was conducted in four phases. Data was entered into Excel or directly into SPSS version 16. With support from a statistician[4] the data was checked for consistency of names, and units and measures calibrated (see Appendix 8). Common metric units of measurement from field units were calculated and extrapolated to annual volumes and values. Data were extrapolated from an individual to actor group and village and study region level. Where annual volumes and values were not given, but data was provided in terms of weeks or months, data was extrapolated to a 12-month period for non-seasonal products (e.g. *Gnetum* spp. and *Prunus africana*). Where only seasonal production data was available, this was used without extrapolation. Seasonal fluctuations and natural changes in productivity and supply and demand changes were also calculated as annual averages. Statistical and quantitative analyses were conducted with twelve equations used to calculate annual quantities, annual production costs, profits, income and aggregated values (shown in appendix 9) . Profits were calculated using only stated costs, as actors normally did not provide an economic value or opportunity cost for their own time engaged in NTFP chain-related activities. This is a frequently occurring problem in quantifying livelihood costs and benefits (Campbell *et al.* 2002c; Angelsen *et al.* 2011a). If labour was hired

[4] See Acknowledgements for details.

and paid for, these costs were included. Logic regression analysis was used to explain dependency on NTFPs and the Gini coefficient to test inequality in NTFP incomes and whether, and to what extent, NTFP income helps reduce income inequalities. Details of the equations used are presented in Appendix 9.

6. Research findings were verified with stakeholders during chain meetings and three regional workshops in 2009 and 2010, organised and supported as part of the FAO-CIFOR-SNV NTFP project. They were also cross-checked in meetings with representatives of the Central African Forests Commission (COMIFAC) and Cameroon government, FAO, the World Agroforestry Centre (ICRAF) and national research organisations.

The resulting analyses of the three selected in-depth value chains – *Gnetum* spp. apiculture and *Prunus africana* – are presented in Chapters 7 to 9 and the five other chains in Chapter 10. Detailed reports of the value chain analyses are provided in Appendices 6 and 14.

Trade data

Official trade data was obtained from the Ministry of Forestry (MINFOF) on quotas allocated and quantities exploited of Special Forestry Products (SFPs); the MINFOF Database of Commercialised Species in Cameroon (COMCAM) detailing export quantities, importing countries and exporters of forest products exports since 2004; annual reports from MINFOF to CITES; and customs records in the Port of Douala. The database of Forestry Information (Système de Gestion de l'Information Forestière, SIGIF) was investigated but did not contain any data on NTFPs. Internet sales sites were reviewed. These offered a guide to products and prices, but actual sales prices were expected to differ from those advertised. Variations between government data (SFP permits and COMCAM), actor's reports and internet sources indicated that not all NTFPs traded and exported are captured by government statistics, the results of which are indicated in Chapters 4 and 7 to 9. The lack of long-term and consistently recorded trade data made it difficult to establish baselines to track prices and volumes for all products. For the apiculture chain, in collaboration with the Ministry of Livestock, Fisheries and Animal Industries (MINEPIA), data from a 2008-2009 survey on beekeepers and their organisations, numbers and types of hives, year of commencement of operation, annual volumes and prices of honey and other apiculture products, was obtained, checked, cleaned and added to data obtained from workshops and questionnaires. General trade data is presented in Chapter 4 and Appendix 10; trade data for the specific chains studied in Chapters 7 to 10 and exported NTFP trade data is shown in Appendix 11.

To triangulate the trade data and literature review, traders and market managers were interviewed and the products, prices and volumes traded were surveyed once in ten towns: Abong Mbang, Bafoussam, Bamenda, Dschang, Idenau, Kribi, Limbe, Lomié, Makenene and Yaoundé in between 2008 and 2010. This method did not allow seasonal variations to be addressed but enabled a verification of all the traded NTFPs and especially small quantities of condiments and barks not captured by the trade data and the literature. Data and reports from the SNV Market Information System (MIS) and the CIFOR NTFP databases provided complementary information. The results are also presented in Chapter 4 and Chapters 7 to 9. Limitations of this method include difficulty in distinguishing species, as some products are sold generically and are processed and thus difficult to identify. For example *eru* is the common name for two species: *Gnetum*

buchholzianum and *Gnetum africanum*, which are not distinguished when traded. Similarly, bush mango, *ndo'o* and *mangue sauvage* are trade names for two species (*Irvingia gabonensis* and *Irvingia wombulu),* the dried kernels of which are not distinguishable, although species can be distinguished by harvesters. Bushmeat (monkeys, duikers and small rodents in particular) are often sold by generic names and difficult to identify visually once dried or smoked. Many caterpillars are often known only by their local names or by the host tree. For some caterpillar, insect and mushroom species, the scientific name has not been identified (Hoare 2007). For many condiments traders referred to the names of barks, herbs and spices by their use (for food or medicinal use) such as *epice d'nkui* and *achu* spices.

As part of the FAO-CIFOR-SNV NTFP Project (see Preface), a national apiculture market survey was conducted according by a team of researchers.[5] The report is provided in Appendix 10. This set the baseline of actors, prices and volumes and enabled longitudinal data to be gathered from 2006 to 2010 with 465 individuals during 18 focus group meetings and workshops with beekeepers, traders, exporters, importers and consumers. At each meeting trade data and volumes were tracked and validated by actors. Market prices for *Prunus africana* were also tracked from 2006 to 2010 during participation in Prunus Platform meetings. A limitation of this method is the accuracy of recall by producers and traders of seasonal and annual variations, which was an issue as most do not record sales, values and volumes. This was minimised by limiting the data to the last three years or to written records and verifying data against current and historical data from the literature and market observations.

Also as part of the FAO-CIFOR-SNV NTFP Project, Market Information Systems (MIS) were initiated to track the impact of interventions once the value chain analyses had provided a baseline. MIS are tools to help build capacity and empower marginalised and poor actors in forest chains to design, provide and use market information (Ribot 1998; Lecup *et al.* 2000; Scherr *et al.* 2003). The MIS were piloted in response to requests of actors. Market prices, the dynamics and how information flows affect interactions were tracked monthly. Details of the MIS results were published as project reports (Mekongo *et al.* 2008; SNV 2009c; b; Fon 2010; SNV 2010a; SNV 2010b)[6].

Databases were consulted and analysed to provide long-term data on key NTFPs and the selected products, providing a historical perspective, verifying and triangulating the production and consumption regions and values derived from interviews. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) database from the United Nations World Conservation Monitoring Centre (WCMC)[7] of internationally traded species was accessed to evaluate the value and volumes of CITES listed NTFPs from Cameroon. There is a discrepancy between the Cameroon government data and CITES data regarding trade in *Prunus africana* over the period 1995 to 2007. This may be due to different definitions in the early 2000s about dried, powered and fresh bark. Although data was not available for all years from either database, ultimately these databases were judged as sufficiently accurate. CIFOR's NTFP databases were also analysed. These contain the results of weekly monitoring of 27 NTFPs in 28 predominately food-based markets in the Centre, South, East, Littoral and Southwest regions of Cameroon. The markets were visited by CIFOR staff on average twice in

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5 See Acknowledgements for details and Box 3.2.

6 URL: http://www.fao.org/forestry/enterprises/nwfp-centralafrica-eu/en/, retrieved 10 June 2012.

7 URL: http://www.unep-wcmc.org/citestrade, retrieved 10 January 2010.

1995 (interviewing 253 traders) and three times in 1996 (interviewing 315 traders), and a sample of retailers, wholesalers and producers surveyed between June and August 1997. Full details of the results are presented in Appendix 14. The methods follow those detailed by Shanley *et al.* (2009). A single database containing all annual data was then created in Excel and transferred into SPSS and subsequently updated with baseline surveys covering harvest seasons in the period 2007 to 2010.

From these data sources, trade volumes and values were averaged to minimise the effect of seasonal variations. Annual values are calculated from the different data sources dating from 1990 to 2010. As the methods of calculations were not always explicit, the results of combined values for different products and years are therefore approximate. Prices have not been adjusted for inflation as in the study period inflation remained low (0.3% from 2006 to 2007, 5.4% from 2007 to 2008, and 3% from 2008 to 2009 (Trading Economics 2011). Although the basic goods prices increased in 2007 to 2008, leading to violence in February 2008, this was followed by government subsidies and price regulation of some staple and imported goods, and local foodstuff prices remained stable (Central Intelligence Agency 2009). If not quoted, prices were converted from FCFA to US$ using the historical, inflation-linked equivalent US$ exchange rate[8] to provide equivalent terms for 2010 and enable a comparison (details shown in Appendix 1). Values provided are either 'forest gate' (i.e. value to harvesters) or retail market values. Where no export prices were available, prices advertised on the internet were used. Total values and volumes were calculated by selecting the most recent data for a species. If several discrete geographical studies provided information, all these were used when there was no overlap. Where no details of values and volumes were found, this has a distorting effect on the selection based purely on economic values, particularly for products where exchange, gifts and non-cash trade can be significant (Willcox *et al.* 2007; Wright *et al.* 2010b).

Participatory action research

A participatory action research (PAR) approach was used to address specific gaps about the products, their ecology, governance, management and markets. The PAR approach combined science and capacity building. PAR is an eclectic and dynamic field with multidisciplinary roots and fast evolving (Sithole 2002). The core of PAR is to increase understanding of how change in actions or practices can mutually benefit a community of practitioners (McNiff & Whitehead 2002). It is based on a continuous, cycle of systematic planning, taking action, observing, evaluating and reflecting, prior commencing the next cycle (Wadsworth 1998). The method tests ideas on value chains and implements action with the direct participation of the value chain actors concerned in a dynamic research process, while monitoring and evaluating the effects of the researcher's actions with the aim of improving practice. The approach attempts to avoid extractive and unaccountable research (Shanley 2009, Shanley & Lopez 2009).

Ideally PAR is by and for local people with results directly applied to the problems. In practice, as an obviously foreign researcher, ('le blanche', 'white man' or 'sara'[9] were frequently heard cries whilst doing fieldwork), this was achieved by being part of locally embedded organisations (SNV and CIFOR), working with the Western Highlands Nature Conservation Network (WHINCONET) in a professional capacity with

[8] URL: http://www.usinflationcalculator.com, retrieved 10 January 2010.

[9] 'Sara' and 'white man' are pidgin for a white (Caucasian) person, both male and female.

SNV and working with an enterprise, Guiding Hope (see Box 3.2). Chambers (1983) points out a limitation of PAR where the intrinsically political and external 'outsider seeking to change things' results in empowering participation, but which is also political, as a development organisation/researcher relationship affects power dynamics. Outcomes of PAR are notoriously difficult to predict. Achievements depend on the researchers and targets and context. Results can be difficult to causally attribute to the interventions implemented (SNV 2008). To overcome these problems, questions and comments were invited at the beginning and end of each questionnaire and focus group, and for every meeting or workshop an anonymous evaluation form was provided and analysed. The main PAR activities are listed in Appendix 12. With SNV, quarterly monthly monitoring and feedback sessions were conducted, leading to revisions of activities and approaches. Annual monitoring and evaluation of the FAO-CIFOR-SNV NTFP Project yielded lessons learnt, aiding planning of subsequent activities. With Guiding Hope, annual evaluations allowed results and impacts to be evaluated.

Box 3.2 Participatory action research

Whilst working with SNV, WHINCONET and its members were clients with whom I worked to develop and implement capacity building and collaboration contracts concerning governance, collaborative natural resource and forest management, pro-poor tourism and private sector development from 2004 to 2008. I became an individual, honorary member of the Network and continued to work with them from 2008 to date, providing advice and assistance to develop and conduct new activities, projects and research, to monitor and reflect on their progress, activities, challenges and successes.

In 2006 I met three of the eventual co-directors of Guiding Hope when they successfully tendered for a market study of apiculture in Cameroon (Erasmus *et al.* 2006), a project I managed as part of my work with SNV. Nine months later, I was presented with a wax candle, symbolising the opportunities they had seen whilst conducting the study and subsequently turned into action. This resulted in the registration in 2007of Guiding Hope as common initiative group (CIG), a type of small enterprise, and their buying and eventually exporting a container of wax to Europe, sourced from beekeepers across the Northwest and Adamaoua regions. They had realised the long-held visions of the founders to create a for-profit, ethically operating enterprise based on sustainable apiculture. This pathway is described in Ingram and Njikeu (2011b). Guiding Hope did not receive capacity building from SNV, but collaborated with SNV and provided consultancy services in support of SNV's Northwest apiculture chain programme from 2008 to 2010. Upon leaving SNV in 2008, Guiding Hope invited me to continue collaborating with them, to conduct my PhD research and become a director in the business. The benefits of these unusual participatory action research arrangements were an extremely close working relationship with the people, organisations, networks and chain actors. In-depth knowledge and understanding was gained from being able to observe, implement, reflect, learn and improve as part of the Guiding Hope team and as partner and subsequent member of WHINCONET. The challenge was to maintain objectivity, impartiality and a critical view. Realising that PAR can create dependency, and given both personal and SNV's experiences, clear agreements were made with Guiding Hope concerning my, and the other director's roles, the use of and publishing of data. With WHINCONET, a contract, quarterly appraisals and an agreed exit strategy were used to support the PAR approach whilst working with SNV.

Aware of the (deliberate and possible unintended) effects of disclosing and disseminating value chain data in terms of changes to power and relations between actors, markets, gender and ethnic groups, these dynamics were periodically reviewed both as part of the projects and personally, with action taken to further inform or correct, where either actors noted perceived imbalances in power or relationships or they were perceived.

Governance arrangements

To evaluate the presence and intensity of governance arrangements identified in the NTFP chains studied, a two stage assessment was used. First, drawing on the conceptual framework, criteria were elaborated to assess whether a particular governance arrangement existed and its 'intensity' of influence or pervasiveness, inspired by the governance indicators (shown in Box 2.4) and institutional design principles (see Box 2.5). Those design principles and indicators used to provide a normative judgement of whether design or governance is 'good' or not were not included. The intensity of governance arrangements were identified and interpreted from the literature review, stakeholder interviews, situation analysis and value chain analyses. This resulted in the development of eleven parameters which enable the intensity of arrangements to be assessed:

1. Existence of an institution (institution is named and rules/norms)
2. Boundaries of rights known/ by actors in chain
3. Level of monitoring and compliance with rules
4. Frequency of use of sanctions and enforcement
5. Use of conflict resolution mechanisms
6. Use of individual and collective action in developing and modifying rules
7. Nesting horizontally (e.g. local-global level) and/or vertically (value chain)
8. Level of accountability and dependence on actors
9. Moral grounding/legitimacy of power
10. Location of decision making clear to actors
11. Longevity of institution and participation of actors

These parameters were scored using an 'informed ranking' from which the intensity of arrangements was situated on a continuum from strong to non-existent, scored from ten to one and shown in Table 3.7. In between the five score shown in the table are gradations where some, but not all of the criteria were met. The full details are shown in Appendix 13, along with individual scores per chain. The different data sources were used to deductively inform and allocate scores. These scores are summarised diagrammatically in Chapters 7 to 10 and superimposed for comparison in Chapter 11. Secondly the method and scores were shared with a panel of seven experts[10] to gather their opinions and subsequently adjusted taking into account their feedback. The scores were averaged and displayed as percentages to provide the final scores, summary and diagrammatic representations presented in Chapter 11 and in Appendix 13.

The PAR activities were undertaken in response to problems identified in 1989 (Paterson 1989) for the Northwest apiculture chain and again in in 2006 as part of local, regional and national problem-solving workshops supported by SNV and FAO, and the situational analysis. These analyses were used to develop capacity building interventions by SNV such as business skills training, market analysis, exchanges, trade shows and export stimulation. For *Prunus africana,* the elaboration of a national management plan, including inventories, studies, actor platforms and exchanges, support in developing project proposals and disseminating information were the main PAR activities. For *Gnetum* spp., activities focused around cultivation and nurseries. These activities fed

[10] Mirjam Ros-Tonen, Julius Chupezi Tieguhong, Aaron Russell, Koen Kusters, Jolien Schure and Ruth Meinzen-Dick.

Table 3.7 Intensity scoring of governance arrangements

Score		Criteria
Strong	10	▪ Institutions existence clearly stated, well known by all actors in chain ▪ Boundaries of rights well known/stated by actors in chain ▪ High level of monitoring and compliance with rules ▪ Frequent use of sanctions and enforcement ▪ Use of conflict resolution mechanisms ▪ Individual and collective action engaging in rule development & modification ▪ Well-nested horizontally (e.g. local-global) and/or vertically (chain) ▪ High level of accountability and dependence on actors ▪ Strong moral grounding/legitimacy of power ▪ Location of decision-making clear to actors ▪ Long lived institution with frequent actor participation
Clear	8	▪ Institution stated to exist (named, rules/norms known) by majority of actors ▪ Boundaries of rights well known to actors in chain ▪ Frequent monitoring and compliance with rules ▪ Use of sanctions and enforcement mechanisms ▪ Use of conflict resolution mechanisms ▪ Use of individual/collective action developing and changing rules ▪ Nesting (horizontal e.g. local-global) and/or vertical (chain) ▪ Moderate accountability and dependence on actors ▪ Moderate moral grounding of power ▪ Location of decision-making known for all actors ▪ Long to medium term existing institution with regular actor participation
Reasona-ble	5	▪ Institution stated to exist (named, some rules/norms known) ▪ Boundaries of rights known to most actors in chain ▪ Occasional monitoring and compliance with rules ▪ Infrequent use of sanctions and enforcement mechanisms ▪ Sporadic use of conflict resolution mechanisms ▪ Occasional use of individual/collective action developing and changing rules ▪ Some nesting (horizontal e.g. local-global) and/or vertical (chain) ▪ Low level of accountability and dependence on actors ▪ Weak moral grounding of power ▪ Location of decision-making uncertain for all actors ▪ Moderate lived institution with occasional or infrequent actor participation
Weak	2	▪ Existence of institution not clear (no or few rules/norms stated/discernible) ▪ Boundaries of rights little known to actors in chain ▪ Little monitoring and compliance with rules ▪ Little use of sanctions and enforcement mechanisms ▪ Little use of conflict resolution mechanisms ▪ Little individual or collective action in rule development and modification ▪ Little nesting (horizontal e.g. local-global) and/or vertical (chain) ▪ Little accountability and dependence on actors ▪ Weak moral grounding of power ▪ Location of decision-making vague to unclear to actors ▪ Temporal institution and actor participation
Non-existent	0	▪ Existence of institution not stated ▪ Boundaries of rights not known to actors in chain ▪ No monitoring and compliance with rules ▪ No use of sanctions and enforcement mechanisms ▪ No use of conflict resolution mechanisms ▪ No individual or collective action in rule development and modification ▪ No nesting (horizontal e.g. local-global) and/or vertical (chain) ▪ No accountability and dependence on actors ▪ No moral grounding of power ▪ Location of decision-making not clear to actors ▪ No institution and no actor participation

multi-actor and stakeholder discussions, stimulated further actions for multiple actors in the chain to create change, provide benchmarks for monitoring and reflection, and further seek support from other partners. The advantage of conducting this research over a period of over six years is that it allowed the challenges and outcomes to be understood and actions to address these to be implemented and assessed. From August 2010 observation was conducted with a much lower level of engagement.

Resource assessments

In response to concerns about the lack of data on the resource base during the value chain analysis, *Prunus africana* inventories were conducted. I supervised the studies, which were jointly conducted with experienced foresters and botanists.[11] This activity was supported by the FAO-CIFOR-SNV NTFP project. The initial selection of harvest zones occurred after a review of data and interviews with stakeholders to identify the location of wild and cultivated trees in the Northwest, Southwest and West. Based on this, inventories were conducted from November 2007 to March 2008 in natural forests in the three major production zones: Mount Cameroon and Mount Muanengouba in the Southwest and Kilum Ijim in the Northwest. Methods were adapted from previous inventories (see Ingram *et al.* 2009 for details). At each site a sampling plan was defined taking into account the species characteristics, along 1,500 m long principal transects, with secondary transects varying between 250 and 1,000 were used. Within these sampling plots of 5,000 m² (250 x 20 m) were mapped. Adaptive cluster sampling (ACS) was used in 480 hectares to observe 8,743 *Prunus* trees in the wild. For plantations, 23 sites were surveyed in which 2,962 trees were counted in 18 plantations in the Northwest and 13 in the Southwest. In each plantation of at least 100 trees, the diameter and height was measured for 5% to 10% of the trees, and data collected from owners using a questionnaire. The inventory assessed available stock by measuring diameter at breast height (dbh) and classifying them into two categories: those over 30 cm dbh as trees suitable for exploitation and those over 30 cm dbh as trees with potential for regeneration. Large and small-scale regeneration and planting activities over the last 20 years were collected, with numbers, ages and health status gathered from primary and secondary data collection and interviews with 32 people. Data was analysed using SPSS and Excel, and interpretation satellite images and maps produced from the GIS survey. Preliminary findings were presented and verified in two actor meetings in Oku in June 2007 and Yaoundé in April 2009. Subsequent discussions on the methodology, its pros and cons led to a revised inventory and harvest standard as part of the development of National Management Plan for *Prunus africana*. This data has been used in Chapter 9, where sustainability issues are addressed. The management plan can be found in Appendix 14.

To respond to the lack of data on traditional harvesting highlighted during the value chain analysis, an in-depth study of bark harvest methods was undertaken, the results of which have partly been used to assess the sustainability of the *Prunus* value chain in Chapter 9. The aim was to observe the differences in tree health and mortality and determine sustainability. Traditional harvesting practices were observed, photographed and written up during field and village meetings with 18 bark harvesters and traditional

[11] See Acknowledgements section for details.

medicinal practitioners in Mboh Bolem (July 2007), Mbi (January 2008) and Oku (March 2007). This data is presented in Chapter 9.

Responding to concerns by stakeholders during the value chain analysis about the lack of data on the regeneration of *Prunus africana* bark and harvest sustainability, an in-depth study was undertaken, supported by the FAO-CIFOR-SNV-ICRAF project in collaboration with the University of Dschang and conducted by a MSc student[11] whom I supervised. From April to August 2009 710 uneven-aged *Prunus africana* trees in 14 sites were assessed: wild trees at eight sites and four planted sites (Ichim, Vikhovi, Bova and Cameroon Development Corporation), permanent forest domain (Foungoi, Yangare, Nsoung, Kupe, Mann's Spring and Viambi) and community forests (Kilum CF and Bikhov CF) in four main harvesting regions (Mount Cameroon, Mounts Kupe and Muanengouba, Kilum Ijim and Tchabal Mbabo). In each site a meeting was held with stakeholders to introduce the study, identify harvesters and those with knowledge of the forest. Based on this, former harvesters and porters were recruited and trees located. In forests, trees equal to or above 30 cm dbh were located using transects, cutting paths or using hunting paths. In each site up to 60 trees with dbh above 30 cm and 5 cm (in the forest and planted respectively) were measured, except in Mt Muanengouba and Kupe, where insufficient trees were found. Bark samples of approximately 100 g were collected from 10 trees at each site, weighed and measured. The number of trees debarked and underexploited (less than twice ¼ bark diameter removed), normally exploited (twice ¼ bark diameter removed) or overexploited (more than twice ¼ bark diameter removed) were recorded. Seedling regeneration rates were assessed by counting all trees (excluding seedlings) below 30 cm diameter at breast height within 20 m radius of the enumerated trees. A classification system was used of zeros (stems indicating no regeneration), less than two stems as poor, three to four as average, and more than five as good regeneration. The distance of 20 m was obtained based upon Stewart (2009).

To estimate recovery rate and bark yield post-harvest, for each tree the bole height was measured using a Bitterlich relaskope. Breast-height diameters were measured using a diameter tape and diameters at 2 m intervals were measured to calculate tree volume. Bark thickness was measured at breast-height levels using a Priestler bark gauge for harvested and un-harvested bark. The recorded values were averaged for four readings taken at four breast height diameter (dbh) points. The difference between the harvested and unharvested values indicated the level of regeneration after a given period. To determine the rotation age, a graph of recovery rate on ages was traced based on the fact that each tree had reached a specific age after harvest. The same reasoning was applied to determine the sustainable diameter for harvesting since the mean recovery rates per diameter class were computed. Samples were taken to measure and compare dry weights. The bark yield volume per tree was calculated. Bark weight was measured using an electronic scale balance to allow conversion from harvested fresh weights to exported dry weights, as well as bark volumes to weights. The health status of each tree was evaluated and classified following the Biodiversity International/ Austrian Development Service (BFW) method (Bioversity International 2009) to assess crown condition. The trees were examined for pests and diseases in the bark and on the leaves and the effects noted. Data analysis was carried out using two main distinctions, to enable a comparison between harvested and planted areas using means and standard deviations per site and across different altitudinal levels. The measured parameters were standardised by taking their rates according to age (height increase was obtained by dividing the actual height measured by age of the corresponding individual). Growth rate data were

analysed using Multivariate Analysis of Variance (MANOVA). For comparison purposes, area means were separated using the Duncan multiple range test. The results are presented in Chapter 9, with the full report contained in Appendix 14.

The apiculture value chain analysis indicated a lack of knowledge about the resource base. Knowledge of the species foraged by bees is essential to determine livelihood and sustainability impacts and to characterise apiculture products from the two areas. A two-pronged approach was used to examine forage sources and analyse hive products (honey, wax and propolis) to determine botanical sources and geographical origin. An assessment of bee forage sources was made. Multiple methods were used: field observations from June 2004 to November 2010 in the Kilum Ijim forest at Mt Oku in the Northwest, around Tombel, Kumba and Mt Muanengouba, around Buea to Mount Cameroon in the Southwest region, and around Ngaoundal in Adamaoua region. Support with identification was provided by botanists and additional fieldwork was conducted by MSc students[12] whom I supervised. Species identification was complemented with a literature review; discussions with botanists from the University of Dschang, National Herbarium and Royal Botanic Gardens Kew; interviews with beekeepers; discussions following a presentation of forage species during the SNV Beekeepers Training of Trainers Workshop in Bamenda 2007; and pollen analysis of two 50 g samples of honey from the Northwest and Adamaoua region by the APPICA Lab in Germany in 2010, using microscopy to analyse botanical and geographical origin. A physical and chemical analysis of apiculture products (see Appendix 15) was conducted to identify the physical and chemical properties of hive products, which are determined by the vegetation which bees forage upon. A laboratory analysis was commissioned of solubility, flavonoids, antioxidants, phenols and microbial activity of twelve propolis samples from the Northwest and Adamaoua regions, by the University of Zagreb. As there is no standard for analysing propolis, parameters were defined using a literature review (Marletto 1984; Woisky *et al.* 1998 ; Peña 2008). Antimicrobial activities were determined using agar-diffusion and other parameters using a spectrophotometer. Secondly, laboratory analyses were commissioned of chemical residues, chemical and physical properties of honey and wax, performed by APPICA Lab in Germany and VIMTA Labs in India, using European Council Directive 2001/110/EC of December 20th 2001 relating to honey standards. The results are presented in Chapter 8 with the detailed report available in Appendix 15.

Limitations of the study

During this study 'research fatigued' people and communities were regularly encountered: just one too many researchers or development workers had quizzed them and failed to give anything back. The interviewee or subject, whilst perhaps curious and faintly amused the first or second time, was apt to be sceptical after several such encounters – resulting in what may be unreliable research results. Although it was rare to find someone unwilling to collaborate, maybe the next researcher or development worker who comes along may encounter more resistance. A negative view of outsiders, development and so-called capacity building was encountered. The personal experience of living and working in Cameroon for six years has led to several convictions. First is

[12] See Acknowledgements section for details.

support for Shanley & López's (2009) observation that most of the world's population deriving livelihoods from forests are out of the information loop, being systematically excluded from access to scientific research results. This has expensive and negative ramifications for conservation and development. Second is a belief in the need to avoid and to actively reverse traditional extractive research, by giving back information to build capacity of those less privileged and making an 'impact'. Third, agreeing with van Dijk and colleagues (2003), is the need to be accountable to one's research subjects. Fourth is the need to maintain impartiality and neutrality, particularly whilst working for a development organisation and as director of one the organisations studied (see Preface and Box 3.2).

To balance the challenges and limitations of being embedded in organisations which were also active in the chains and neutrality, triangulation, mixed data sources and verification was used. PAR was also used to breach what Shanley (2009: 3) describes as "a chasm between where knowledge is generated and where it is needed" that "rarely leads to positive ecological or livelihood outcomes where the work was conducted". The PAR activities conducted are listed in Appendix 12. Rigour was maintained by using participation methods that developed mutual trust and open communication; using multiple concepts, methodologies, data sources and methods of data collection; and critical reflection, feedback and review processes where preliminary results were presented and disseminated for critical feedback by stakeholders and actors.

To make this research available in suitable and accessible formats to inform policy and practice, a publication strategy was developed to disseminate the results and ensure their social and political relevance. The results of this approach are listed in the final chapter on Outputs and a reflection on the process is presented in Chapter 11. Actively seeking feedback, monitoring and assessing impacts of interventions further helped to limit some these classical problems, creating more acceptable and reliable research and positive development outcomes.

As the research was conducted in a limited sample of chains, based on a sample of production areas, markets and very limited number of consumers, the economic (trade value and number of active actors), social-cultural value, and environmental value (including abundance and vulnerability) are based on best estimations and extrapolations. The estimations of the total market value of NTFPs in Cameroon, based on sporadically collected data over a time period of ten years, also means that the values presented are estimates.

Another limitation was my physical distance from my supervisors whilst being in the field. To overcome this, support from researchers in the region and a CIFOR mentor were solicited (see Acknowledgements). A further challenge was to collect sufficient quality data for a reliable assessment with limited resources: ideally data would have been collected periodically over longer time-periods to provide more robust information on the values, impacts of interventions, particularly of PAR activities, using control groups and creating baselines. This challenge I hope to be able to address in future research. Difficulties dealing with the multiple languages spoken in the study area were overcome by collaborating with other researchers, using translators and taking French lessons.

Finally, an understanding of how governance arrangements impact livelihoods for actors in NTFP value chains has been hindered by a lack of comparative case studies using common approaches and multiple, mixed methods. The methods used here aim to fill this gap. The results obviously depend on how cases were selected and thus have

limits to their possibility for extrapolation to other NTFP chain actors, countries and products in the Congo Basin and elsewhere. The study was designed to provide insights into the products and value chains and the social, economic, political, social-cultural and natural capital, and livelihood and governance contexts in which they operate. The results are presented in Part II and in Part IV of this thesis. In Chapter 11 the implications of using these methods are reflected upon.

Part II: Contextual analysis

Part I introduced the multiple spatial and temporal links between people, poverty and development, places, forests and their products and provided the conceptual and methodological framework underpinning this study. Part II goes deeper into the forest: presenting the context based on existing literature. Current gaps are filled and new knowledge created on the contexts in which the NTFP value chains are embedded and operate. This enables the contexts of the areas in which the value chains originate and operate to be introduced and analysed, showing how these shape governance arrangements and their outcomes, currently and from a historical perspective. Chapter 4 covers the environmental context – the forest resource base and Chapter 5 the livelihood aspects in terms of socioeconomic and entrepreneurial context. Part II thus responds to the first research question concerning the contexts in which governance arrangements of NTFP value chains are embedded and observable trends, and the second question concerning the nature of products, uses, sources and values. Chapter 2 stressed that a historical perspective and broad context is essential to understand value chains, with detail and breadth needed to appreciate the impact governance arrangements have on livelihoods and their sustainability. This multi-dimensional analysis of the context in which the values chains operate also follows the bricolage line of inquiry adopted for this study.

Multiple forest governance institutions: A community forest, protected area, project and customary rules in Kilum Ijim, Northwest region, November 2009

4

Forest capital contextual analysis[1]

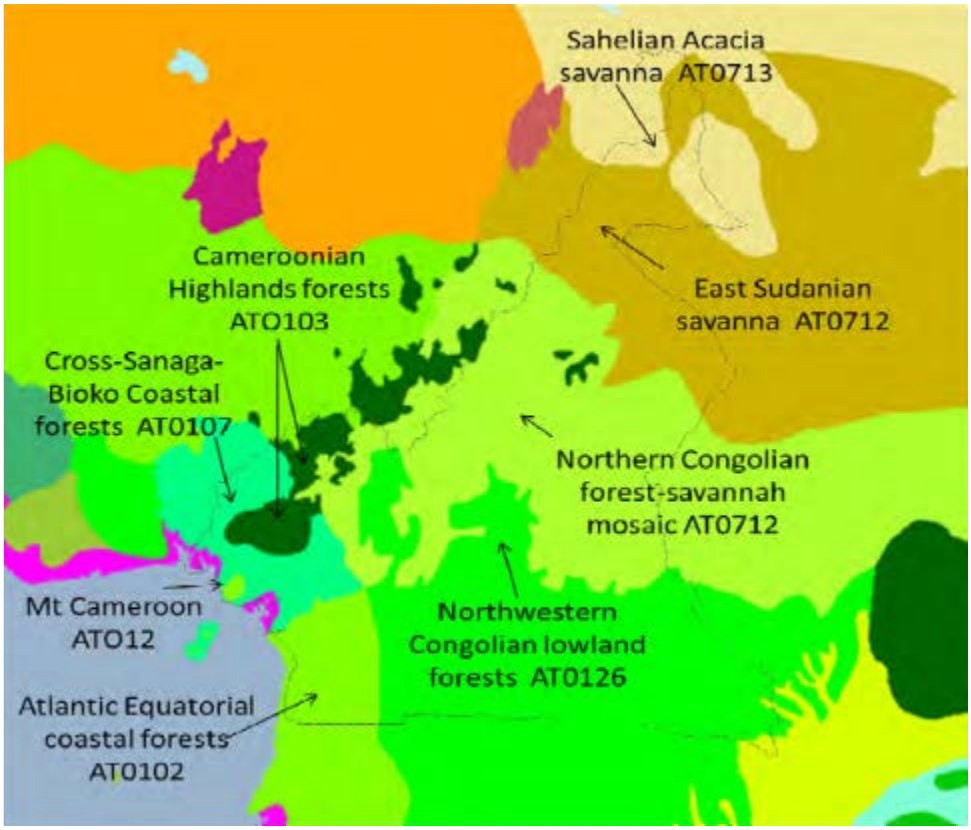
This chapter elaborates on the scene set in Chapter 1 and travels deeper into the study area. It provides answers to the first research question concerning the contexts in which governance arrangements of NTFP value chains are embedded and the trends therein, with a focus on natural 'forest' capital. It also addresses part of the second research question regarding the products and their values. The bio-physical context creating natural capital is presented using an ecoregion approach. This allows an analysis of how the capital base provides species and in general terms shapes the subsequent products, their characterisitcs, uses, values and vulnerabilty, which in turn impact the value chains and sustainable livelihoods. Detialed in Chapter 3, this chapter draws on data from the literature review, interviews with key stakeholders, trade data and resource assessments. The values provided are best estimates, given the widely varying quality and sporadic, unsystematic nature of secondary data upon which the majority of this chapter is based.

The origin of the value chains: forest ecoregions

Cameroon is situated in the Afromontane, Guineo-Congolian and Sudano-Zambezian phytogeographical regions. Within these are ecoregions: relatively large contiguous, biogeographic land areas around 50,000 km^2 or more containing distinct assemblages of ecological communities and species, with boundaries approximating the original extent of natural communities prior to major land-use changes (Gunn 2007). They have specific climatic characteristics and dominant plant communities including natural and planted forests, agroforestry and agriculture. The NTFPs in this study originate from seven ecoregions (the codes of which are indicated in brackets in the text and shown in Figure 4, which are grouped by phytogeographical region.

[1] This chapter draws on peer-reviewed, published work written or contributed to by the author (Cerutti *et al.* 2009; Ingram *et al.* 2012a; Ingram *et al.* 2012d; Ingram *et al.* 2013b).

Figure 4.1 Forest ecoregions in Cameroon



Source: adapted from *http://worldwildlife.org/science/wildfinder/*

Afromontane forests

The *Prunus africana, Raphia* spp., *Cola* spp., honey and bamboo chains originate in the Afromontane phytogeographical region, specifically the Cameroonian Highlands forests (AT0103) and Mount Cameroon (AT012) ecoregions. These span the Gulf of Guinea Highlands, a chain of volcanic mountains stretching from the Atlantic Ocean to Mount Cameroon (4095 m), the Bamenda Highlands and Mount Oku (Mt Kilum) at 3011 m. Seven ecosystems can be differentiated with increasing altitude from montane forest, afroalpine bamboo forest, to open mixed montane forest and montane grasslands (Ingram *et al.* 2009). Within the Cameroon Highlands ecoregion, the Bamenda Highlands (18,100 km^2) contains the largest remaining patches of afromontane forest in West Africa and has 920 known plant species (Cheek *et al.* 2000). The Mount Cameroon ecoregion has six altitudinally distinct ecosystems ranging from lowland forests to subalpine grasslands identified (Ingram *et al.* 2009) and contains 2,435 plant species, 42 of which are endemic and 50 near-endemic (Cable *et al.* 1998; Cheek *et al.* 2000). Due to their biological uniqueness, they are considered as hotspots of biodiversity, rarity and endemism on a continental scale (Jetz *et al.* 2004; Bergl *et al.* 2007). Recognising this, the forests in this ecoregion have been prioritised by the WWF and Birdlife International as "Important" and "Endemic Bird Areas" and by Conservation International as a "biodiversity hotspot".

Human activities have resulted in increasingly fragmented, degraded and isolated forest patches and diverse production systems. Archaeological and botanic evidence in-

dicates that the Bamenda Highlands were once forest covered and inhabited by forest-dwelling people (Nkwi *et al.* 1982; Cable *et al.* 1998). Human interventions resulted in ecoregion landscape changes from 2,000 years ago (Tamura 1990). In the 1950s forest cover and large mammals were common (Durrell 1953; 1954) and approximately 37% of the region was forested (Kaberry 1952). The decrease led to the area to be referred to as the Grassfields and by 1965 forests were around one third of their original extent (Hawkins *et al.* 1965). From 1958 to 1988, over 50% of montane forest was lost (Royal Botanic Gardens Kew 2003). The deforestation rate was three times higher than the national average from 1978 to 2001 (Solefack 2009). Forest regeneration from 1988 to 2001 resulted in 7.8 % of the 1988 forest recovering. From 1995 to 2004 the forest boundary remained static, marking the community forests and the Plantlife Sanctuary reserve, with regeneration occurring inside these limits (Royal Botanic Gardens Kew 2003). Since the end of the Bamenda Highlands Forest Project in 2004 degradation continued inside the forest boundaries (personal observations, confirmed by Enchaw (2010). An estimated 95 km^2 of continuous montane forest now survives, with smaller remnants spread across the region. Deforestation and degradation are caused by conversion to agriculture; grass burning (*ankara*) by farmers, graziers and hunters; hunting; and wood collection for subsistence energy use and for construction. The high population density (see Table 5.2) increases pressure, with soil degradation common (UNDP/ARPEN 2006; Cerutti *et al.* 2009). Forest and land-use conflicts have been common since colonial times (Dafinger *et al.* 2006; Enchaw 2010; Mbah 2010). The impact of deforestation on biodiversity has been devastating, with most large mammals now locally extinct (Maisels *et al.* 2001) or highly threatened (Ingram *et al.* 2008). Although new species are still being discovered (Cheek *et al.* 2000; Harvey *et al.* 2004; Cheek *et al.* 2010), the impact on flora is less known. The loss of faunal seed dispersers, combined with grazing and fire (Chapman *et al.* 2007), impacts ecological composition, further decreasing forest regeneration (Ayodele *et al.* 2002; Bergl *et al.* 2007) and threatening the NTFP resource base.

Guineo-Congolian lowland humid forest

The *Gnetum* spp. and *Irvingia* spp. value chains originate in the Guineo-Congo phytogeographical region, specifically the coastal area of Southwest Cameroon and Nigeria in the Cross-Sanaga-Bioko Coastal Forests ecoregion (AT0107), the Atlantic Equatorial Coastal Forests ecoregion (AT102) and Northwest Congolian Lowland Forest ecoregion (AT0126). The latter ecoregion encompasses a vast swathe of lowland, with humid, tropical forest covering the majority of the Congo Basin. The Cameroon variant covers south and southeast Cameroon and typically has heavy rainfall during one nine month long season. The moist broad-leaved deciduous and evergreen forests are relatively intact with high levels of endemic flora and a high animal species diversity (White 1983), with 950 flora and 541 animal species known in Takamanda national park (Comiskey *et al.* 2003); 1,100 plant and 1,964 animal species in Korup national park (Mount CEO 2007); and 724 animals (WWF 2009a) and 2,297 plants in Campo Ma'an national park (Tchouto *et al.* 2006). Terrestrial megafauna act as major seed dispersal agents (de Wasseige *et al.* 2009). This species diversity indicates a long history of permanent forest cover (Comiskey *et al.* 2003).

Over the last 10 million years, climate fluctuations have affected the proportion of forest to savannah (WWF & Saundry 2008). Continuous forest loss over the last 40 years is apparent (Robiglio *et al.* 2010), although slowing from 0.08 to 0.03% from

2000 to 2005 (de Wasseige *et al.* 2012 . Whilst low compared with the Amazon and Asia (FAO 2011), more significant degradation occurs in highly populated areas and around urban areas (Wilkie *et al.* 2001; Duveiller *et al.* 2008). Population density varies significantly. The rainforests of the east (7.5 inhabitants per km^2) and south (12.5 inhabitants per km^2) are sparsely populated whilst the Littoral region has 105.2 inhabitants per km^2, containing Doula, the largest city in Cameroon with an estimated 2 million inhabitants. Deforestation and degradation are caused by conversion to agriculture and plantations, logging, infrastructure extension and fuelwood extraction (Robiglio *et al.* 2010; Dkamela 2011).

Sudano-Zambezian savannah

Situated in the Sudano-Zambezian phytogeographic region, channels of the honey and bamboo chains also originate from the Northern Congolian forest-savannah mosaic (AT0712). This region contains one of the most northernmost African savannah woodlands, forming a narrow transition zone and abrupt habitat discontinuity between the lowland rainforests and Sudanian/Sahelian grasslands. The mosaic landscape is the result of climatic fluctuations over the last five thousand years, with indications of a drying climate in the past three decades (UNDP/ARPEN 2006). The region's high species richness, with at least 965 plant and 417 animal species (WWF 2009b; Froumsia *et al.* 2012), is due to these diverse habitats (WWF & Saundry 2008). The forests are dominated by *Daniella oliveri* and *Lophira lanceolata* (Letouzey 1968), multiuse, melliferous species (Fohou *et al.* 2010). The climate is characterised by single wet and dry seasons, with forested areas exhibiting high dry season relative humidity. Frequent fires, increasing since about 50,000 years ago and aggravated by human-induced clearings in the last 3,000 years, have reduced tree densities, creating wooded grasslands (WWF & Saundry 2008). Historic land-use patterns reflect plant-soil interactions, with nutrient-poor oxisols left after forest slash-and-burn agriculture. The region has a low population density with 0.12 per km^2, particularly outside the major population centres of Ngoundéré, Tibati and Ngaoundal (UNDP/ARPEN 2006). Small-scale agriculture occurs around settlements and is increasing around Ngaoundal (UNDP/ARPEN 2006). Nomadic cattle herding is common, although decreasing significantly over the past 30 years (Mitchard *et al.* 2009).

The gum arabic (*Acacia* spp.) chain originates from the Sahelian Acacia savannah ecoregion (AT0713). The ecoregion has a tropical, hot and strongly seasonal climate with a six to eight month dry season, when fires are common and hot, sand-laden Harmattan winds blow from the north. Wooded grassland is widespread with six *Acacia* species dominating (UNDP/ARPEN 2006), most of which are bee pollinated. Although not particularly biologically rich, these savannahs once supported large and diverse ungulate communities, reduced by over a century of hunting and habitat loss. The original Acacia bush land has been altered to grassland over thousands of years by climatic changes and anthropogenic actions (FAO 1977). Deforestation, soil degradation, salinity and desertification are increasing and major problems (UNDP/ARPEN 2006).

From ecoregion, to species, to product

These distinct ecoregions together contain over 10,007 plant species, 55 of which are threatened and 3,000 endemic, with new discoveries regularly occurring (Secretariat of the Convention on Biological Diversity and Central African Forests Commission 2009;

Thompson 2009). The species used by people and how they become products, illustrated in Box 4.1, are presented and analysed in the next section.

Box 4.1 From species to product: bamboo and *Raphia* spp.

In the process of commodification, the values and social understanding of relations between people and a product change (van Binsbergen 2005). One species can give rise to one product, with multiple uses, or multiple products with similar and/or different uses. As a product is used in different ways, particularly if it is traded, different values may be associated with the species and product(s). Where multiple parts of a species are used, these can create further products and other values. Illustrative examples are bamboo, the stems of which are used to create at least 45 products for energy, material and cultural use. Some are highly culturally valued, but of low economic unit value: palm wine is cheap, compared with bottled beer, and bamboo furniture, perceived as of low quality, rustic and artisanal compared to wooden or plastic furniture (Ingram & Tieguhong 2012). Nearly all parts of *Raphia* spp. palms are used, producing at least 30 product types, by both the owner and a chain of different processers. These products provide materials, tools, food and energy (see Chapter 10).

Non-timber forest products in Cameroon

This section presents the results of the data review and shows the species in Cameroon which become products, their characteristics, uses and vulnerability. Their values are analysed, and in doing so, the representativeness of the selected NTFPs in terms of their economic, social and environmental values is ascertained.

NTFPs re-inventoried

The literature review confirms Dounias' (2000) observation that Cameroon is over-represented in Central African ethno-botanical literature, attributed its phytogeographical diversity, social, political and logistical factors, colonial legacy and largely stable politics allowing access for Anglophone, Francophone and local researchers. Data is classified into:

1. Single species studies, focussing predominantly on highly commercialised species (Appendix 3), such as *Irvingia* spp., *Gnetum* spp. and *Prunus africana* (Appendix 14).
2. Specific geographic location studies (Appendix 5), associated with conservation and ethnographic projects, particularly covering four administrative regions and the Guinean-Congolian and afromontane forests. The studies show how in areas where local populations, such as the Tikar (Dounias 1996; Zapfack *et al.* 1999) have not had a close or historically long relationship with forests. Use and knowledge of forest products is significantly less than for forest-dwelling ethnic groups such the Baka, forest-adjacent groups such as the Nso, Oku and Kom in the Northwest and Bantu in Dja and Campo Ma'an. These studies also show that NTFPs are found in less biodiverse, degraded and peri-urban landscapes and in fields and agroforests.
3. Specific uses, particularly food, medicinal (Vasisht *et al.* 2004; Jiofack *et al.* 2008; Focho *et al.* 2009; Jiofack *et al.* 2009a) and for trade (Appendix 3). Data collection has not been consistent over time and clusters around specific geographical areas, shown in Appendix 5. For medicinal plants, traditional uses and the efficacy of species for Western style medical use has been the main focus of literature.
4. General studies (Appendix 4) initially analysed trade and economic values (Trefon 1994; Ladipo 1998). In the late 1990s 'key' or 'major' plant NTFPs were identified

(Wilkie 1999) and assessments of regional and national trade conducted (Ndoye *et al.* 1997/98; Sunderland *et al.* 1998; Tabuna 1998; CERUT-AIDEnvironment 1999; Ruiz-Pérez *et al.* 1999; Tchatat 1999; Ruis Pérez *et al.* 2000; Walter 2001). Two regional studies reiterated existing statistics (FAO 1999; Mbolo *et al.* 2002). Studies[2] provide details on values, volumes, socio-economic and environmental aspects, noting 205 plants used (Fomete *et al.* 1998; Betti 2007b), 300 edible fruits (Vivien *et al.* 1996; Eyog Matig *et al.* 2006), 86 plants in the Highlands (Neba 2006), 200 plants used for food in the humid ecoregion (van Dijk 1999) and 839 plants with medicinal uses (Adjanohoun *et al.* 1996).

5. Recommendations to revise the regulatory framework including trade, taxation and monitoring (Mbile *et al.* 2005; Betti 2007a;b; Ebamane 2008); (Walter *et al.* 2006; Bonannée *et al.* 2007) (Appendix 4).

Box 4.2 NTFP data deficiencies

Timko *et al.* (2010) indicate that the paucity of socioeconomic data in Africa is due to the ambiguous definition of NTFPs, their origins from both the forest and farming systems and their role being poorly defined. In Cameroon they fall under the jurisdiction of Forestry and Wildlife Ministry, but their different characteristics from timber, exacerbate data gathering difficulties:
Visibility: Products are often physically small, less visible than timber and once processed their cultivated or wild origins are difficult to differentiate. Many NTFP species are difficult to identify and some have low turnovers, making them less visible. *Diversity:* over 200 NTFP species are traded, compared to 10 species comprising the majority of exported timber (Cerutti *et al.* 2009) and around 80 artisanally traded (Koffi 2005). *Value:* Most NTFPs are sold in non-standard units, in values of less than US$ 1 and weigh under 1 kg. Unit prices are variable, changing by market and season (see Appendix 9 and 14), unlike timber measured in roundwood and sawnwood in m^3 (Fometé *et al.* 2008; ITTO 2010). *Data collection points:* The diverse and diffuse market channels make determining data collection points difficult and costly compared to the high visibility of timber, particularly exports. *Collecting responsibilities:* NTFP data collection is fragmented and uncoordinated between DPT, COMCAM in Douala, CITES authorities (ANAFOR and MINFOF) and Customs phyto-sanitary officials. National trade data is not collected. *Export:* There is a perception that only a few NTFPs are exported (Tabuna 1998). Timber in contrast has a high turnover and is easily visually identified at export locations, aiding data collection which is used to generate significant revenues for the state. *Multiple origins:* NTFPs are collected in numerous locations and by many people: at least 283,000 people work in just the 9 NTFP chains studied (Ingram 2011c). Whereas most of the timber (91%) originates from 93 Forest Management Units (2010) and 169 Sale of Standing Volume titles (2000 to 2008) (Cerutti *et al.* 2010), employing 163,000 people in 2006 (Auld *et al.* 2008).
Lack of coordination: Too little and insufficient coordination between research, development and conservation organisations means when data does exist it is often under-utilised (Republique du Cameroun 2008).

The review findings highlight the range and depth of existing knowledge but also gaps. These concern locally traded species used for tools, construction and materials, and specific administrative regions (West, East, Adamaoua, North and Extreme North), and products wild or of domesticated origin. Regularly collected temporal and spatial statistics do not exist and most values are estimates. The difficulties in gathering data – highlighted in Box 4.2 – explain why these gaps occur. To compensate for these gaps, the market survey, market information systems, tracking and observation provided data

[2] Including those conducted for the FAO-CIFOR-SNV NTFP project.

on species, products and prices in 18 markets, and trade data and databases were used to source exported product values and quantities. From these sources a database of 710 NTFPs was established (Appendix 2), detailing local and scientific species names, quantities sold, market type, values, vulnerability status, habitat, plant type, parts used, uses and level of cultivation.

Analysis of priority NTFPs

Analysis of these data sources shows how species are used, the proportion traded, a large number of species with multiple uses and from which multiple parts are used, and levels of vulnerability of specific species to certain harvesting methods – given their population and ecosystem status. This enabled priority NTFPs to be established and the NTFPs studied to be situated in context. Data gaps occur where no details were found on environmental, social and economic values. For example where exchange, gifts and non-cash trade is significant, such as for *Irvingia* spp. by the Baka'a pygmy, Anyang and Becheve ethnic groups. Using the scoring system elaborated in Box 3.1 and Table 3.2, all NTFPs were ranked so that priority species and products could be determined, shown in detail in Appendix 2 and Appendix 16, and summarised in Table 4.1. This aids understanding of the context in which chains studied are located and their representativeness.

Table 4.1 Summary of prioritised NTFPs in Cameroon

Value score	Number of species		Percentage of total species		Average number of uses	Number of products	Average number of parts used	Estimated annual value US$
	Plant	*Animal*	*Plant*	*Animal*				
5	16	-	7	0	3.5	≥ 41	2.0	406,372,712
4	> 53	>41	10	27	1.5	≥81	3.5	622,562,719
3	5	-	1	0	1.5	≥9	2.8	No data
2	138	53	24	56	1.9	≥200	2.3	No data
1	290	>9	59	17	1.3	≥300	2.7	No data
Total	589	121	100	100	1.94		2.6	1,028,935,431

Source: Research results

Of the 710 species assessed, only 2.3% merited the highest value score of five, due to their wide-scale consumption and/or large-scale trade. Many more species might be included if all those used for fuelwood were known. A further 3% of all NTFPs received a value score of four, denoting either (i) a wide-scale regional, national or international trade which provides an important revenue source for livelihoods; (ii) multiple use species and species where trade is combined with large-scale consumption for important uses (such as cultural, medicinal, food, tools or construction); or (iii) species classed as protected or vulnerable. For animals, 38% scored four, representing the most hunted species for consumption and trade, those with high cultural values and most vulnerable species. Traded species include those sold for meat, the international pet trade, to zoos and for research. Just 1% of plants and no animals were scored three, denoting species with both multiple uses and a local trade. For multiple use species where there was either only consumption but no trade, or a small, limited trade, these were ranked lower with a score of two, and comprise the majority of animals (51%) and a 285 of plants. The highest number of plants (58%) and a small proportion of animals (8%) were valued with a score of one: these have minor use, and/or a small trade or low-level consumption. The highest valued categories (scored three, four and five) were classified as 'priority NTFPs'. The priority NTFPs in Cameroon closely mirror those prioritised in

other Congo Basin countries (FORENET 2010) and include all the NTFPs studied except for bamboo. This similarity can be explained by the similarity in forest ecoregions and the comparable social, cultural and economic contexts. This suggests that the values of the eight NTFPs studied in Cameroon generally reflect the values of NTFPs across the Congo Basin and suggests that a limited extrapolation can be made.

Subsistence use and traded NTFPs

A result of the data review is that more NTFPs are shown to be used and traded (Table 4.2) than previously recorded. The market surveys highlight the much larger number of plant species traded, especially medicinal plants, than previously indicated, particularly in government statistics. NTFPs not well studied, but having high economic and social value, include firewood, fish, cola nuts (*Garcinia cola, Cola nitida, C. anomala* and *C. acuminata),* insects (such as palm grubs, larvae, caterpillars, termites and grasshoppers), mushrooms, resins, seeds and barks for condiments and medicinal use. The number of animal species used and traded are likely to be higher as bird, bat, reptile and rodent species were often not specified and except for large mammals, savannah fauna was largely absent in the literature. Around 1,000 freshwater fish species are eaten (Essama-Nssah *et al.* 2000; Stiassny *et al.* 2007), although mainly clariid catfishes and tilapias from the Sanaga River basin and Lake Chad are traded (Randall Brummet, World Fish Centre, pers. com.). Most NTFP plant species (65%) originate in the humid forest ecoregion, 16% from the montane and 9% from the savannah, with 14% occurring in more than one ecoregion. The proportion of NTFPs from the humid forests is slightly higher than the area (60%) this ecoregion covers in Cameroon.

Table 4.2 Overview of NTFP species and products in Cameroon

Species and products	Number	Percentage	Percentage traded
Animal species used as NTFPs	121	17	83
Plant species used as NTFPs	589	83	21
Total number of species used as NTFPs	710	100	32
Animal based products	130	8	
Plant-based products	943	92	
Total estimated number of NTFPs	1,073	100	

Source: Research results. Note: Products calculated using number of uses per individual species multiplied by the species

The data illustrates that Cameroonian NTFP trade has a long history. Since at least the 7th century (Oliver 1999) trade in palm oil (*Elaeis guineensis),* elephant ivory, pepper (*Piper guineensis),* honey, beeswax and cola nuts (*Cola acuminata* and *Cola nitida*) has occurred between Central and North African countries. Melegueta pepper (*Aframomum* spp.) has been traded outside of Africa since the Middle Ages (Pakenham 1991; Sunderland *et al.* 2004b). Inter-African and international trade increased with colonial improvements in infrastructure and communications (Langbour *et al.* 2010), leading to gum arabic (*Acacia* spp.) (see Chapter 10), ivory (Pakenham 1991), palm oil (Kaberry 1952; Chilver *et al.* 2009) and especially wild rubber (*Funtamia elastica*) (Geschiere 2007) becoming big business, fuelling Western industrial revolutions and encouraging the scramble for Africa (Pakenham 1991). Inter-African trade continues to flourish for gum arabic, *Raphia* spp. palm wine (see Chapter 10), cola nuts and honey. Wild rubber and iboga (*Tabernanthe iboga*) (Kingsley 1897; Pakenham 1991) trade has now virtually ceased. Scarce historical data exists on values and products traded interna-

tionally, comprising exports to Europe (Tabuna 1999), ivory (Johnson 1978; Feinberg *et al.* 1982; Chaiklin 2010) and cola (Kaberry 1952; Fomine 2009).

At least 225 of the products, 32% of the total, are traded. Of these 80% are animal species and 20% plants. Data on the quantity and specific species of animal products traded is scarce (shown in Appendix 9, 10 and 14 in Ingram and Schure (2010)). Since 1996, 22 plant-based products have been recorded as dominating lowland humid forest ecoregion markets, of which *Irvingia gabonensis* (see Chapter 10 and Awono *et al*. 2009 in Appendix 14 for details); *Gnetum* spp. (see Chapter 7) and *Dacryodes edulis* together constitute 86% of the volume. The details of volumes and prices are shown in Appendix 10. Five NTFPs from four species (seeds from *Ricinodendron heudelotii,* fruit 'pepper'' from *Piper guineensis*, *Cola acuminata* nuts and *Garcinia kola* barks and nuts) were also sold in significant quantities, amounting each up to 10% of total market volume. The remaining products, originating from at least 11 species (although the exact number of insect species is unknown), each constitute less than 1% of annual market volumes traded. Many of these products are condiments with good storage properties or are highly seasonal. On average, seven products were traded in the main Type II NTFP markets in the lowland humid forest ecoregion, varying by location (detailed in Ingram & Schure 2010 in Appendix 14). Over 20 NTFPs from across Cameroon were offered in the Type III urban markets of Douala and Yaoundé. The Type II regional markets such as Limbe, Buea and Ebolowa have a smaller range of on average 10 products. Local type II markets which generally offer a smaller range of products sourced from the vicinity in larger quantities. These findings reiterate Ruiz Pérez *et al.*'s (2000) market typology, with the same NTFPs continuing to dominate markets. The market value is however much higher than previously reported (CERUT-AIDEnvironment 1999; FAO 1999; Ruiz-Pérez *et al.* 1999; Hoare 2007). Detailed in Appendix 16, the approximate total annual value of NTFPs with a score of five (indicating a high social-economic and environmental value) was at 406,373,712 US$ and for those with a score of four, 622,562,719 US$. The total estimated annual market value of Cameroonian NTFPs is at least 1,028,966,931 US$. This is unrecorded in official statistics. To place this figure in context, the value of exported and domestic timber in 2008 was 1.41 billion US$ (see Table 1.1) and agriculture[3] was 4.68 billion US$ in 2005 (World Bank 2009b).

The review resulted in a large number of NTFPs reported as exported and higher international trade quantities and values. At least 50 plant-based species providing 70 products and an estimated 135 animal species are exported or have been in the last thirty years (detailed in Ingram and Schure 2010 in Appendix 14 and in Appendix 10). This is much larger than previous studies indicate (FAO 1999; Tabuna 2000; Mbolo *et al.* 2002). The exported products fall into four categories:

1. Diaspora products comprising around 15 products consumed mainly by Central African diaspora located in Europe and the USA, via markets and specialist retail outlets in major urban areas such as Paris, London, Brussels and Amsterdam. These popular condiments and foods include *Gnetum* and reflect those traded in Type III markets in Cameroon. Bushmeat exports are difficult to estimate, being informal, illegal and undocumented except for Tabuna (2000) and Chaber *et al.* (2010) indicating at least eight species – and probably many more.

[3] Includes forestry, hunting, fishing, cultivation of crops and livestock production.

2. Regional exports of a few high value, larger volume, raw and processed products such as eru (*Gnetum* spp.), bush mango (*Irvingia* spp.), honey, ebaye *(Pentacletra macrophylla),* njangsang *(Ricinodendron heudelottii*) and cola nuts *(Cola* spp).
3. Industrial ingredients either raw or partially processed NTFPs used as medicines, foods, and materials such as *Acacia* spp., *Prunus africana*, honey and wax.
4. From 1973 to 2010, 267 CITES-listed species were exported: 127 animal species mainly as trophies, for trade, research and zoological purposes and five plant species, dominated by *Prunus africana,* orchids (*Bulbophyllum* spp.) and *Pericopsis elata* (CITES 2011).

Multiple parts of species used as NTFPs

Table 4.3 shows that for just over half of all plant-based species, more than one part is used and for most animals just one part (the flesh) is used. This finding emphasises that only a small number of plant-based NTFPs have high multiple part use values.

Table 4.3 NTFP species with multiple parts used in Cameroon

Number of parts used	Plants (n=582)		Animals (n=121)	
	Number of species	*Percentage of total species*	*Number of species*	*Percentage of total species*
1	354	61	116	96
2	129	22	5	4
3	45	8	0	0
4	37	6	0	0
5	17	3	0	0
Multiple parts used (>1)	*228*	*39*	*110*	*96*

Source: Research results

The uses of plants and their parts varies by cultural groups (Schippmann *et al.* 2002). Following Betti (2007b), plant species were classified according to 11 commonly used parts and for animals 8 parts. Compared to Betti's findings, a lower percentage of fruits, similar proportion of barks and higher proportion of leaves were found (shown in Table *4.4*). The difference may be due to the wider range of data sources and inclusion of traded and consumed products. The review highlights that most animals are used for their flesh, indicative of their food use.

Multiple uses of NTFPs

How NTFPs are used differs significantly with biological origin. Most animals are used only for food (Table 4.5) with few having multiple uses. A smaller number are used as cultural objects, materials and medicines. Plants have a much wider variety of uses, with up to 19 uses of any one species. Medicinal use dominates, followed closely by food and for tools. These proportions mirror ethno-botanical studies (Thomas *et al.* 1989; Tame 1993; Zapfack *et al.* 1999, 2001a, 2001b; Cheek *et al.* 2000, 2001, 2004, 2010; Betti 2004; Gwet 2004; Harvey *et al.* 2004; Lykke *et al.* 2004; Ilumbe 2006; Neba 2006; Focho *et al.* 2009; Jiofack *et al.* 2009b; Simbo 2010). The number of species used as fuel is probably vastly under-recorded (Ibrahima *et al.* 2007; SIE-Cameroun 2009) and differs by ecoregion, according to the availability of energy sources and fuelwood species, agricultural and agroforestry practices (Robiglio *et al.* 2011). Different ethnic groups use species in different ways, but despite such differences, the proportion of spe-

Table 4.4 Parts of animal and plants harvested for NTFP use in Cameroon

Plant part used	Number of species (n=582)	Percentage of total species*
Bark	189	32
Leaves	188	32
Fruit	116	20
Wood/timber	105	18
Stem	95	16
Seeds	97	17
Root	50	9
Exudate	40	7
All	11	2
Sprout/shoot	1	0
Animal part used	Number of species (n=121)	Percentage of total species
Flesh	107	88
All – live	13	2
Fur	1	1
Horns	1	1
Feathers	2	2
Skins	1	1
Spines	1	1
By product	3	3

Source: Research results. *Multiple parts of one species can be used, thus the percentage score can exceed 100.

Table 4.5 Major uses of NTFPs in Cameroon

Use category	Plants (n=582)		Animals (n=121)	
	Number[#]	*Percentage of total*	*Number*[#]	*Percentage of total*
Medicinal	289	41	2	2
Food	264	38	112	95
Tool/equipment/material	104	15	1	1
Construction	77	11	0	0
Cultural	45	13	17	7
Timber/wood[1]	41	6	0	0
Fuelwood	41	6	0	0
Condiment	35	5	0	0
Oil	18	3	0	0
Bee forage	14	2	0	0
Forage	13	2	0	0
Wrapping	12	2	0	0
Ornamental	11	2	0	0
Aphrodisiac	9	1	0	0
Poison	5	1	0	0
Host species for caterpillars & insects	9	1	1	1
Insecticide	3	1	0	0
Agroforestry	3	0	0	0
Cosmetic	4	0	2	2

Source: Research results. Notes: #More than one use is possible, therefore total can exceed 100% *where explicitly recorded in literature review and market observations.[1] Species used for timber included if also a source of NTFPs.

cies in each use category in different ecoregions is similar, suggesting common needs of forest-product using people.

At least 33% of species have multiple uses, shown in Table 4.6. Multiple uses add holistic value to a species and the forest it originates in (Asseng Ze 2008; Guariguata *et al.* 2011). At least 39 species have timber and non-timber uses over which conflicts were noted, often due to overlapping customary and formal governance regimes which confuse ownership, access and rights for different users. The highest value often takes precedence, for example, *Prunus africana* is sold mainly for its medicinal bark rather than for its traditional subsistence uses for carving, firewood or charcoal.

Table 4.6 Number of uses of animal and plant species as NTFPs

Number of uses of a species	Plants (n=582)		Animals (n=121)	
	Number	*Percentage of total*	*Number*	*Percentage of total*
1	349	60	91	91
2	115	20	8	7
3	80	14	1	1
4	21	4	2	2
5	14	2	0	0
Multiple uses (>1)	*240*	*34*	*11*	*9*
Average	*1.6*		*1.0*	

Source: Research results. *Note*: *Data deficiencies mean that not all the uses of all species are known.

At least 62 NTFPs (11% of the total) have cultural values (see Appendices 3 and 9). Cultural value is difficult to quantify (Campbell *et al.* 2002a; Forest Peoples Programme 2010) and so many NTFPs unintentionally not be included, despite being embedded in local cultures, often with non-substitutable values. These products and sometimes the places they originate are sacred or taboo, placing constraints on how they are used, by whom and who views them as valuable. This makes quantitative valuation almost impossible. Combined with the dynamic temporal and spatial nature of culture, their value may change over time and differ markedly by ethnic and social group.

Abundance and vulnerability of NTFP species

Using the definition of priority NTFPs (Box 3.1) species classified as environmentally vulnerable or having a protected status (see Table 4.7) and/or facing threats to their ecosystem were scored as higher value. In the absence of indicators and reports of abundance (Redford *et al.* 2013) abundance is taken (*de facto*) to be where there is no indication of vulnerability or threat.

Table 4.7 shows that the majority of species are not classified as vulnerable or protected. A higher proportion (14%) of animals are classified as vulnerable and/or protected than plants (5%). There is little correspondence between the different vulnerability classifications for plant-based NTFPs: of the thirteen products classified as Special Forestry Products (SFPs) in the 1994 Forestry and Wildlife law (see Chapter 6 and Box 6.1), only 7% are also CITES and Red Data listed. Most vulnerable species classified by CITES and Red Data are thus not captured by the SFP. This incongruence, discussed further in Chapter 6, is despite all three protection statuses being complementary.

Abundance refers to the overall number of individuals and the diversity of individuals within a group (Gaston 2011). As the counterfactual to species vulnerability, it is another measure of value, as an ecological feature that maintains other species – in-

Table 4.7 Vulnerability classification of NTFPs in Cameroon

Classification	Plants		Animals	
	Number of species	Percentage of total	Number of species	Percentage of total
Red Data listed	*15*	2.1	*14*	11.6
Legal protection (Class A or B)	*0*	0.0	*18*	14.9
Special Forestry Product list	*33*	5.0	*0*	0.0
CITES listed Appendix 1	*0*	0.0	*18*	14.0
CITES listed Appendix 2	*1*	0.1	*186**	-

Sources: IUCN Red list. MINFOF. *CITES Appendix 2 (CITES II) lists of 186 species. The data review did not yield a specific enough list of animal species used as NTFPs to be identify exactly the CITES II listed species.

cluding humans – and ecosystems. It is however difficult to ascertain, given that it is not a common indicator (Redford *et al.* 2013) and for the majority of species used as NTFPs, little data is available on abundance, except for some geographically specific areas (see Appendix 5). For the eight selected NTFP shown in Table 4.8, a variety of sources were used to provide indications of abundance and vulnerability, using the classification shown in Table 4.7.

Table 4.8 Abundance and *v*ulnerability status of selected NTFP species

Species	Abundance[1]	Vulnerability
Gnetum africanum	Locally abundant	Near threatened (RD list)
Gnetum buchholzianum	Less common*	Near threatened (RD list)
Apis mellifera adansonii	Common*	No listing
Prunus africana	Locally common (also cultivated)	Vulnerable (RD list), CITES), SFP
Cola acuminata	Common	No listing
Cola nitida	Common (also cultivated)	No listing
Cola anomala	Common (also cultivated)	No listing
Irvingia gabonensis	Common	Lower Risk/Near threatened (RD list)
Irvingia wombulu	Common, low density	No listing
Raphia farinifera	Common*	No listing
Raphia vinifera	Common*	No listing
Raphia hookeri	Common*	No listing
Raphia regalis	Uncommon	Vulnerable (RD list)
Bambusa vulgaris	Common*	No listing
Yushania alpina	Locally common*	No listing
Oxytenanthera abyssinica	Less common*	No listing
Acacia senegal	Common (also cultivated)	No listing
Acacia seyal	Common	No listing
Acacia polyacantha	Common	No listing

Key: [1]Abundance in the wild in the study ecoregion, and if cultivated, indicated in brackets. RD= Red data list. *Sources*: Shiembo 1986; C. Freeman 1987; Cable and Cheek 1998; United Nations Environment Programme 1998; Cheek *et al.* 2000; Tachie-Obeng *et al.* 2001; Chupezi *et al.* 2004; Clark *et al.* 2004; Eyog Matig *et al.* 2006; Ekpere 2007; Laird *et al.* 2008; CITES 2008; Cheek *et al.* 2010; IUCN 2010; Peltier *et al.* 2010; Samndong 2010; Ingram *et al.* 2012c; Ingram *et al.* 2012d, Prota database www.prota.org *Actors perceptions gathered from interviews.

Table 4.9 illustrates this relationship for the plant-based study species, distinguishing vulnerability to harvesting based upon Ticktin (2004) and Cunningham's (2001) classification. Whilst only a small proportion of plant species are collected in their entirety, harvesting an entire plant is often easier than selecting parts in situ. Collecting stems and roots, common for nearly a third of species reviewed, can lead to vulnerability as harvesting damages or kills the plant. Bark harvesting, practised for a third of species, can lead to sickness and mortality, although small quantities may not significantly affect

productivity, exemplified by the traditional small-scale harvesting practices of *Prunus africana* and *Irvingia* spp., among others (Cunningham *et al.* 1993; Sunderland *et al.* 1999b; Guedje *et al.* 2001). Leaves constitute almost a third of the plant parts collected. Again, the risk of over-harvest damaging or killing individual plants suggests unsustainability, as many trees are unable to withstand even low harvest rates (Ticktin 2004). Harvesting seeds and fruits, particularly from trees, is generally benign and non-destructive (Guedje *et al.* 1998). Harvesting fruits from a long-lived tree presents a lower threat to the long-term species survival than collecting seeds from an annual plant as if the seed ceases to exist, so does the plant. Ndoye *et al.* (1999) however point out that it may have long-term effects on population structure. In contrast, very high levels of fruit or seed harvest can permit long-term population persistence, but may have a negative effect on community populations. This excludes seed or fruit harvesting that damages the tree when harvest is not restricted to collecting fallen fruit. When species have several methods of reproduction, such as seeds and rhizomes (as in the case of *Aframomum* spp.), and where only fruits or only leaves are harvested, populations are not seriously threatened by harvesting (Cunningham 1995). Harvest impacts may be complex for slow-growing trees reproducing from seed and producing only a few, large fruits – increasing their susceptibility to over-harvest. However, no such examples were found among the NTFPs in Cameroon. Tolerance to harvest also varies with life history. For instance, perennial herbs can withstand higher harvest rates than trees, which tend to be slower growing and longer lived (Clark *et al.* 2004). The selective harvest of parts can be sustainable at individual or population level but requires an understanding of the ecological impacts including growth and reproductive characteristics, harvesting techniques and management practices that may mitigate negative impacts and/or promote positive impacts. This would allow sufficient reproduction or regeneration. Unfortunately, this basic information remains incomplete for most taxa in the region (FAO *et al.* 2008; FAO 2009a).

Table 4.9 Relationship between plant life cycle, form and vulnerability of NTFPs

Life cycle	Timber	Stem	Bark	Root	Resin/Sap	Leaf	Flower	Fruit/Seed
Annual	High -	High -	High -	High -	Medium -	Medium -	Medium -	High -
Biannual	High -	High -	High -	High -	Medium -	Medium -	Medium -	High -
Perennial	High *P. africana* *Irvingia* spp. *Acacia* spp.	Medium *Y. alpina* *O. abyssinica* *Raphia* spp. *Gnetum* spp.	Medium *P. africana* *Irvingia* spp. *Cola* spp. *Acacia* spp.	High -	Medium *Acacia* spp. *Raphia* spp.	Low-medium *Gnetum* spp. *Raphia* spp. *Acacia* spp.	Low -	Low *Irvingia* spp. *Cola* spp. *Raphia* spp.

Source: Research results

Sustainable extraction

For most (85%) species, no information was available about the sustainability of harvest techniques. For 6% of plants the impact of harvesting appears to be sustainable, for 5% harvesting is highly destructive. For 2% of animals harvesting appears to be sustainable (for bees and snails). Table 4.10 shows that most species are wild harvested, with cultivation mentioned for 18% of plant species, including *Raphia* spp., *Cola acuminata*, and *C. nitida*. For animal-based NTFPs the majority are wild sourced. Only a few species are domesticated on a small scale and in specific areas, including bees.

Table 4.10 Level of cultivation and domestication of NTFPs in Cameroon

Level of cultivation	Plants (n=582)		Animals (n=121)	
	Number of species	*Percentage of total*	*Number of species*	*Percentage of total*
No data (suspected wild harvest only)	481	82	69	57
Wild harvest only	75	13	46	37
Small scale cultivation	11	2	6	5
Cultivated or domesticated	8	1	0	0
Main harvest from cultivated sources	1	1	0	0
Integrated agroforestry/farm systems	6	1	0	0

Source: Research results

Indigenous knowledge of sustainable harvest techniques differs widely across species ranges, such that successful and sustainable techniques when used may not be widely known. An example is *Gnetum* spp. cultivation technique used in the Southwest but largely unknown in the Centre and Littoral regions (Patrick Shiembo ex-IRAD, pers. comm. 2011; Erik Wirsiy, CENDEP pers. comm. 2011; Joseph Nkefor, Limbe Botanic Garden pers. comm. 2009). The effects of harvest on different ecological levels are also little known. Sustainability at one level may or may not coincide with sustainability at another. For example, *Prunus africana* populations are genetically different in Adamaoua compared to wild and domesticated populations in the Northwest and Southwest (Kadu *et al.* 2011). However, few studies have assessed the effects of harvesting on genetic diversity (Laird *et al.* 2010), let alone in Cameroon. As the long-term health of cultivated NTFP species depends on the gene pool contained in wild populations (Reis 1995), such information is necessary to maintain long-term sustainability in wild and cultivated NTFP species.

The selected NTFP value chains in context

Summarised in Table 4.11, the eight NTFP species studied can be seen as representative of Cameroon and of the Congo Basin (FORENET 2010). This is despite the products originating from just 16 species, a tiny proportion (3%) of the total number of estimated NTFP species. The 30 products generated from these species represent a small proportion of NTFPs traded (less than 1%), however they form a considerable proportion of total economic value of NTFPs in Cameroon. These NTFPs originate from all three phytogeographical regions, four each from two ecoregions. They are all auto-consumed and traded with multiple parts used, and have widely differing uses with food, medicinal and materials dominating, similar to the majority of NTFPs in Cameroon. Their environmental values differ markedly, reflecting ecoregion diversity in Cameroon, species characteristics and life form (including resilience to harvesting techniques, frequency and effect on population structure and regeneration). Social values are linked to use and whether the NTFP is traded. Half of the eight NTFPs studied are environmentally vulnerable, associated with high trade levels. Further threats derive from habitat changes, proximity to densely populated areas and land-use changes, particularly in the montane and savannah forests (Duveiller *et al.* 2008), and for the montane species due to their relative rarity globally, restricted range and narrow ecological preference (Kingdon 1990; Bergl *et al.* 2007).

Table 4.11 Overview of value scores of the NTFP value chains studied

Species scientific name & product	Own use and trade	Vulnerability	Ecoregion origins[1] & cultivation	Number of parts used	Number of uses	Value score
Gnetum spp. Eru	Own use Local, national and international trade	Low-medium	Humid Wild & cultivated	2	3	5
Apis mellifera Apiculture	Own use	Low	Afromontane, humid, savannah, Wild & cultivated	3	4	4
	Local, national and international trade		Humid, savannah Wild			4
Prunus africana Pygeum	Own use, local and international trade	High-medium	Afromontane Wild & cultivated	4	5	5
Irvingia spp. Bush mango	Own use, local, national and inter-national trade	Not	Humid Wild & cultivated	4	6	4
Cola spp. Cola nuts	Own use, local, national and inter-national trade	Low	Afromontane, humid Wild & cultivated	2	1	4
Raphia spp. Raffia	Own use, local trade	Medium	Afromontane, humid, savannah, Wild &cultivated	4	6	4
Yushania alpina, O. abyssinica Bamboo	Own use, local and national trade	Medium	Montane, savannah Wild & cultivated	6	4	3
Acacia spp. Gum arabic	Own use, local and international trade	Low-medium	Savannah Wild & cultivated	4	6	4

Source: Research results *Key*: [1] Afromontane = Afromontane forest; Humid = Guineo-Congolian lowland humid forest; Savannah = Sudano-Zambezian savannah forest.

Conclusion: paradoxical products

Responding to the first research question concerning the contexts in which governance arrangements of NTFP value chains are embedded and trends therein, this chapter shows how the forest ecoregions generate natural capital. Although the physical nature of the ecoregions differs greatly, interactions between people and these environments give rise to at least 710 species being used as products. This is higher than previous studies have found, due to the methodology capturing more data sources and geographic areas. It is impossible to indicate trends in use and commercialisation of the 1,000 plus products given the lack of data. Plants are the most important product sources, providing 92% of products, supporting the focus of this study on plant-based products. The predominance of plant-based products is because multiple parts are used from 39% of species and as 34% of plants have multiple uses, with up to 19 product types originating from one species. The majority of products are used as medicines, food and materials. However, over a third of animal species scored highly, reflecting the importance of bushmeat for consumption and trade. Harvest for commercialisation is prevalent: over 200 species are traded, 185 of which are exported, with an estimated annual market of trade of at least 1,000 million US$ annually, higher than the timber trade. This finding justifies descriptions of NTFPs as assets, as ‘gifts’ (ITTO 2009a), ‘wealth’ (van Dorp *et al.* 1998) and ‘riches’ (López *et al.* 2004) of the forest. It also highlights that measured economically, socially or environmentally these commodities play multiple roles in the

livelihoods of people in Cameroon, other African countries and globally and continue to be common in households and in markets across Cameroon and the Congo Basin. Ecoregion characteristics shape both the products and the chains. The montane forests are a haven for endemism and biodiversity, providing a bounty of species. Species with high local abundance and multiple uses, in an area of high population density, have lent themselves to becoming commercialised. However degradation and deforestation, both human-induced and due to climatic changes negatively affects the ability of the eco-region to continue providing these products, which combined with intensive harvest for commercialisation. Similar trends, although at lower rates, occur in the savannah and lowland humid forest ecoregions.

Responding to second research question, this chapter makes explicit the multiple values of NTFPs. The products studied are representative of the phytogeographic regions, but are equally exceptional, ranked in the top 5% of 'priority' NTFPs due to their high economic, social and environmental value. The data review indicates that data on NTFP values generally continues to be patchy, inconsistent, imprecise, incomplete and difficult to obtain, except for a few better studied species and geographical areas. The paradox is that for the majority of these treasures, their multitude and ubiquitous uses and trade mean that although they are highly visible in the livelihoods, both rural and urban, of those engaging in the chains, their values remain poorly captured in statistics and policy. This makes their contribution to livelihoods and economies invisible to decision and policymakers. This finding confirms other studies (Cunningham 1991; Campbell *et al.* 2002c; Shackleton *et al.* 2007; Tieguhong *et al.* 2008b). To shed the cloak of invisibility and unravel the paradox of substantial but hidden riches, the social, economic, political and institutional and governance contexts are further examined in Chapters 5 and 6.

5

Livelihoods context[1]

Different histories of habitation, knowledge, institutions, economic and cultural preferences, practices and tastes determine which species are used and become products. This chapter contributes to the first research question concerning the contexts in which the NTFP value chains are embedded and trends, with a focus on the livelihood context. Given the long history and rich and diverse cultural and geographic fabric in which the value chains originate, the chapter concentrates on the social and economic contexts of the livelihoods of people collecting, using and trading NTFPs which influence chain governance. Continuing the bricolage theme, this section weaves the study results – particularly the surveys, stakeholder interviews and workshops (detailed in chapter 3) – with the literature review to present and analyse the contexts. Livelihood aspects specific to the chains are further detailed in Chapters 7 to 10. Livelihoods data is highly temporal, context and location specific and as such, is intended to provide context to the specific chains and locations studied. Where this is generalizable to NTFPs in Cameroon, this is indicated.

Socioeconomic context

Although the term 'NTFP' is a couple of decades old (de Beer *et al.* 1989), Chapter 4 showed that such products have been used and traded for centuries. Many have maintained subsistence; economic, social and cultural values for local people but their values have waxed and waned on national and international markets. Examining the historical and current socio-economic context helps to map swings in value and subsequent shifts in importance to livelihoods across time and societies: from subsistence products to important commodities during colonial periods to secondary resources, and more recently a re-entry in the national and international spotlights concerning their trade, conservation and development. This has led to different regulations, policies and institutions addressing NTFPs (see Chapter 6) and consequently different governance strategies. A

[1] This chapter draws on the following, peer-reviewed published work written or contributed to by the author: Beauchamp and Ingram 2011, Cerutti *et al.* 2009, Ingram 2012, Ingram, Ndoye *et al.* 2012a and 2012b, Ingram 2012, Ingram *et al.* 2013, Laird *et al.* 2010.

more rounded view of the NTFPs, their chains and sustainability can be gained from understanding these spatio-temporal and socio-political aspects.

Historical socioeconomic context

To understand the current context in which the chains operate, it is critical to understand their history. A brief trip through time and across what is now Cameroon reveals how history influences the chains today. Around 2,800 years ago the earliest inhabitants of the Congo Basin (Verdu *et al.* 2009) were semi-nomadic hunter gatherers. The Mbenga ethnic groups (Geyele, Baka/Baka-aa, BaKola, Aka and Kongo) – often referred to as pygmies – continue to inhabit the lowland humid forests and have intricate knowledge, use and customs associated with the forest (Turnbull 1961; Bahuchet *et al.* 1991; van Dijk 1999; van Dijk *et al.* 2003; Hattori 2005). Whilst many of their forest-based traditions have remained unchanged, their contact with market economies, subsistence and cultivation activities and the relationship with Bulu and Bantu-speaking farmers has led to increasing exploitation since the 1950s of NTFPs for cash (Wilkie 1989; Hewlett 1996). The market surveys evidence how bush mango (*Irvingia* spp.) (see Chapter 10) and *Gnetum* spp. (see Chapter 7) are increasingly commercialised by the Baka. Movements[2] to defend their traditional rights and counter marginalisation and exclusion respond to the threats posed by agriculture, settlement, large infrastructure projects, mining and timber concessions on their traditional lands (Egbe 1997; Young-Ing 2006; Larson *et al.* 2010a).

From around 500 BC Bantu people migrated in waves into and across southern Cameroon. By AD 500 Northern Cameroon was gradually inhabited by Arabic, Hamitic and Negroid peoples (Neba 1999). By the end of the 16th century the Fulani, a nomadic, pastoral Islamic people had developed a strong presence in the north and by the mid-18th century they had moved into the Highlands. Portuguese explorers arrived on the River Wouri in 1472. Subsequent adventurers and traders set up sugar plantations and built upon the existing north-south slave trade run by local chiefs, which endured for 400 more years. Heightened demand for ivory, wax, cola and rubber allowed previously subjugated and isolated peoples to rise to economic prominence using the ancient slave routes. These form the foundation for today's trading routes and explain the preponderance of certain ethnic groups in the cola and gum arabic chains.

Numerous small-scale chiefdoms emerged by the 17th century with ornate and luxurious courtly and funerary arts, these as well as everyday objects feature forest animals and plants as symbols of spiritualism and power (Metropolitan Museum of Art 2010). They remain evident today, particularly in the Highlands. The influence of the Bantu coastal clans grew, extending to Adamaoua by the 16th century but by the late 1770s and early 1800s, Fulanis defeated and displaced many of the largely non-Muslim inhabitants, further developing the slave trade and creating a powerful feudal empire ruled from Sokoto, Nigeria. From 1844 onwards, starting in the Southwest, missionary centres were established, followed by European settlement and conquest from the late 1870s, aided by quinine (*Cinchona* spp.) cultivation to combat malaria. Germany signed a treaty with Douala and Bamiléké chiefs in what are now the Littoral and Western areas, encountering strong opposition in parts of Adamaoua, the Southwest and Northwest.

[2] Lobbying and advocacy organisations include the Rainforest Foundation, Rainforest Alliance, Forest People's Programme, Centre d'accompagnement des Autochtones Pygmées et Minoritaires Vulnérables (CAMV) and Cercle pour la Défense de l'Environnement (CEDEN).

The Northwest and West regions however particularly were, and still are, strongholds of highly organised kingdoms (Fondoms) from the semi-Bantu Chamba and Tikar groups that migrated to the fertile highlands from the North and Nigeria from the 16th century. Among the Fulani, Grassfielder tribes, Bamiléké and Bamoun, social organisation was traditionally based on hierarchical relations between members of groups with different status (royalty, nobility, commoners and slaves). They traded in slaves, ivory, palm oil, kola nuts, salt, oil, iron, cloth, pearls and cowry shells. During the 19th century the Highlands – increasingly known as the Grassfields – were still largely outside the trading networks of the Benue and Adamaoua, although these spread into the Bamenda Highlands at the end of the 19th Century (Chilver 1961). This opened possibilities for differentiation and commodification (Rowlands 1978; Warnier 1985) and the cultivation of the most valuable products, such as cola nuts in the Northwest (Geary 1980). Their cultural and economic value derives from this period.

In the South, Bantu-speaking groups such as the Fang and Beti migrated into south-east Cameroon by the end of the 18th century. They are characterised by a clan-based, societal organisation in which age and gender are the major social stratifiers. The coastal Duala, Bakweri and Bakossi are sedentary, village based, hierarchical clans distinguishing between indigenes and slaves who have different land entitlement rights. There is a high degree of social inequality among some of the northern and Highlands ethnic groups. Adamaoua is a melting pot of Bantu and Fulani origins, with the Gbaya an acephalous, tribal, patrician-based people with dispersed communities with contingent membership and permissive subsistence ecology. Current social inequalities based on access to political power and formal education level now coexist with these indigenous forms of stratification in all the study areas. Although a cosmopolitan lifestyle has developed among the wealthy and intelligentsia, these culturally distinct markers and obligations to kin and ethnic compatriots remain. This affects socio-economic life, with ethnic origins reflected today in customary governance arrangements, the choice of trading partners, food preferences and celebrations and attitudes to forest products.

The exploitation of natural resources initiated by the Germans continued after the World War I handover to Britain and France. Cocoa, coffee, cotton, timber and palm oil were developed into major export revenue sources. The economy remained buoyant upon these until the economic crisis of the late 1980s. This is reflected today in the policy focus on timber and agricultural commodities. The basic road and rail infrastructure present today was developed during the colonial period (USAID 2010). The generally poor state of this infrastructure now presents major problems for harvesters – evidenced by it being ranked as the first or second most major barrier to trade by all actors the chains in the interviews. In 1955 the Union of Cameroonian Peoples commenced an armed struggle for independence that led to self-government for French Cameroon. Ahidjo was the first prime minster of the independent Republic of Cameroon, unifying Francophone Cameroon with the largely Christian, Anglophone Southern Cameroons. On-going political, ethnic, language and cultural tensions still exist between Francophone and Anglophone regions and peoples as a result of the colonial divide and reunification. Administrative, educational and political systems have been heavily influenced by the colonial systems, imprinting land tenure and state relations with customary authorities. A Beti ethnic coalition gained political dominance as the Cameroon People's Democratic Movement (CPDM) in 1985, with the still ruling President Biya at its helm.

Ethnicity

This rich and chequered history is reflected today in Cameroon's cultural and ethnic diversity, with over 247 ethnolinguistic groups (Ndongo-Semengue *et al.* 1999). In 1987 an estimated 32% of people had migrated intra-nationally in Cameroon (Schrieder *et al.* 2000), mainly outside of their original ethnic areas, to urban areas and to regions offering employment, such as plantations and timber concessions in the Southwest (Diaw 1997; Sunderlin *et al.* 2002). The survey results (see Table 5.1) reflect this diversity and mobility, with 9% of all harvesters not being indigenous to the harvest area. An illustration of this is the blurring of linguistic boundaries such that forest-based gastronomic terms such as eru and achu[3] have become commonplace in Cameroonian French and English (Echu 2002).

Table 5.1 Ethnic origins of harvesters in value chains

NTFP chain	Region	% non-indigene harvesters	Origin of immigrant harvesters
Gnetum spp.	Southwest	0	Southwest, Littoral, Northwest
	Littoral	0	Northwest, Nigeria
Apiculture	Northwest	22	Southwest, Northwest
	Adamaoua	10	Adamaoua, North
Prunus africana	Northwest	15	Northwest
Cola spp.	Northwest & West	0	West, Northwest, Littoral
	Littoral	14	West, Southwest
	Southwest	10	Southwest, Littoral, Northwest
Irvingia spp.	Centre, South & Littoral	13	North, Centre
	East	2	East
Raphia spp.	Northwest & West	0	West
Bamboo	Centre, South, West, Northwest	15	All regions
Acacia spp.	North & Extreme North	10	North
Average		*9*	

Source: Research results

Another impact has been increased exposure to, and popularity of forest products once used only by specific tribal groups (Poubom Ngundam 1997), such as eru and cola nuts. There has been increasing dissemination (encouraged by academic and development organisations) of rich oral myths, folktales, riddles, and proverbs. Many include accounts of NTFPs use such as 'Tales of the grasslands and the forest' (Nzuh 1999), 'Kola nut divination' (Dah 1995) and 'Rituals in the Grassfields' (Mzeka 1996). The recognition of tribal affiliation, deference to some customs and maintenance of maternal and paternal languages remains common, although mobility and changing social relations mean that the institutions ensuring adherence to such traditions are weakening. Thus myths upon which customary arrangements governing forest use are founded no longer have the same power to shape or control activities (Paul Mzeka, ANCO, pers. comm. 2008; George Bang, Oku Honey Cooperative pers. comm. 2010). This aspect is ruled by upholders of those traditions (Fon of Oku, pers. comm. 2009; Fon of Pinyin, pers.

[3] The Bayang term eru signifies a dish of sliced *Gnetum* spp. leaves cooked in palm oil with ground, fermented cassava. Achu originates form the Grassfields and is a yellow soup of palm oil and NTFPs (*Tetrapleura tetraptera, Ricinodendron heudelottii, Piper guineensis* and *Afrostyrax kamerunensis),* served in a pounded cocoyam and plantain porridge with meat, usually beef or goat.

Table 5.2 Population statistics of study areas

Region/State	Division	Capital	Surface area km^2	Population[1, 2]	Population density km²	Estimated no. adjacent villages [3, 4]	Estimated population villages[3, 4]
Cameroon							
Southwest	*Total Southwest*	*Buea*	25,410	1,316,079	*51.8*	*27*	*10,000*
	Fako	Buea	2,093	46, 412	222.8	14	10,000
	Kupe-Muanengouba	Bangem	3,404	105,579	31.0	3	
	Meme	Kumba	3,105	326,734	105.2		
	Manyu	Mamfe	9,565	181 039	18.9	8	
	Ndian	Mundemba	6,626	122,579	18.5	2	
Northwest	*Total Northwest*	*Bamenda*	*17,300*	*1,728,953*	*99.9*	*26*	*62,500*
	Bui	Kumbo	2,297	321,969	31.5	11	29,000
	Mezam	Bamenda	1,745	524,127	34.5	1	
	Boyo	Fundong	1,592	124,887	30.5	13	30,000
	Donga Mantung	Nkambe	4,279	269, 931	32.3	1	2,500
West	*Total West*	*Bafoussam*	13,892	1,720,047	37.5		
	Ménoua	Dschang	1,380	285,764	42.5		
Littoral	*Total*	*Douala*	*20,248*	*2,510,283*	*124.9*	*6*	
	Mungo	Nkongsamba	3,723	379,241	101.9	6	n/a
Adamaoua	*Total Adamaoua*	*Ngoundéré*	*63,691*	*884,289*	*7.7*	*14*	*11,800*
	Mayo Banyo	Banyo	8,520	187,066	22.0		
	Faro et Déo	Tignere	10 435	82,717	7.9		
	Djerem[4]	Tibati	13,283	82,717	9.4	14	11,800
Centre	*Total Centre*	*Yaoundé*	*68,926*	*3,098,044*	*24*		
Extreme North	*Total Ext. North*	*Maroua*	*34,263*	*3,111,792*	90.8	13	n/a
Total[5/5]				*17,463,836*	*37,5*	***73***	***72,500***
Nigeria							
Cross River	*Total*	Calabar	20,156	3,104,446	154		
Akwa Ibom	*Total*	Uyo	7,081	4,805,451	679		
Total [5]				*170,123,740*	*184*		

Sources: [1] Institut National de la Statistique 2011, 2005 census [2] United Nations Population Fund 1999, 1999 census [3] Community Forest Simple Management Plans and MOCAP 2007, [4] Fieldwork. [5] URL: https://www.cia.gov/library/publications/the-world-factbook/geos/ni.html accessed June 2011. NA= data not available.

comm. 2008; Yamma Peter, ASSOKOFOMI, pers. comm. 2007; Bakia Besong, SNV, pers. comm. 2008).

Poverty

NTFP's contribution to livelihoods can be seen in the socioeconomic context of where the chains operate, shown in Table 5.2. The chains all originate in the poorest regions of Cameroon (National Institute of Statistics 2007). Poverty still dominates (see Table 1.1), despite the Government's plans to create a socially acceptable, middle-income country (Republic of Cameroon 2009). The main vehicle to do this has been the Poverty Reduction Strategy Programmes, started in 2003 with the second published in 2009 (Premier Minister 2009). Among the indicators used to measure poverty in Cameroon, poverty is defined as less than 738 FCFA/day (1.47 US$/day) (National Institute of Statistics 2007). The last household survey (National Institute of Statistics 2007), indicated that poverty still affects 40% of the population, a slight decrease from 2001 and 1996. Women and children are particularly vulnerable as half of the members of poor households are under 15 years old and the majority of people living in rural areas are women. In urban areas, poverty has declined, particularly in Douala and Yaoundé and increased in rural areas, particularly in the Extreme North (25% of poor), the Northwest (15%) and North (9%). The national average household size was 5.1 persons in 2001 and 4.0 in 2007 (Tandes 2010). Shown in Table 5.3, the average household size of actors in all the NTFP chains was 6.1 persons (SD 1), inferring higher than average chance of poverty.

Table 5.3 Average value chain actor's household size

Chain and region of origin	Chain Average	Average household size				
		Harvesters	*Processors*	*Wholesalers*	*Retailers*	*Exporters*
Average	*6.1*	*7.0*	*5.5*	*6.2*	*6.1*	*7.0*
Gnetum SW, L	5.9	5.0			6.0	7.0
Apiculture NW	8.3	7.0				
Apiculture Ad	7.0	8.2				
Prunus NW,SW	7.0	9.5			7.0	
Cola spp. NW	6.0	6.1				
Irvingia spp. SW	7.0	7.0		8.0		6.0
Irvingia spp. L	5.6	7.0				
Raphia spp.	7.3	7.3				
Bamboo NW	5.0	6.8	5.5		5.0	
Acacia spp. ExN	7.0	8.0				

Source: Research results. *Key:* Regions:Ad=Adamaoua L=Littoral S=South SW=Southwest N=North W=West ExN=Extreme North NW=Northwest

The empirical results shown in Table 5.4 show that on average 53% of people active in the NTFP chains primary school education, which is comparable to the national average of 55% (National Institute of Statistics 2007). However, chains varies significantly. *Acacia* spp. harvesters in the extreme North and *Prunus Africana* harvesters in the Northwest are more likely to have no schooling and few of them have secondary education, as is the case for harvesters of *Cola* spp.. The highest levels of education were found among *Gnetum* spp., *Irvingia* spp. and bamboo harvesters. Some of these trends can be explained by gender, such as women dominating harvesting in the *Acacia* spp. chain. A high proportion of gum arabic harvesters in the Extreme North are females who, due to their culture and Islamic religion, tend not be sent to school. According to the ECAM III survey only 18% of rural women have secondary-level education and

women in the North and Extreme North regions are the least educated. Education also varies by actor type, with processors and exporters having higher than average levels of schooling. This may be influenced by their urban habitation and thus better access to education, but also generally higher incomes. These figures reflect the 75% average national literacy rate., with 92% and 89% respectively for urban men and women, and 65% and 52% respectively for rural men and women (National Institute of Statistics 2002).

Table 5.4 Average education level of actors in value chains

Chain and region of origin	% of total actors attaining education level (N/P/S/U)					
	Average	*Harvesters*	*Processors*	*Wholesalers*	*Retailers*	*Exporters*
Gnetum spp.SW, L	0/57/43/0	0/68/32/0	-	-	0/68/31/0	1/36/63/0
Apiculture NW	10/55/29/02	20/54/24/02	-	-	12/53/33	-
Apiculture A	07/77/16/0	07/77/16/0	-	-	-	-
Prunus africana NW	28/53/17/2	28/53/17/2	-	-	-	-
Cola spp. NW	16/77/05/0	16/77/05/0	-	-	-	-
Irvingia.SW,C,S, L,E	9/24/52/15	25/44/30/0	-	-	05/25/65/5	1/18/54/27
Irvingia spp.E	3/66/30/02	3/66/30/02	-	-	-	-
Raphia spp.NW	16/77/05/0	16/77/05/0	-	-	-	-
Bamboo NW	01/48/36/10	13/59/26/03	3/68/24/5		03/48/34/15	-
Acacia spp. ExN	92/08/0/0	92/08/0/0	-	-	-	-
Chain average	*19/53/25/4*	*25/55/22/1*	*3/68/24/5*		*7/43/44/10*	*1/18/54/27*

Source: Research results. *Key:* Regions: Ad=Adamaoua E=East L=Littoral S=South SW=Southwest N=North W=West ExN=Extreme North NW=Northwest. Schooling: N= None, P= Primary, S = Secondary, U= University.

Actors' NTFP incomes present a very mixed picture. Table 5.5 highlights how *Gnetum* spp. harvesters earn almost double the lowland forest zone average, but *Irvingia* spp. harvesters earn less. *Cola* spp., *Raphia* spp. and *Prunus africana* harvesters on average all earn less than the Highlands average, whilst bamboo actors (see Chapter 10) earn above the average. Honey harvesters in Adamaoua earn slightly less than the savannah average, although gum arabic harvesters earn almost double the average. These differences are related to product value, costs, markets and quantity harvested. The urban based actors in the chains[33] – the exporters and wholesalers – all earn significantly more than the average, whilst retailers earn less. The average income for all harvesters is slightly less than the average for rural inhabitants in Cameroon. The wide variations in incomes per chains reflect issues such as demand, product value, scarcity and different market types and access. This highlights that only in specific chains and for specific actors (wholesalers and exporters) who add value, take most risks and earn the highest profit, does trade in NTFPs provide an above national average household income. To interpret these findings, it is necessary to compare with spatially disaggregated data. For example, in 2001, average annual income for households engaged in informal non-agriculture was 931,000 FCFA (1,308 US$) and for informal agriculture 391,000 FCFA (549 US$) (ECAM II). Annual average rural income per adult equivalent was 276,335 FCFA (388 US$) in the humid forest zone, 297,146 FCFA (417 US$) in the Highlands and 283,902 FCFA (399 US$) in the savannah, 565,112 FCFA (794 US$) in Yaoundé and 522,947 FCFA (735 US$) in Douala and 444,292 FCFA (624 US$) in other cities (National Institute of Statistics 2002). By 2005, people based in the rural lowland forest

[33] FCFA US$ exchange rate fluctuations in the period 2005 to 2007 were 1.10, making the 2005 and 2007 figures comparable and inflation rates stable at 1 to 2% (Konings 2009).

area showed the greatest decreases in poverty (17%), however in the rural savannah zone poverty increased by 1.3%. Average urban incomes per adult were 497,896 FCFA (699 US$) and 280,233 FCFA (393 US$) for rural adult inhabitants (National Institute of Statistics 2007). Actors' NTFP incomes reflect this pattern of uneven economic growth and activity across the country and social categories, with poverty reducing in urban areas, but remaining high in rural areas.

Table 5.5 Contribution of NTFPs to household income per actor and chain

NTFP chain	Contribution to annual average household income (US$)					
	Harvester	*Processor*	*Wholesaler*	*Exporter*	*Retailer*	*Average*
Gnetum spp.	1,276	-	818	-	1,654	1,249
Apiculture	469	377	-	8,953	2,458	3,064
Prunus africana	374	213	-	11,563	-	4,050
Cola spp.	184	-	347	-	-	266
Irvingia spp.	331	-	10,437	-	620	3,796
Raphia spp.	432	-	325	-	-	379
Bamboo	536	1,010	-	-	1,608	1,051
Acacia spp.	1,105	-	-	-	-	1,105
Average	*588*	*533*	2,982	*10,258*	*1,585*	*3,189*

Source: Research results. *Key:* - signifies no data.

NTFPs are generally of strategic importance for the livelihoods of harvesters and their households. Shown in Table 5.6, many of the NTFPs studied contribute to a significant proportion of harvesters' incomes for long periods of time, with harvesters having been active on average for 8 years. In three chains the NTFP studied was more important than farming. Often the product studied is one of several harvested, indicating the strategic importance of NTFPs to household livelihoods.

Table 5.6 Importance ranking of NTFPs in harvesters' household incomes

NTFP chain	% ranking NTFP as primary household income source	% ranking farming as primary income source	Average number of years harvesting NTFP	Average number of income sources	NTFP as % of total income from all NTFPs produced	Average number of all NTFPs harvested
Gnetum spp.	33	43	11	5	28	10
Apiculture	54	38	6	5	54	3
Prunus africana	80	40	17	8	37	6
Cola spp.	49	60	9	6	32	2
Irvingia spp.	37	38	18	6	31	18
Raphia spp.	49	33	4	7	40	5
Bamboo	18	56	11	8	97	3
Acacia spp.	18	49	8	3	-	9
Average	*42*	*45*	*11*	*6*	*46*	*7*

Source: Research results. *Key:* - signifies no data collected

Gender

Summarised in Table 5.7, the surveys indicate that men dominate chains numerically, compromising 60% of all actors (Ingram *et al.* 2013). Their presence varies per chain and stage, with processing, retail and wholesale stages generally dominated by women. Gathering forest products in general is gender differentiated. This mirrors other activities, as in most areas, regardless of ethnic background, labour and family duties are strongly segregated by gender (Sunderlin *et al.* 2002). Women are responsible for feed-

ing the family and growing staple food crops, while men grow cash crops, own trees, clear the land and provide the traditional luxuries of meat, oil, and salt. Such customs have been largely unchanged for centuries at least up to the 1950s (Goheen 1996). This has led to women collecting traditionally low-value products (plant-based and fish) for family use and men focusing on timber and high value, traded species – particularly hunting (Ndoye *et al.* 2006). Among specific ethnic groups, such as the pastoral Mbororo and Fulani in the Extreme North, Northwest and West, men traditionally herd the livestock and women process dairy products and do not enter the forest or stray far alone from their homes. These practices are both linked to their Islamic traditions (van Santen 1998) and the specific Mbororo and Fulani culture. The male-female ratio of actors in specific chains is determined by the products' value, physical activity in harvesting and processing, harvest distances and forest type (farm-fallow or 'black forest'). Women generally, but not always, harvest NTFPs closer to home in farm and fallows. However, for certain products such as bush mango, women will, often with families and in groups, camp in the forest for several days of harvesting. However, perceptions of the suitability of heavy, physical work appear gender-differentiated: it is common to see women in the Highlands carrying traditional rucksacks and head loads of fuelwood, potatoes and maize that at approximately 25 kg (Kaberry 1952; Davis 2001), weigh around the same as the pygeum barks and full beehives that men carry. This observation mirrors observations in other African countries where women still transport most crops and carry similar weights (Calvo 1994; Starkey 2001).

Table 5.7 Male-female ratio of actors in value chains

Chain and region of origin	Average Male/female	% actors male *Harvesters*	*Processors*	*Intermediaries*	*Retailers*	*Wholesalers*	*Exporters*
Gnetum spp.	31:69	21	20	100	0	5	41
Apiculture NW	63:37	94	60		34		
Apiculture A	71:29	96	90	60		60	50
Prunus africana	99:01	99					
Cola spp. NW	58:42	91			25		
Cola. Littoral	91:09	91					
Irvingia SW	51:49	25		83	30	50	58
Irvingia. CSL	28:72	29			30	53	
Irvingia. East	59:41	84		100		53	
Raphia spp.	75:25	99	99		5	100	
Bamboo	94:06	90	100		93		
Acacia spp.	35:65	35					
Average	*60:40*	*71*	*62*	*86*	*31*	*54*	*50*

Source: Research results. *Key:*Regions: NW=Northwest, SW =Southwest A =Adamaoua CSL= Centre, South & Littoral. Blank = no data.

Women often retain informal power within households, enforced by their control of subsistence activities, their role as conduits to female ancestors and their role in cultivating and domesticating species (Brown *et al.* 2002). However the proportion of women involved in chain activities tends to decrease with commercialisation and increasing product value. This has led to men collecting, for example eru (Chapter 7) and bush mango (Chapter 10). The research findings highlight that women continue to dominate petty NTFP trade, particularly prevalent in markets. This trend has remaining unchanged over the last fifteen years (Ruíz Pérez *et al.* 2003). Among forest product traders, there is also strong gender differentiation related to business size, product specialisation and market strategies. Gender differences account for half of the variability in

profit margins, with family status and age being important factors. Gender disparities however diminish among younger traders, echoing previous research (Ruiz Pérez *et al.* 2003). Other explanatory factors are that in general, men have higher social status than women. Men generally have more rights with regard to marriage, divorce, and land tenure within most local systems of social organisation and more access to government bureaucracy and the courts. The more recent entry of women into retailing, wholesale and export in contrast to harvesting highlights the changes afoot, despite increases in farm work associated with the economic crisis of the late 1980s and early 1990s (Fonchingong 1999), with more women entering paid employment. This corroborates trends of women starting businesses, obtaining higher education levels and entering traditionally male-dominated sectors (Veuthey *et al.* 2009). Gender equality and empowerment of women have been recognised as critical for poverty alleviation, enshrined in one of the millennium development goals.

Entrepreneurial operating context

The challenges in the business environment affect how individuals, groups and businesses operate (Bowen *et al.* 2007) and form a significant aspect of the contexts, influencing governance arrangements in the chains.

Trade

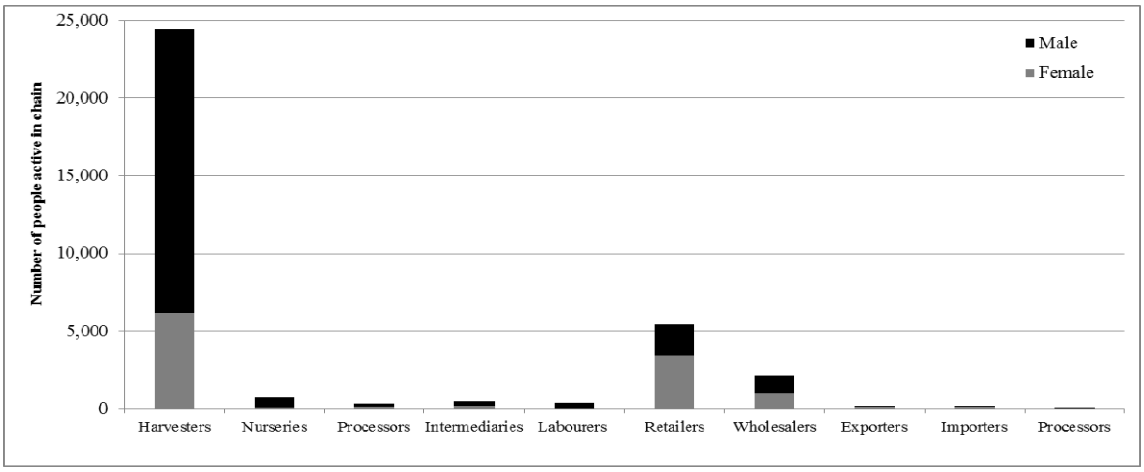
The nature of Cameroon's international trade has changed dramatically over time, impacting poverty levels, employment and incomes. Colonial rule saw the rapid amalgamation of governance and government units, with 'modernisation' achieved at the expense of the indigenous structures and through the exploitation of the African peoples (Oliver 1999). Despite unification upon independence, the colonial legacy has left plurality of languages, administrative and government systems, and politics, which are still apparent today. Cameroon remains a member of both the Commonwealth of Nations and La Francophonie and associated economic, cultural, social and educational ties such as the Alliance Française, British Council and Goethe Institute. The EU has remained Cameroon's major trade partner since independence (with 41% of imports and 57% of exports). France, the Netherlands, Portugal and the UK are the most important partner countries (DG Trade 2011). Major export products include petroleum oils (48% of revenues in 2005), followed by timber (14%) and agricultural products (DG Trade 2011). Trade with other members of the Economic and Monetary Community of Central Africa (CEMAC) appears to be very limited, at around 3.4%.

However unrecorded, informal regional trade figures are not included[34] and the findings of this study suggest that trade in *Gnetum* spp. *Acacia* spp., *Irvingia* spp. and other NTFPs is substantial, with trade in the eight chains worth an estimated 32 million US$ annually (see Chapter 4). Around 34,227 people are active in different stages of the chains of these products, shown in Figure 5.1. This lack of data is despite Cameroon being a member of the CEMAC and sharing the Central African Franc (FCFA) currency with the five other sub-regional states. Nigeria is officially the third major trade partner (accounting for 7% of all exports and imports). New economic links are also apparent, with China rising from a low position in 2005 to become the second most important

[34] World Trade Indicators 2008 database URL: http://www.worldbank.org/wti2008. Retrieved 29 June 2011.

partner (12% of imports and exports) by 2010 (DG Trade 2011). Since 2000 China and other emerging economies have been increasingly securing trade and control of chains such as timber and oil palm at source (Roda 2009; Cerutti *et al.* 2011). These new market entrants shape trade patterns and forest management (Cerutti *et al.* 2011). This is mirrored in, for example, increasing sales of medicinal NTFPs such as *Prunus africana*, *Voacanga africana* and *Pausinystalia johimbe* to China.

Figure 5.1 Number of people active in eight NTFP chains



As 41% of NTFPs have medicinal uses (see Chapter 4), and given the levels of poverty, and poor access to modern health services (Republic of Cameroon, 2009a), their trade has implications for health, and in turn for poverty, with health central to two of the millennium development goals. Traditional practitioners, such as herbalists, *ngambi* (diviners) and ritual specialists, use a wide variety of plant and animals in such treatments, a number of which have been inventoried (see Appendices 3 and 7). Current healthcare systems are typically a mix of biomedical treatment, traditional medicine, witchcraft (closely bound to traditional religion) and Islamic medicine. The combination depends on beliefs, cost, proximity and the advice of family and friends. Traditional practices remain strong, despite shifts in the last century and commonly see power as simultaneously attractive, dangerous and traceable to occult forces, causing both mental and physical health and illness and affecting material success. Over the last two decades there has been a gradual tendency towards herbalists and individual treatment, away from the use of ritual specialists and community-wide treatments. Many practitioners specialise in treating particular afflictions and people often consult practitioners from different cultural groups. These practitioners have adapted to societal changes by incorporating new ideas and medicines into their practices and treating modern illnesses such as AIDS. Ethnic groups with reputations for witchcraft, such as the Maka in the south and Oku in the Northwest (Geschiere 1997) continue to draw substantially on forest products for their cultural and medicinal powers. Pharmaceutical enterprises and research organisations[35] have been investigating the efficacy of traditional NTFPs. This has resulted in scientific articles and closely guarded local compendiums. The rights to

[35] Centre de Naturopathie et d'Action Humanitaire du Cameroun (CENAHC), the Institute de Recherche Médicales & Etudes des Plantes Médicinales (IMPN) and Centre de Recherche en Plantes Médicinales et Médicine Traditionnelle (CRPMT).

use, maintain and protect traditional knowledge have been debated and guidelines formulated in the Convention on Biological Diversity (CBD). This has resulted in Cameroonian cases on access and benefit sharing of traditional knowledge (Laird *et al.* 2008; Secretariat of the Convention on Biological Diversity and Central African Forests Commission 2009; Union for Ethical Biotrade 2010).

Informality

Most NTFP commerce, as in other African economies, is informal (Roitman 2005; RRI 2009a). Most NTFP traders are also small scale (Trefon 1994; Ndoye *et al.* 1997/98; Ladipo 1998). Informal denotes commercial operations not being registered as enterprises (with the Chamber of Commerce or the Ministry of Small and Medium Enterprises, Social Economy and Handicrafts (MINSME) and includes economic activities, enterprises and workers unregulated or protected by the state. In developing countries the informal economy is estimated to comprise between half to three quarters of the non-agricultural labour force (Economic Commission for Africa 2010). The informal economy is also estimated as the main source of job creation in Africa, providing between 20% and 75% of total employment in most countries (Economic Commission for Africa 2010). It has been viewed positively as a pool of entrepreneurial talent, cushion during economic crises and source of livelihoods for the working poor, and problematically as avoiding regulation and taxation (WIEGO 2011). Links between informality, growth, poverty and inequality have become more apparent (WIEGO 2011). In inter-African trade informality is stimulated by urban development (Portes *et al.* 1991). Informal institutions can shape political behaviour and outcomes even more strongly than formal rules (Helmke *et al.* 2004).

Despite such informality, prevailing regulations have some influence on NTFP commerce. Trade is formally regulated by the Ministry of Finance and the Ministry of Small and Medium Enterprises, and employment by the Ministry of Employment. Discussions indicated that there is little, if any, coordination between them. Trade in physical markets (including traditional country Sunday markets), is generally controlled by the local council, which decrees times, days, location and area of marketplaces, and grants annual and daily permits to sellers. Interviews and workshops (see Appendix 12) indicated that traders make conscious choices whether to work informally or register, with 17% in total being part of a group – the majority (95%) in Common Initiative Groups (CIG). This is the easiest and cheapest form of profit-making organisation. Registered at regional level, they are governed by Law 92/006 of 14 August 1992 related to societies, cooperatives and common initiative groups. Taxation is a major worry for most enterprises, with 95% of actors in the Northwest and Southwest indicating that they did not register or formalise their activities to avoid taxation. Registering as a CIG or an NGO provides tax exemption[36]. However, to obtain a SFP permit, individuals or communities must be registered companies or approved and accredited as forest resource harvesters, which only 14 operators have achieved since 2008. As a result, the majority of SFPs are traded without permits: interviews indicate that over 90% did not have a permit. Sudano-Sahelian inter-African trade networks have a strong ethnic component, providing a social structure and informal institutions. A trader's ethnic group often reflects a product's origin or main consumers, such as in the cola chain (see Chap-

[36] Law No. 73 -15 of 7/12/73 relating to the roles and regulations governing cooperative societies and Law No. 92/006 of 14 August 1993 relating to Cooperative societies and CIGs.

ter 10) where traders from the Northwest and Extreme North dominate. These ethnically determined institutions compensate for weak formal institutions, incompetent administrative systems and rampant corruption. Based on trust, they enable trans-national economic exchanges, dispute settlement, financial support, information sharing and trade facilitation (Langbour *et al.* 2010).

Business challenges

The difficulties of launching a business in Cameroon were iterated by the majority of actors in the chains and deterred many from operating formally. These challenges have been confirmed by the World Bank's Doing Business indicators which measure the strength of legal institutions and procedures required to establish a business, the associated time and cost, and minimum capital requirements. In the study period, Cameroon continued to score poorly on an African and international scale, worsening from a rank of 147 in 2006 to 167 out of 175 in 2009 (World Bank 2007; 2010b). Compared to the average for Sub-Saharan Africa and lower-middle income countries, Cameroon's performance in the areas of government effectiveness, rule of law and control of corruption was much lower (World Bank 2009c). This is despite significant improvements since the late 1990s and early 2000s. Rigid labour laws make hiring and firing difficult and focus heavily on individual protection and national insurance contributions for pensions, which can be onerous for small enterprises (Jacques Nyam Eben, Ministry for Small and Medium Enterprises, Social Economy and Craftspersons, pers. comm. 2009). As a result, formal employment contracts were not common among the enterprises interviewed.

Obtaining credit is also difficult for the NTFP sector and for women in particular (Awono *et al.* 2010a). The scope, access and quality of credit information available through public organisations or private sector is very low, compared with the region and OECD average and twice as costly (World Bank 2009c). This results in a low uptake of credit though such formal channels and reliance on informal credit, such as tontines, particularly in the NTFP sector (Awono *et al.* 2010a). Whilst finance for micro-entrepreneurs is fairly new, informal financing has a long history (Rogerson 2001). Tontines, njangi[37], micro-savings schemes and gifts or informal flexible loans from friends and/or family and own capital are very important for entrepreneurs in the NTFP sector (Awono *et al.* 2010b). Interviews confirmed these as the major sources of capital for traders and retailers who needed to invest in stocks, equipment, premises and transport prior to starting a business.

Taxes levied on NTFP trade include general businesses duties (profit and VAT) and local council taxes for market traders. Since 1996 traders have been required to pay a flat business tax of 12,000 FCFA (25 US$) per year. The total tax burden for small-scale traders can be significant, adding to the burden of 'informal' taxes. Larger traders and companies are also subject to significant taxation, including regeneration taxes for SFP quotas at 10 FCFA (0.02 US$) per kilogram of SFP exploited. Revenues from SFP regeneration taxes are small compared to timber: from 2000 to 2005, the state annually received around 16 million US$ from timber concession area taxes (Cerutti *et al.* 2006), ten times the value from SFPs. The export of raw, unprocessed SFPs requires payment of another, progressive and volume-based tax. In the mid-1990s, an export tax of 15%

[37] Informal associations of individuals along neighbourhood, professional, age, gender or ethnic lines, often with a cultural and/or credit and saving function.

was instituted on all NTFPs, but was reduced as it became apparent that the tax pushed the trade underground and forced many companies to close, such as the pharmaceutical NTFP-exporting company Plantecam. Measures to improve the transparency and management of the tax and customs in the Autonomous Port of Douala were not seen as producing improvements by the exporters interviewed. All interviewees indicated that negotiating bribes with officials from customs, tax, agriculture and MINFOF inspection services are part of their daily business.

Collective action has been seen by Macqueen *et al.* (2006) as a strategy to overcome the bottlenecks of informality and difficult business environments, when few other support structures exist. Successful associations can achieve cost reductions, adapt strategically to new opportunities and lobby for more supportive policies. The interviews confirm this, with 17% of harvesters, 6% of processors, 12% of traders and 14% of retailers working collectively, with variations found in specific chains and regions, partly linked to social culture. For example in the Northwest and parts of the Southwest the traditional cultures encourage and support collective action, with people accustomed to working collectively, dating back to colonially instigated farmer cooperatives. A survey of collective action in the Northwest and Southwest confirms this (Ingram *et al.* 2007), indicating that collective action and networking helped groups to meet their goals. The less hierarchical societal cultures more common in the Centre, South and Adamaoua regions make collective action more uncommon and problematic. On average, 18% of actors surveyed engage in collective action.

Conclusion: Visible for livelihoods – invisible for policy

The social-economic context in which NTFP chains are embedded highlights their ongoing, long-term importance for subsistence and trade. Many NTFPs are everyday items and common sights in households and markets. Trade has been highly dynamic, with booms and busts dependent upon a combination of factors involving supply and demand, as well as changing alternatives, tastes, uses and consumers. Diverse trade and consumption practices by ethnic groups have merged and melted as mobility, urbanisation and globalisation increases, creating further opportunities for new products and markets. The economic benefits of trade are not equally distributed. On average, those involved in NTFPs gain equivalent to average national income. However, certain actors and products provide above average, substantial, highly valuable economic contribution to livelihoods. The unmeasured, non-economic benefits are also apparent – their use in healthcare, as food and their cultural importance. For other people, mainly women, rural harvesters, minority ethnic groups and large households who are more likely to be poor, NTFP trade provides an important economic and social contribution to their livelihoods but they remain poor. For others, it is a minor contribution, an opportunistic practice, diversification and safety net. The benefits from trade are easily controlled by the actors in the chains with the most economic and/or political power. The poorest, most marginalised and most dependent on NTFPs have less control.

NTFP business is fraught with challenges, many inherent in Cameroonian socio-economic culture and its politics. This has meant that trade has remained largely informal and reliant on family and ethnically based networks. Informality aims to avoid the costs of state interference and corruption, but also means that bribery is rife as there is no formal safeguard. Informality, whilst breeding creativity, is also a barrier to gaining support from the government, research and support organisations that are present or ac-

tive, albeit uncoordinated, in the chains. It also forms a barrier for people and enterprises in the chains to access financial capital. Collective action is one way that people in the chain have sought to generate more power to counter such practices, but it is not widespread in all chains and segments.

Informality is also equated with lack of policy attention: the importance of the NTFP sector's contribution to national economies, livelihoods, food security and health has been unknown or under-estimated. Politically it has been almost invisible, except for a handful of economically important and/or threatened products. The formal framework does little to promote or support vibrant NTFP-based entrepreneurship. Corruption adds an unpredictable and often costly layer of arrangements. However, in the last two decades an increasing trend of attention is apparent. Regional and national level discourses, institutions and networks of actors have emerged. However, this has yet to be translated into practices on the ground, in the forest, fields, villages and markets. The lack of harmonisation between government agencies means there is no differentiation between wild and cultivated NTFPs and subsequent policies and practices related to the majority of chains.

Part III: Governance and value chain analyses

This section further presents main empirical results of this study. Chapter 6 provides an analysis of governance arrangements, identifying statutory and customary, but also voluntary and market-based arrangements, projects, international conventions and corruption. Chapters 7 to 9 present the in-depth value chain analyses for the *Gnetum* spp., apiculture and *Prunus africana* value chains. In Chapter 10, the five additional chain analyses are summarised. These illustrate a representative range of NTFPs found in Cameroon. They include bamboo, cola (*Cola* spp.*)*, raffia (*Raphia* spp.), gum arabic (*Acacia* spp.) and bush mango (*Irvingia* spp.) Each of these four chapters addresses the second research question concerning how chains are configured in terms of products (uses and sources), actors, activities and values. The governance arrangements specific to each chain are described, to answer the third research question on governance arrangements. This allows question four on sustainable livelihoods and question five on the impact on product sustainability to be answered. Each chapter describes and analyses how these governance arrangements affect the livelihoods of actors along the chain and how these impact on chain and product sustainability.

Pygeum (*Prunus africana*) hoe handle sellers, Belo market, Northwest region September 2009

6

Governance analysis[1]

This chapter answers the first research question concerning the governance context and arrangements in which NTFP value chains are embedded and observable trends. The chapter draws on data from the literature review, content analysis of policy and regulatory documents and interviews with key stakeholders (Chapter 3). After outlining the policy and institutional context, it sets out how NTFPs are governed, building on the definition in Box 1.3. The principles and systems guiding interactions around NTFPs and institutions that enable these interactions are focused upon. The multiple governance frameworks existing in Cameroon are described, with a focus on the main geographic areas from which the value chains originate. Originally, the research sought to examine the formal, regulatory system and traditional and customary regulations. However the existence of other governance arrangements became apparent during the research: those based on voluntary and market-based schemes, projects and international agreements, and the impact of corruption, all of which have introduced systems and practices by creating, adapting and/or enforcing formal and customary regulations and policies. The specific governance aspects in each value chain are subsequently detailed in Chapters 7 to 10.

Political and institutional context

This section introduces the prevailing forests, poverty and trade politics and policies. It presents and analyses the institutions impacting individuals and groups in NTFP chains.

Development policy

Compared to other African countries and many of its neighbours, Cameroon enjoys relatively high social and political stability, being largely peaceful since battles with German, French and British invaders in the late 19th century and political unrest in the early 1990s and 2008. Sporadic conflicts today arise from mainly pressure groups advocating for greater autonomy of the Anglophone Northwest and Southwest regions

[1] This chapter draws on the following peer-reviewed documents written or contributed to by the author: Cerutti *et al.* 2009, Colfer *et al.* 2011, Ingram *et al.* 2011c, Beauchamp and Ingram 2011, Laird *et al.* 2010,

(Konings *et al.* 2003). Slow moves towards democratic reform have been made since the CPDM ceased to be the only legal political party and multi-party elections recommenced in December 1990. Political power has remained firmly in the hands of President Biya since 1982, currently the second longest running African president after Mugabe. The president has broad, unilateral powers including creating policy, administering government agencies, negotiating and ratifying treaties. He appoints government officials at all levels.

Political, institutional and juridical reforms have been enacted to support development-oriented strategies since the 1980s when agreements were negotiated with the International Monetary Fund (IMF) and the World Bank. These were accompanied by slashing the civil service, public finance reforms, state governance changes and industry privatisation. Though they have had some effect, meaningful and visible reform, especially on corruption, have not occurred (International Crisis Group 2010). Currently all developmental strategies, policies and external support fall under the Poverty Reduction Strategy Document (PRSP), adopted in 2003 (International Monetary Fund 2003). This embodies a decentralisation and participation rhetoric, prioritising a stable macroeconomic framework, growth through economic diversification and private sector revitalisation (International Monetary Fund 2003). Failing to meet the conditions of the first four IMF programmes, the government was forced to adopt the IMF-supported Poverty Reduction and Growth Facility (PRGF) from 2005 to 2008. A new constitution was adopted in 1996, espousing democratisation, economic liberalisation and decentralisation. Emphasis was placed on governance and fighting corruption, leading to a National Governance Programme in 2003. Democratisation appears though to have halted after the return to political pluralism. Current politics are reminiscent of the post-independence monolithic political period, with elites regaining political and economic privileges associated with autocratic rule (Mbuagbo *et al.* 2004). Civil society has been compromised by the creation of political and social structures promoting autocratic rule and remains mired in cleavages, ethnicisim and regionalism. In this context 'good governance' has remained a persistent dream (Nkwi 2010).

Forest policy

Under pressure from the international community, the government was more or less forced to adopt reforms. The Bretton Woods institutions[2], used conditionalities linked to structural adjustment programmes to drive a new forest law. Heavily influenced by the Rio Summit (1992) they attempted to reconcile economic forest exploitation and biodiversity conservation and to mobilise new sources of state income by introducing a forest tax (Topa *et al.* 2009). Local communities, business and civil society were poorly represented in the process, undermining the positive impacts the reformers wished to promote (Assembe-Mvondo 2009). The Forest and Environment Sector Policy (FESP) was adopted in 1999, becoming operational in 2006. It aims to be a comprehensive policy for accountable and sustainable management of forest resources and has five main activities: environmental management of forest activities, valorisation and processing of NTFPs, biodiversity conservation and valorisation of wildlife, community management of forest resources, and institutional capacity building, research and training. Government actions are complemented by a basket of tied donor funding that eventually be-

[2] Established post World War II to assist European reconstruction and provide mechanisms for international cooperation managing global financial systems, includes the World Bank, IMF, and IFC.

came available in 2008. Progress indicators[3] strongly focus on timber and conservation, poverty and governance, with no specific indicators for NTFPs. A result has been improved governance and sustainability of forest management in timber concessions, better conditions for adjacent communities and enhanced timber-based economic growth[4] since the mid-1990s, with the resulting regulatory framework culminating in the 1994 Forest and Wildlife law – considered by some as the most progressive in Central Africa (Topa *et al.* 2009).

Although non-state actors were foreseen as partners in policy development and implementation, MINFOF acknowledges that their participation remained below par[5]. Although the FESP is a government programme, donor input to and steering was, and still is, strongest. This has mainly been through the 20 strong Circle of Partners of the Ministry of Forestry and Wildlife (CCPM), a group of international donor organisations, embassies and support organisations active since 1999. Timber and conservation generally dominate the FESP and CCPM agendas, although periodically attention has been paid to NTFPs. The Forest Governance Facility (FGF) in 2007, initiated by the UK Department of International Development (DFID), the Netherlands Development Organisation (SNV) and local partners aimed to stimulate civil society, private sector, research and elected and traditional representatives involvement. But after three years it failed to gather momentum. The FESP is implemented by the Capacity Building for Community Managed Forest and Fauna Resources Initiatives Project (RIGC) set up and managed by the MINFOF with Highly Indebted Poor Country Initiative (HIPC) funds. It supported community-based activities, including NTFP extraction and processing until 2010. The National Forestry Action plan (PAFN) supported and revitalised the semi-dormant National Reforestation Agency (ANAFOR)[6]. NTFPs were not specified in the PAFN. Largely stimulated by the FAO, a national policy framework (FAO 1999; Mbolo *et al.* 2002) been developed within the context of Central Africa Forest Commission (COMIFAC) (Mbolo *et al.* 2002; Betti 2007b; Djeukam 2007; FAO *et al.* 2008; FAO 2009a, 2009b).

Governance actors

A range of government agencies have been and are involved in implementing policies concerning NTFPs in Cameroon, shown in Figure 6.1. Alongside the direct actors In the 1990s, the competent ministry – the then Ministry of Environment and Forests (MINEF), now Forestry and Wildlife (MINFOF) – created a sub-directorate for NTFPs. Located in the Directorate of Promotion and Transformation of Forest Products (DPT) it concerns the commercialisation, transformation and development of forest products. The DPT was also tasked with centralising data collection for these products. The department had to compete with more powerful directorates for influence and resources and accomplished little. Although MINFOF has been streamlined since the late 1990s, the same problems continue, and the DPT continues to have limited influence compared with the directorates concerned with timber and conservation. It has been dependent for

[3] URL: http://data.cameroun-foret.com/?q=fr/node/10588. Retrieved 13 July 2012.

[4] URL: http://www.acdi-cida.gc.ca/cidaweb%5Ccpo.nsf/projEn/A031537005. Retrieved 13 July 2012.

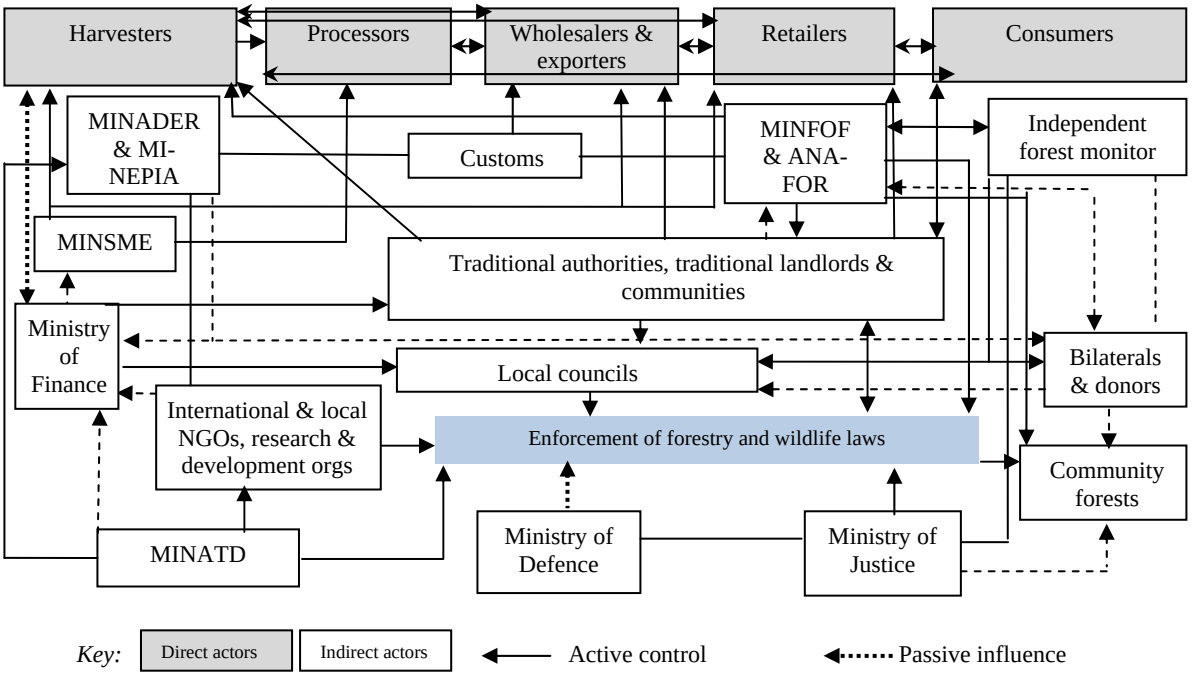
[5] Cf. Introductory Note, MINFOF Conference, Ten years of Forest Management in Cameroon 1996-2005, Yaoundé 25-28 April 2005.

[6] ANAFOR succeeded the National Office for Forest Development (Office National de Développement des Forêts, ONADEF) as part of the reorganisation of MINFOF to implement the FESP.

its operating budget on donors, allowing them to influence priority setting. It has so few resources that it is unable to collect basic statistics on most NTFPs (Walter *et al.* 2006; Betti 2007b; Ingram 2009b), a major obstacle to drafting, implementing and monitoring NTFP regulation.

The National Reforestation Agency (ANAFOR) is responsible for regeneration and reforestation. A lack of funding has meant these activities have not been conducted, although funding from CITES and the International Tropical Timber Organisation (ITTO) in 2010 enabled studies on *Prunus africana*. Other ministries include the Ministry of Livestock, Fisheries and Animal Husbandry (MINEPIA), regulating honey, classed as an animal product under the Veterinary Sanitary Inspection Law of 2000. Coordination within and among ministries of Forestry and Wildlife, Livestock, Environment and Nature Protection and Sustainable Development (MINEP), Agriculture and Rural Development (MINADER), Finance, Customs, Territorial Administration and Decentralization (MINATD) and Small and Medium Sized Enterprises, Social Economics and Crafts (MINSME) on NTFPs does not happen on a regular or planned basis. The lack of collaboration is exacerbated by high staff turnover and extensive reshuffles every two or so years. Thus despite the large number of departments concerned with NTFPs, a bureaucratic, large, expensive, ineffective and unconnected apparatus exists.

Figure 6.1 Direct and indirect actors in forest governance in Cameroon



Whilst the state seems omnipresent on paper, fieldwork indicates an inverse correlation between distance from the capital and physical presence of civil servants in regional offices and councils, and even stronger inverse correlation with presence at subdivisional posts, the field or forest. Remoteness and the lack of adequately trained staff, infrastructure, equipment, financial and logistics hinder implementation. Staff are often paid months late, hence 'private settlements' (another euphemism for bribes) is a necessary practice. Per diems and support from projects supplement income and facilitate op-

erations, such as transport, monitoring, meetings and control activities. Some government staff work as consultants with research, conservation and development organisations while remaining civil servants. Shown in Figure 6.1, other actors include traditional authorities, NGOs and civil society organisations (CSOs), community based organisations (CBOs) such as community forests, and local community development organisations), research organisations (international and national universities and research institutes) and development organisations (international and local). Their roles are elaborated further in the following sections and specifically in each chain in Chapters 7 to 10.

Regional political and institutional links

Cameroon's relations with African organisations, such as the African Union, are marked by an absence of active diplomatic initiatives (Konings 2009). Despite a shared colonial background with West African states, regional political and institutional affiliations are mainly directed towards Central Africa. At the first Central Africa summit on the conservation and sustainable management of tropical forests in 1999, heads of state proclaimed "their commitment to the principle of biodiversity conservation and the sustainable management of the forest ecosystems of Central Africa … [and] the right of their peoples to be able to count on the forest resources to support their endeavours for economic and social development" (COMIFAC 2006). In 2005 the COMIFAC Treaty for the Conservation and Sustainable Management of Forest Ecosystems in Central Africa finalised commitments to sustainable forest management and created the legal basis for COMIFAC as a political and technical steering, coordinating, harmonising and decision-making institution, supporting and monitoring the implementation of international conventions and forest development initiatives. Cameroon is a member of the Congo Basin Forest Partnership (CBFP). This informal structure of about sixty COMIFAC member country institutions, NGOs, international institutions and private sector organisations was launched during the World Summit on Sustainable Development in Johannesburg in 2002. The CBFP aims to enhance the effectiveness of technical and financial contributions and harmonise programmes implementing the COMIFAC Convergence Plan. Both initiatives have been strongly driven by the food security, conservation and development-related agendas of the EU, FAO, GTZ and USAID. In the last decade these four organisations have been major drivers of NTFP policies nationally and regionally. A result has been that COMIFAC members have increasingly recognised the role of NTFPs in reducing poverty, economic development and biodiversity, leading to recommendations for the harmonisation of policy and regulatory frameworks (FAO *et al.* 2008). The two year revision process culminated in a participative multi-stakeholder activity (with a broad, but not entirely representative group of actors), to produce and validate a sub-regional Directive on sustainable management of NTFPs of plant origin in Central Africa in 2010 (Bigombe Logo 2010); (COMIFAC 2010). COMIFAC reiterated the need to improve the legal and institutional frameworks for the sector in its Convergence Plan (FAO *et al.* 2008). These regional actions slowly filtered to a national level. The redrafting and revision of national policies that started in Cameroon in 2008 has drawn on the sub-regional guidelines and seems to be approaching finalisation. A meeting of the NTFPs Sub-Group of the Central African Biodiversity Work Group produced "strong recommendations" to reinforce NTFP policies, programmes and projects (Congo Basin Forest Partnership 2011).Together with the Central African Forest Observatory (OFAC), these provide an opportunity for governing NTFPs nationally and regionally.

Statutory frameworks regulating NTFPs

Cameroon's colonial legacy has bequeathed it with two operating legal systems: French-oriented civil law in the eight eastern and northern regions and English common law in the Northwest and Southwest regions. These recognise some customary laws, which, due to the country's ethnic diversity, encompass multiple norms. In Muslim regions, primarily in the north, Islamic legal principles have been incorporated into customary law, and Sharia law was recognised in the 1996 Constitution.

Forestry and environment laws

In the 1990s international agencies, particularly the World Bank, pressured the government to promote forestry laws incorporating forest products and services other than just timber. These policy processes culminated in the regulations shown in Box 6.1, in particular the 1994 Forestry and Wildlife Law. However well-intentioned, the 1994 law was developed without adequate or meaningful consultation with people using and trading NTFPs. It has since proved largely ineffectual and often undermines the objectives it sought to achieve (Njamnshi *et al.* 2008; Assembe 2009). These instruments have been strongly criticised for allowing over-extraction due to the multiplicity of actors involved and the weak and ineffective legal coverage, for limiting access to revenues for communities and customary users and the lack of specification of harvesting techniques (Djeukam 2007). The law also suffers from definitional problems. Article 12 of the 1994 law establishes national sovereignty over genetic resources and describes requirements for free and prior informed consent[7] and benefit sharing between prospectors, the government and local communities. Articles 64 and 65 of the 1996 Law also set requirements for genetic resources. However distinctions between genetic resources supplied for bioprospecting and those traded remain poorly elaborated. The 1994 law addresses plants and fauna and sets out three protection classes, but these regulate only animal species (Article 78). Although a classification is appropriate given the role of bushmeat and fish in the economy and livelihoods, the logic behind the selection of species is conservation based and not on their livelihood or market value. A 2011 revision was strongly influenced by conservation concerns (Matthew LeBreton, CAMHERP, pers. comm. 2011). The lack of a similar classification for plants indicates the need for a legal and policy framework addressing the realities of their use and trade. The government has clearly struggled regulating NTFPs, indicated by the lack of a definition. Developing an appropriate legal framework has been limited as most NTFPs – unlike timber – do not have values or characteristics that can easily be captured by the government. Thus the current legal framework largely maintains a status quo prior to the introduction of the regulations: most NTFPs consumed locally traded are not formally regulated but de facto by customary regulations concerning land tenure and resource rights. Only a handful of high-value products traded nationally, regionally and internationally are regulated.

[7] Free prior and informed consent' is the principle that a community has the right to give or withhold its consent to proposed projects that may affect the lands they customarily own, occupy or otherwise use. It is a key principle in international law and jurisprudence related to indigenous peoples.

Box 6.1 Forestry laws in Cameroon

The authorities in French Cameroon did not specifically regulate NTFPs. In the Western Cameroons, the British applied Chapter 75 of the Nigerian Forestry Ordinance, 1 February 1938. This remained the main legislation governing forest resources in the Northwest and Southwest provinces until 1973. It listed 25 product classes from timber, to plants, surface oil and minerals, beeswax and all produce from animals found in or brought from a forest. Since independence in 1960, Cameroon has enacted five relevant pieces of legislation:

- Law N^{o} 68/1/COR of 18 July 1968 regulated forest resources in French-speaking areas.
- Ordinance N^{o} 73/18 of 22 May 1973 and its decree of application, No. 74/357 of 17 April 1974, were the first to cover all of Cameroon since independence and dealt exclusively with forest resources. Article 39 (73/18) used the expression "traditionally harvested products" and specified, with Article 64, fuelwood, charcoal, grains, roots, leaves, barks, medicinal plants, flowers, eggs and feathers. Article 24 (74/357) used the term "secondary forest produce".
- Law N^{o} 81/13 of 27 November 1981 and three decrees of application, all issued on 12 April 1983, had a wider scope, dealing with forestry, wildlife and fisheries resources. The Law Article 39 regulated fuelwood, charcoal, grains, roots, leaves, barks and medicinal plants, and Decree covered (literally) raffia, palms, bamboo, rattan, firewood, edible produce, sand, gravel, laetrile (Section 3), medicinal plants (Section 23), poles, firewood, wood for charcoal (Section 34), wood, roots, bark, leaves, fruit and sap (Section 54).
- Law N^{o} 94/01 of 20 January 1994 on Forestry and Wildlife provides a national framework, replacing the 1981 law. It covers "forestry products of any nature except those from trees" (Article 21), "other forest produce" (Article 45), forestry products as '"essentially constituted, as vegetal products of wood and non-wood vegetal origin, as well as faunal and fish resources obtained from the forest" (Article 9) and ''special products'' as '"certain forest products such as ebony, ivory, wild animal horns, certain animal, plant and medicinal species which are of particular interest and shall be classified as special'' (Article 9.2).It has three application decrees:
- Decree N^{o} 95/466-PM of 20 July 1995 on wildlife.
- Decree N^{o} 95/531-PM of 23 August 1995 on forestry, specifying (literally) raffia, palm trees, bamboo, rattan, foodstuff, fuelwood, deadwood and grazing products (Sections 26(1) and 32(1) and fuelwood and poles from felled trees (Section 26(2).
- Decision N^{o} 0336/D/MINFOF 6 July 2006 Setting the List of Special Forestry Products representing a particular interest to Cameroon, specified 13 timber and non-timber products.

Proposals for regulatory and institutional reform have been made since 2008 (Ebamane 2008; FAO 2010c; b; Logo 2010), including specifically for *Gnetum* spp. (Ndoye *et al.* 2010) and for harmonisation across the Congo Basin (Walter *et al.* 2006; Mekongo *et al.* 2008). A consultative process to revise the 1994 law and address its perceived deficiencies has been under way since 2009, with finalisation expected in August 2013. Many of civil society organisations, parliamentarians and campaigners criticising the 1994 Law have contributed to its revision to counter the democratic failings of their state, pushing for increased participation in decision-making, greater fiscal accountability and transparency. One result was the set of recommendations for reform developed with extensive stakeholder consultation processes with actors from the sector (FAO 2010a)[8] aimed specifically at NTFPs (FAO 2010a).

[8] Findings from this research contributed to the recommendations.

NTFPs in Cameroonian law

The measures enacted over the last 50 years (Box 6.1) have added to confusion by providing multiple, different definitions of regulated forest products. As the basis of a quota and permitting system, the terms 'minor forest products', 'secondary forestry products', 'forest produce other than timber' and 'special forestry products' (SFP) are used in Articles 9, 21 and 45 of the 1994 Law. No further clarification or definitions of the terms 'certain', 'interest' and 'special' are given. The majority of products listed are NTFPs, but not exclusively, shown in Box 6.2 by the list elaborated over a decade later (Government of Cameroon 2006). SFP lists have subsequently been published annually, including species and products that are both native and introduced, cultivated and wild harvested, exported and consumed locally, timber and non-timber.

Quotas for the study period (detailed in Appendix 10) are determined annually by an interministerial committee headed by the MINFOF. The law states quotas should be based on surveys of species populations. In practice, they are determined by requests from exploiting companies. Interviews and inspections of the annual permit allocation and quota (*bulletin de spécification des produits forestiers spéciaux*) attached to waybills[9] (*lettre de voiture*) indicated that quantities purchased from harvesters regularly exceed quotas. Species are regulated in some years and not others, due purely to demand, rather than to availability or conservation status. Quotas, and the associated permit and waybills are allocated to individuals or companies, who are rarely harvesters or exploiters themselves. It takes from several months up to a year to receive a permit, in a procedure involving several governmental bodies. Permit holders tend to have sufficient political and economic power to gather the necessary paperwork and follow up their dossier in the capital. This parallels the timber sector, where political patronage is deeply embedded (Assembe 2009). Many quota holders sell their waybills at 250% to 500% of the permit value reported by the Ministry of Finance. This practice allows others to trade slightly easier than with no permit, albeit still illegally, and further stimulates institutionalised corruption. Some high-value NTFPs not included on the SFP lists are regulated by quotas and permits mutual agreements (*gré à gré*) granted by the Minister of Forests, based on regulations pre-dating the 1994 law. Examples since 2005 include rattan, charcoal, eru (*Gnetum* spp.) and bush mango (*Irvingia* spp.) (Detailed in Appendix 10). Exported SFPs such as *Prunus africana*, require an additional export authorisation from MINFOF. Other exported NTFPs are neither subject to SFP or other permit systems.

In summary, the quota and permit system for both national and export trade is not transparent and places enormous burdens on traders and exporters, increases costs and discourages trade and compliance with laws. The myriad of bureaucratic and expensive financial obligations, including high levels of corruption challenges the sector's economic viability. The annual nature of permits makes it impossible for businesses to plan and creates uncertainty for customers. Combined with the generally unsupportive business climate, these factors have discouraged international investors, with at least one company reported being dissuaded from continuing and one from setting up NTFP-processing operations in the period 2004 to 2010.

[9] The part of the quota granting permission to transport SFPs and used by MINFOF for monitoring.

Box 6.2 Special Forestry Products in Cameroon

Decision N° 0336 of 2006 listed 13 SFPs in a mix of French, English, local and scientific names.

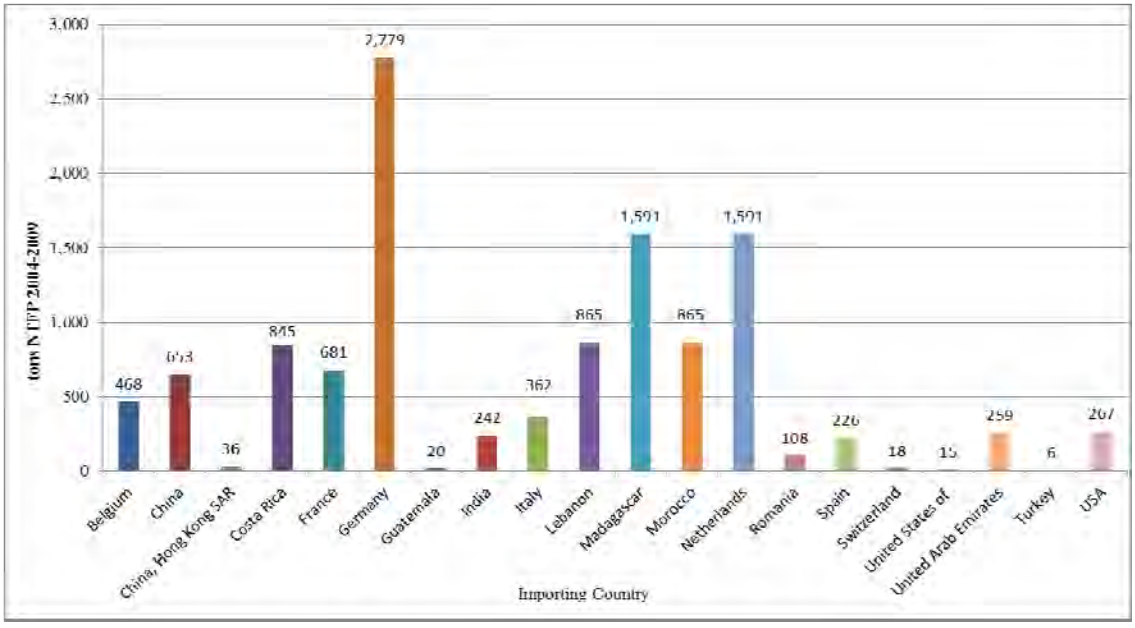
Product*	Species scientific name	Local names	NTFP	Timber
Ebéne	*Diospyros crassiflora*	Ebene, ebony		√
Eru	*Gnetum africanum, Gnetum buchholzianum*	Eru, ókok, koko	√	
Pygeum	*Prunus africana*	Pygeum, kanda stick	√	√
Yohimbé	*Pausinystalia yohimbe*	Johimbe	√	√
Wild rubber	*Funtumia elastica*	Rubber, manjongo, ebongo, damb, damba, ndama, ntoh, akaine, etendamba, elé-ndamba, domjongo	√	
Rauvolfia	*Rauvolfia macrophylla, R. vomitoria*	Yando-yotongo, ebtong, etong, esombo	√	
Rattan	*Eremospatha* spp., *Laccosperma* spp., *Oncocalamus* spp.	Rattan, cane,	√	
Gomme arabique	*Acacia* spp.	Gum, gum arabic, gavde	√	
Tooth stick	*Randia massularia, Garcinia mannii, Cola acuminata, Cola nitida*	Chewing stick	√	
Candle stick	*Carpolobia alba, Carpolobia lutea, Canarium schweinfurthii*	Cattle stick Candle nut	√	√
Charbon de bois	At least 27 species (see Appendix 2), excluding exotic species#	Charcoal, firewood, fuelwood, bois d'energie, bois de feu	√	√
Aniegré	*Aningeria robusta*	Aniegré, abam	√	√
Poteaux d'eucalyptus	*Eucalyptus* spp.	Eucalyptus		√

*# Such as Gmelina arborea, Eucalyptus spp. and Pinus sylvestris.*term used in SFP list*

The quota and permit system does not accurately monitor or manage quantities traded, highlighted by the discrepancies between the permit quantities requested by traders, permits granted and actual sold in markets and exported (see details in Appendix 10 and 11) as annual permitted quantities are far below actual quantities sold. For example, between 2007 and 2009 only one quota was allocated for 100 tons of *Irvingia* spp. from the Centre region. However, on average 5,089 tons was produced annually from just 36 villages in the Southwest, Centre, South, East and Littoral regions and on average 4,448 tons of safou (*Dacryodes edulis*) was sold annually from 1997 to 2007. Despite these high volumes, safou is not an SFP and does not require a permit.

This results in less revenue being collected, actual quantities being not verified and possible over-extraction. Data collected at some ports, custom and highway checkpoints is not centralised. Information is not shared between different government agencies at Abang Minko and Kye Ossi on the Cameroon, Gabon and Equatorial Guinea border and Mamfe, Tiko and Idenau on the Cameroon Nigeria border where the MINFOF checks permits, waybills and certificates of origin; the Ministry of Agriculture and Rural Development (MINADER) checks phytosanitary certificates; and Customs verifies circulation and tax certificates. Fieldwork indicated that it is almost impossible to calculate quantities of products sold locally and exported regionally. Only data concerning four exported non-timber SFPs is generated by the database of Commercialised Species in Cameroon (COMCAM) from the Port of Douala. Regional exports at other ports and border crossing are thus not captured in official figures. Comparing the NTFPs traded worldwide from Cameroon (see Appendix 10 and 11 for details) with those regulated indicates that both official government economic data and fiscal systems vastly under-capture international exports of NTFPs.

Figure 6.2 Official exports of Special Forestry Products 2004 to 2009



Source: COMCAM annual reports

The criteria for inclusion in the SFP list are inconsistent. The SFP Decision indicates that species are included due to levels of threat or endangerment that make them 'special'. Chapter 4 highlights that only a small proportion of species recognised as vulnerable are listed as SFPs and that despite the 1994 law naming ivory, animal and fish as of 'interest' these are not listed. Fuelwood was also mentioned, although charcoal (which can be produced from a large number of different species) has only occasionally appeared on annual quotas and permits, despite its enormous value indicated in Chapter 4. 'Interest' is thus inferred to mean value, particularly economic. However the law is oblique and only names medicinal value, although only 9% of the SFPs have medicinal uses. Over the years, a number of other products have been classed as special and permitted, but have not consistently appeared in the annual quotas and permits. The annual listing thus creates more confusion in practice, as products move on and off the list.

A much wider range of products is traded than regulated, with 13 defined, in contrast to at least 123 plant and 100 animal species traded identified in Chapter 4. The SFPs also include products with very small trade. However highly traded products, such as *Ricinodendron heudelottii* (njangsang) and *Dacryodes edulis* (bush plum) are not included (Ndoye 1995; Ndoye *et al.* 1997/98; Ruíz Pérez *et al.* 2003)(see Appendix 10 and 11 for details). Whilst native forest species found wild but also grown or left standing on farms and fallows such as *Cola* spp. are excluded, introduced and cultivated *Eucalyptus* spp. are included. Construction materials such as rattan, *Raphia* spp., bamboo (see Chapter 10) and eucalyptus poles are mainly sold in separate markets to the food markets surveyed in the market surveys and databases, and their current trade quantities do not appear in any statistics. Permitted quantities of NTFPs grossly under-report actual quantities traded. For exports, a similar phenomenon occurs: only 25 of the NTFPs exported required a permit and were monitored (see details in Appendix 10 and 11) and only five exported NTFPs were listed as SFPs (Figure 6.2), in contrast to 50 plant-based products actually exported in the last decade to many more countries than indicated by COMCAM.

Section 8 of the 1994 Forest Law clarifies customary user rights (*droit d'usage*) for forest communities as being "to collect all forest, wildlife, fisheries products freely for their personal use, except protected species including subsistence fuelwood and wood for construction needs, but not timber for sale, from all unprotected areas". This renders all products sold and processed that are not permitted SFPs illegal. Interviews indicated that 95% of harvesters did not know about permits and harvest rights. The result is illegal trade. The wide gap between the intention of the law and customary use is due to a combination of an anomalous law, the lack of knowledge of most people of restricted customary rights and low levels of enforcement. The governance of NTFPs by Cameroonian law thus does not reflect the reality of commodification, is illogical and inconsistent. It does not clarify why products are regulated and only a small proportion of those traded are controlled, mostly on only paper. In contrast to the high values shown in Chapter 4, one result of the legislation is a low level of revenue generated by taxes and permits. This perpetuates the myth of the limited value of NTFPs, such that few resources are allocated to understanding and monitoring the sector and even less to developing, drafting and implementing effective measures to manage it. This finding confirms that of commentators on the sector (Nkuinkeu 1999; Awono *et al.* 2002; Sunderland *et al.* 2004a). The result is that NTFPs are formally regulated much as they always have been, with just an oddly assorted handful regulated de jure through a complex, burdensome system of quotas, permits and taxes, allocated untransparently to the most powerful exploiters or brokers.

Land and forest tenure and rights

Rights to resources are rarely a tidy set of rules (Fortmann 2001). Their histories impact the present, changing as tenure does. Also altering as informal arrangements emerge that may or may not be formalised but which have clear effects on the ground. Observations indicate that this requires looking at how the past affects the present to obtain a clear understanding of the different kinds of rights, users and uses.

Statutory land rights have, like the legal system, grown from the mixed colonial heritage. Under British law, 'vacant' lands were considered the property of local communities and placed under the control of Native Authorities. Under French colonial law, all lands 'vacant and without master' belonged to the state. With unification and the merg-

ing of legal systems in 1972, the British concept of communal land was replaced by the French. A common legal frame was set by the 1996 Constitution and 1974 Land Ordinance which classify land into three major categories. Public state land refers to lands held by foreigners, usually large plantations which became state property after independence. Some are managed by parastatals such as the Cameroon Development Corporation (CDC), some have reverted to natural forest cover and others are used for public purposes. Private land comprises land registered by private individuals (actual persons or international organisations). National domain land, which is all land not registered, is divided into two categories: vacant land and land occupied and worked by the local populations. Following the French model, in 1974 a large number of hitherto communally managed lands were transferred from customary control to state control. These areas include most secondary and primary forest and the resources found in them. The 1994 law (art. 20) distinguishes two domains: the permanent forest domain – land permanently allocated to forests and/or wildlife habitats, and the non-permanent forest domain – forested lands that can potentially be allocated to other land uses. Additionally, ownership over naturally growing (but not planted) trees on private land and all trees planted or naturally growing on land without a title deed are considered state property.

Legal recognition of customary rights falls into two broad categories. Free access is an usufruct right (Section 8, 1994 Law and Section 4, Decree 95/466) and may be exercised in communal and community forests. Paid access refers to the right to exploit the SFPs following receipt of a permit from the government (Box 6.2). Despite the existence of an increasingly refined statutory framework, in practice most communities are unaware of statutory laws. Interviews indicated that 95% of harvesters were unaware of any formal rights and restrictions, or of their user rights. Additionally, when they are known or – as is often the case – arbitrarily enforced, statutory laws are viewed as illegitimate, serving a small group of elites. This view is confirmed by Assembe (2009). Interviews and the evaluations of the Forest Environment Sector Programme (PSFE) reinforce that government enforcement capacity is weak. Its presence is manifested primarily physically only when land is allocated for logging, mining or commercial agriculture, or when a protected area has the status of a national park. As a result, in rural communities customary law governing resource rights continues to be the dominant system, with conflicts erupting when statutory law contradicts customary law (Barume 2004; Assembe 2009).

Most forested land now belongs to the state (see Table 1.1) and the vast majority of landholdings in rural areas, around 90%, do not have a title deed (Tonye *et al.* 1993; Egbe 1997). This is due to the expensive and bureaucratically complex registration process, a lack of knowledge of the possibility and, often, a lack of need unless customary ownership is challenged creating a need for legal title. The permanent forest in the forest zone in the south is nearly all state-owned in a mosaic of timber production concessions, protected forests, and around 345,000 hectares of communal forests. According to the 1994 Law, forests outside the public state land exist in three ownership categories: community forests, communal forests and private forest. Generally, people living in forest areas fully retain their traditional use rights in their communal areas within both the permanent and non-permanent forest domain. The permanent forest domain refers to land allocated solely for sustainably managed forestry or as wildlife habitat and includes protected areas, council forests and logging concessions. The non-permanent forest domain is land that not requires long-term forest maintenance and includes areas for the

sale of standing timber up to 2,500 hectares, and private, communal and community forests.

Community forests (Article 37, 1994 Law) provided new opportunities for local access, control and management of forest resources. They enable communities to gain the exclusive management and production (but not property) rights up to 5,000 hectares of forest resources in the non-permanent forest domain for up to 25 years. Introduced in 1997, the number of community forests peaked in 2004. Just over 400 are now at some stage in the attribution process, although only 43% have approved management plans (Beauchamp *et al.* 2011). These are situated in diverse ecological, political, economic and institutional landscapes, with the majority in the lowland forest zone. NTFPs are often included in community forest management plans, although most attention has been on commercially valuable timber (Tchatat *et al.* 2006; Njomaha 2008). Typical of the definitional confusion in the 1994 law, a 'community' is not defined, paving the way for elite capture and the well-intentioned initiative promoted by the donor community is poorly adapted to local conditions (Beauchamp *et al.* 2011). Community forests appear to offer few advantages, instead adding layers of bureaucracy and cost. They have generally been unable to solve sustainability and equity problems related to high economic value products and contributed little to species conservation. They have however helped some communities achieve greater control over forest areas and gain more significant benefits from timber production. Associations of groups of community forests, such as the Association of Oku Forest Management Institutions (ASSOFOMI) and the Association of Kom Forest Management Institutions (ASSOKOFOMI) and the national network of community forests (Réseau Foret Communautaire, RFC) aimed to use collective action, providing a stronger voice at regional and national level, but have also struggled, for example, to revise the 1994 Law concerning community forests. The impact on NTFPs however has been negligible, with most species continuing to be harvested according to customary law and individually, rather than according to a management plan and communally. Even when included in management plans, sustainable harvesting has not been assured. On the contrary, the institutional capacity that community forests have built has been one factor contributing to the over-extraction of *Prunus africana* in the Northwest (see Chapter 9). These new institutions have led to conflicts between and within communities and have created competition between traditional institutions and the newly established institutions.

A Technical Operations Unit (TOU) is legal entity by Prime Ministerial decree, defined as "a delimited geographical area, based on ecological, socio-economic, cultural and political characteristics for the enhancement of integrated landscape management involving all stakeholders" (Republic of Cameroon 2006). This multiple land-use classification was devised at the request of external donors, primarily the Global Environment Facility (GEF) and builds on the 1994 Law by regulating activities, uses and access. There are, to date, six Technical Operations Units distributed throughout Cameroon's humid forest zone.

The 1974 Ordinance provided a framework to increase private property ownership by setting out the process to obtain land titles. This slow and difficult procedure requires the applicant to have sufficient money, understanding of the bureaucracy and government connections. As a result only a small percentage of Cameroonians have registered land titles (Awafong 2003). The government thus legitimates a passive tenure relationship with traditional authorities and landlords, who in many areas determine access and rights to land, forests and resources locally. Given this context it is not surprising that

disputes are common (Holmes 2005). Conflicts are exacerbated by the legacy of colonial administrative systems, inefficient management of multiple resource claims and poor dispute resolution (Fonchingong *et al.* 2009). Examples are the eviction of traditional forest owners to construct the Chad-Cameroon oil pipeline, Bakweri claims to CDC lands around Mount Cameroon (Konings 2009), and seasonal user-group conflicts over access between livestock herders, farmers and fishers in the Northwest and grand North. In these highly populated areas, disputes are inflamed by protracted multi-ethnic disputes around legitimacy, precedence to land claims and access rights (Mbah 2009; 2010). This has led to violent conflicts since 2004 in the Northwest in Kesu, Waindo and Aghem (Beseng 2004), Bali-Nyongha-Bawock, Oku-Mbessa, Oku (WHINCONET 2005) and Ndawara.

A response to such long-running and increasing disputes was the 2009 evaluation of the land system by the African Development Bank. This recommended a major reform of property and land rights laws and administration systems, to provide accessible, inexpensive formalisation opportunities paying particular attention to protecting the rights of women, pastoralists and marginalised ethnic groups (USAID 2010). The support by major donors for private land registration has been strongly criticised for undermining collective, communal and some traditional ownership systems, and allowing expropriation of valuable forest lands by the government and international interests (Nguiffo 1998).

'Dash'

A major fact of life, also affecting forest-based commerce and livelihoods, is corruption. Conventionally defined as the exercise of public power for private gain, corruption ranges from additional payments 'to get things done' in a private or business environment, to grand corruption in the political arena and the elites engaging in state capture. Corruption can be seen as the manifestation of a lack of respect of both the corrupter and corrupted for rules (customary and formal) governing their interactions, and hence has been seen as a failure of governance (Kaufmann *et al.* 2010). It has been seen as a cause of poverty (Harford 2006). Often euphemistically called 'informal taxes', the frequently heard terms on the street are a 'dash' (in pidgin), 'a little something', "*Donnez-moi quelque chose*" or "*Ou est mon cadeau*?".

Surveys such as the Governance Barometer, Governance Matters, Ibrahim Index and Global Corruption Barometer (see Table 1.1), discussions during any bush-taxi[10] journey, and popular musicians such as Lapiro de Mbanga all reinforce the fact that corruption is ubiquitous, insidious and strongly institutionalised in Cameroon (Assembe 2009). Cameroon ranks among the highest for corruption in public and business worldwide (see Table 1.1). Systemic corruption is prevalent in all sectors and levels of society, including forestry and trade (Assembe 2009; Alemagi *et al.* 2010). A 2009 Central African conference on forest tenure, governance and enterprise stated that corruption in forest management and institutions must be overcome (RRI 2009b). This was reiterated by MINFOF Minister, Elvis Ngolle Ngolle, who stated that there would be:

[10] A shared taxi is the perfect vehicle in which to use the methodology of participant observation and immersion, enabling current popular opinion to be gathered.

> Zéro tolérance de la corruption en 2011 dans le secteur forestier… aussi il a promis d'aligner sans cesse les actions de son département ministériel à l'opérationnalisation de la stratégie gouvernementale.[11]

However, by August he was being probed for fraud and corruption[12]. On the Prime Minister's website[13], the government's achievements page remained empty in 2011. The media have reported with relish and increasing openness[14] on corruption in the forestry sector. A series of high profile anti-corruption campaigns and bodies have been enacted since 2000. The National Anti-Corruption Observatory established to investigate and monitor political corruption and organise anti-corruption initiatives, however it has no legal enforcement powers. It has been criticised as ineffectual and representative of the government's lukewarm approach to fighting corruption (Jimo *et al.* 2001). The sporadic enforcement of anti-corruption laws has proved largely ineffective in countering corruption (Peh *et al.* 2010).

Hard evidence of the impact of corruption is difficult to obtain. It has been linked to deforestation (Koyunen 2009), misappropriation of forest lands and revenues (Veit *et al.* 2009), the root cause of forestry policy failures (Blackman *et al.* 2010) and maintaining poverty (Veit 2006). Granting rights over state or public resources to legislators has provided them with opportunities for career advancement and private gains – allowing land titles and forest concessions to be been used as patronage resources to buy votes and pay for political favours (Veit *et al.* 2009). A consequence is a vicious cycle that hampers policy reforms to redress and improve the situation. The state loses its legitimacy to conduct reform vis-à-vis local state officials; the latter lose their own legitimacy to implement reforms regarding timber operators and the general population; mistrust and conflicts to control of networks of corruption increase whilst laws remain enforced; and state officials choose not collect or retain information as a way of maintaining their vested interests (Blackman *et al.* 2010). Payments to gendarmes, police, forest guards, customs agents and others can consume up to 20% of NTFP traders' gross sales during transport to markets (Sunderland *et al.* 1998; Tchatat 1999). Two decades later, similar statistics persist, with traders paying 530 US$ per truck of *Gnetum* spp., even when possessing permits (Ndoye *et al.* 2010). The interviews corroborate this, with corruption accounting for on average between 2 to 10% of trader's costs, escalating in high-value chains to 37% of Cameroonian eru exporters' revenues. This practice persists partly due to ignorance of the legal requirements by traders and government authorities, which creates openings for abuse and a lack of respect for the law. Similarly, ignorance of CEMAC free trade agreements resulted in corruption being reported as frequent at the border crossings near Idenau, Bang-Minko'o, Kye Ossi, Menguikom Tiko and Limbe. Corruption thus forms yet another amorphous, expected but often unpredictable govern-

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[11] Idriss Linge. Exploitation forestière: Tolérance zéro pour la corruption. Journal du Cameroun. 22/02/2011. URL: http://www.journalducameroun.com/article.php?aid=8087. Retrieved 18 June 2011.

[12] Ngolle Ngolle Probed Over Fraud. The Post. 29 August 2011. URL: http://www.thepostwebedition.com/Content.aspx?ModuleID=1&ItemID=6707. Retrieved 2September 2011.

[13] URL: http://www.spm.gov.cm/en/important-projects/government-achievements.html. Retrieved 2 September 2011.

[14] Au Cameroun, le trafic de bois illégal continue de prospérer. Cameroon Online. 14 May 2008. URL: http://www.centerblog.net/societe/37719-4912477-trafic-au-cameroun. Retrieved 2 June 2008.

ance arrangement foisted upon NTFP chains. It creates rules which affect how and where transactions take place in value chains and their costs. When nested within formal institutional and statutory structures, run in parallel by the same governors, it forms another shadowy, pluralist layer in the governance of forest resources.

Customary forest governance

In contrast to the formal policy and regulations, the *de jure* reality is that forests are largely customary governed and owned common property. This makes people living in forests, according to the formal regulations, squatters on government-owned land and forests (Alden Wily 2011). However common property forests are not, as Alden Wily states, undivided and unanimously community owned, but subdivided by clan, family and individual ownership and use rights, which depending on the dominant ethnic group, are governed through complex systems of short and long-term leases, loans, gifts and inheritances. These customary laws address who owns resources and access them, where and in which quantities harvesting may take place, who benefits and in which ways. Although they differ across Cameroon, in general harvesting of NTFPs held by a clan or family may take place only with the family's permission. On communal village lands any member of a community can harvest products for subsistence use, but for higher-value products intended for sale (particularly timber, but also some high-value NTFPs) approval is generally required from the chief or village council. Outsiders often require permission to harvest resources and provide some form of compensation (in kind or cash) before or after entering and harvesting, even if this rule is not supported by the wider community. This has been well-documented for timber rights (Cuny *et al.* 2007) and has been largely the case for high-value NTFPs, such as *Prunus africana* (detailed in Chapter 9) and moabi (*Baillonella toxisperma*) (Jochem 1995). The effectiveness of customary law varies significantly. It is generally strongest in remoter, less accessible, rural and forest-based communities and weakest when undermined by factors such as proximity to urban centres with growing populations, with high levels of cultural and social change and multiple ethnic groups (Colfer *et al.* 2011).

Despite the dominance of customary law, the legitimacy of the traditional governing structures has been disputed. Some chiefs are seen to not represent indigenous institutions, having been installed by colonial governments in search of cooperative counterparts to cement political power, reduce ethnic conflicts and power struggles (Geschiere 1993; Konings 1999; Oyono 2004). In the study sites, local associations, NGOs and community groups have grown and been supported by external donors and project funders creating changes usurping traditional institutions to create equity and/or reconfigure power and resources. This has resulted in conflict with some of the traditional institutions in the Northwest (WHINCONET 2005; Ingram 2008; Ingram *et al.* 2009) and Southwest (Ewusi *et al.* 2001). Given the local differences, customary governance arrangements in the three main ecoregions where the value chains originate from are examined in the following sections.

Highlands montane forests

In the Northwest many traditional political structures and institutions of the former Tikar chiefdoms remain, evidenced by posters of traditional leaders and their lineage being common sights in bars, homes and public buildings. The traditional centralised political system operates with hereditary dynasties, rules and customs (Warnier 1985).

They are governed by a chief[15] known as the *Fon*, whose chiefdom and ethnic group is known as *Fondom* with a hierarchical bureaucracy composed of hereditary titled men known as *Ya* and *Bobo*. Three Fondoms (Nso and Oku in Bui Administrative Division, covering Kilum Forest, and Kom in Boyo Administrative Division, covering Ijim Forest) cover the majority of the Bamenda Highlands forests. The Fon and Kwifon are the custodians of land and natural resources and de facto owners *Fai, shuufai, mforme* and *shey* are titled males who have made contributions towards the community, manifested by the Fon presenting a red Bannerman's Turaco (*Tauraco Bannermani)* feather, worn in a traditional cap. The Fon is the senior member of a regulatory council of elders, known as *Kwifon* (in Oku and Kom) and *Nwerong* (in Nso). Some members of the council of elders are elected; others are based on family succession (*Nchindah* in Oku). Villages and quarters are managed by village heads and quarter heads, supported by traditional councils, reporting to the Fon and Kwifon, with most village heads being Kwifon members. The *Nwerong* and *Ngiri* traditional societies fix socio-cultural activities and uphold rules, such as Country Sundays (two days in every ten in which farm work is prohibited) and the prohibition on killing bees or destroying natural forests. Immigrants such as the Fulani, living adjacent on the high grasslands, generally respect these traditional authorities.

Traditionally land tenure was regulated by the Fons, allocating land to individual or entities for farming and goat grazing, and to the *Ardo* (Mbororo and Fulani traditional clan leaders) for distribution for cattle grazing, with the Fai and shuufai being the landlords. Tenure patterns (inherited patrilineal for Fulanis and in Oku and Nso and matrilineally in Kom with use rights devolving to specific patrilineages and matrilineages) originate from inheriting, giving, pledging and renting land, often accompanied by traditional gifts including cash and a symbolic calabash of *Raphia* spp. palm wine. Traditional symbols (*sho-oh ngven*) are used to acknowledge the tenancy of a traditional landlord and include the giving of a calabash of palm wine (*Raphia* spp.) and the stem of a peace plant *(Dracaena deisteliana).*Women traditionally own the food crops, supporting a system of male-dominated wealth and power, who control the land and trees (Goheen 1996). Economically important palms and trees such as *Raphia* spp. and *Cola* spp. are owned by lineage heads, enabling them to control their trade, for which Nso and Batibo have become famous. The traditional institutions also address products such as fuelwood, honey, medicines, bushmeat and building materials.

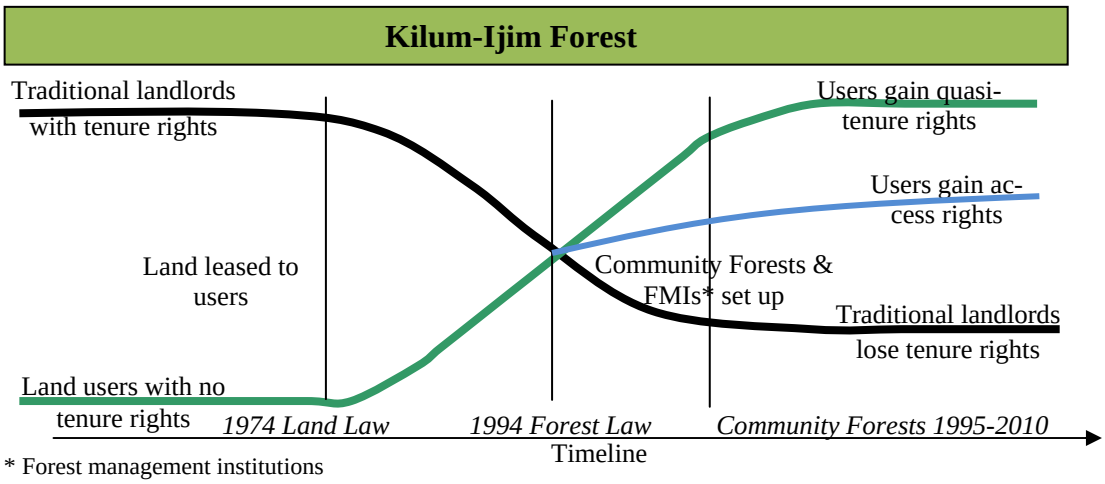
Forests generally are important as the source of most watercourses in the region and as significant cultural and spiritual values due to the presence of sacred areas, groves and shrines restricted to certain societies and social groups. Taboos have a significant impact on forest use with economic cultural and ecological implications. Individual sacred species in Kilum-Ijim include *Dracaena arborea*, *Dracaena deisteliana*, *Ensete gilletii* and *Kigelia africana*, all which have restricted uses, acting as conservation strategies *(Cheek et al. 2000).* The forest shrines in Kilum-Ijim forest, such as the Lumutu Sacred forest in Oku, Iwe-Awoi and Kongang sacred forest in Ijim, Kongang sacred forest in Kom and Akua-fichua in Laikom, are areas where entry and access are highly regulated and where Fon enthronement rituals and annual ceremonies to commune with ancestors to secure good health and harvests take place. New sacred sites can be set up by the Fon, Kwifon or Nwerong, such as the Oku Lake forest area, proposed as a pro-

[15] The government recognise different classes of customary chiefs: a Fon is a first class chief.

tected area in 2002 and gazetted as the Oku Plantlife Sanctuary in 2005. Fais, Shuufais and every family lineage also have sacred groves or shrines (*Kimanen* and *Tokembon*), often enriched with herbs with healing powers. Enchaw (2010) describes how the Lumutu, Lake Forest, Akua-fichua, Iwe-Awoi and Kongang sacred forests have a core sacred no-go area, with shrine-bearing areas representing a buffer zone and surrounding open access forest forming a transitional zone. These provide a seed bank and maintain tree cover (Ingram and Jam 2008). Other shrines are strategically located in watersheds and wetlands, maintaining ecological services. Hunting was also traditionally governed by taboos for specific periods (the dry season coinciding with lower animal reproduction periods), restrictions on who can hunt (only initiated people), species such as civets, musk deer, panthers, lions and elephants being sacred and restricted for royal use and the consumption of certain species, such as apes, forbidden. Other examples are shown in Ingram and Schure 2010 (in Appendix 14). However, the local extinction of many of these species over the last forty years (Maisels *et al.* 2001; Ingram *et al.* 2008), mainly caused by local people of the same ethnic group, indicates how customary practices to obtain food have been over-ruled by economic and food concerns. The Gods of Oku (*Emyin me Ebkwou*) also influence forest use, being a group of distinct named beings, associated with sacred areas, prominent landscape features and the forest. They influence daily life and often appear to diviners or healers during unusual and extraordinary events, often in the forest and in animal form, where they can observe behaviour and reward or punish people. The gods of the land (*Emyin Menttieh*) are associated with plants and animals in the fields and forest, are omnipresent and largely beneficial. Their spiritual force is the basis for the plants used in healing and witchcraft. In contrast to most West Africans who generally view their forests as areas of chaos and peril, the Kilum Ijim forests are seen as areas of order and stability(Koloss 2000). Healers and diviners interact personally with emyin and may visit or call them in the forest. Traditional practices such as using sticks (instead of cutlasses) to clear the sacred forest and harvesting fuelwood only one day a year for palace use, also act as conservation strategies. Certain rites also aim to ensure forest health (production) for which the Fai may receive tributes from forest users (such as honey, crops and rats).

Traditional rules governing forest use have been increasingly diluted by formal legal land titles, by indigenes and outsiders seeking land for farming, grazing and cash crop plantations. Tenure rights are more decentralised in Oku and Nso than in Kom, where the Fon remains powerful, although lineage heads are increasingly contesting the Fon's authority, leasing land with dues paid in cash, crops and honey. Traditional landlords, particularly in newer settlements such as Simonkoh and Semti, are seldom resident and thus unable to control actual land use, such that forest land has been often allocated to people from outside the community, who are less bound by customary regulations. The purchase of official land titles is also increasingly circumventing traditional authority. Enchaw (2010) notes that 9% of people have purchased land, particularly local elites and politicians. These changing practices, shown in Figure 6.3, have led to inter-Fondom disputes and distorted traditional tenure relations, pushing disenfranchised and landless farmers to claim other, including forested, land. This has been exacerbated by the extension of the Ndwara tea estate and Ntock-Mbolong ranch in Ibal-Oku, restricting traditional access for graziers, leading to further forest conversion and encroachment, notably in Upper Shinga Community Forest, and local conflicts.

Figure 6.3 Tenure, access and rights changes over time in Kilum-Ijim Forest



* Forest management institutions
Source: Adapted from Enchaw 2010.

With the introduction of community forests (CF) by the Kilum Ijim Forest Project (KIFP) (see section on Project governance arrangements), traditional authorities and legal regulations became yet more entwined and power shifted from customary to formal, shown in Figure 6.3. The 1994 Forest Law requires a written forest management plan to be negotiated within the community and adjacent communities, by a responsible, legalised community-based institution, which is not allowed by the 1994 law to be a traditional authority. Local populations were divided into forest user groups and represented by Community Forest Management Institutions (FMIs), legalised with project support by the MINFOF. FMI executive committees were elected by the community, as a new form of democracy. This mixed the economically powerful with charismatic community leaders and token minorities, such as women and Fulani pastoralists, giving all of them unprecedented decision-making power over forests. The legal and project's definition of community which embraced leaseholders and pastoralists as stakeholders (not normally included in decision-making and rule enforcement in traditional structures) differed to traditional definitions of villages and boundaries. The project 'gave' traditional authorities the role of coordinating user group activities and resolving conflicts between user groups or members of user groups (Asanga 2001). The government, depending on staff's personal motivations, sometimes played a coordination and conflict resolution role thus creating an enabling environment, but sometimes hindered an enable environment. The FMIs in effect became the new forest custodians, more powerful than the traditional authorities and formally recognised by a majority of the local population, the legal system and by project organisations as legitimate custodians. Nearly 40% of the community members now believe that the FMIs are owners of land and resources in the Kilum-Ijim Forest (Enchaw 2010), indicating the confusion between ownership and access and leading to conflicts.

To fulfil these wide-ranging management tasks and powers, FMI members were provided capacity building, technical support, funds and support to access funds to maintain the FMIs and their umbrella associations by the projects. Although empowered technically, the 17 Kilum-Ijim community forests have since 2004 been unable or unwilling to counter many of the unsustainable practices in the forest. Despite many community forests benefiting from significant *Prunus africana* sales (see Chapter 9), all

the FMIs complained of insufficient financial resources. Some funds were misappropriated by Executive Committees (punch drunk with new power and unable to resist the temptation), individuals, councils and traditional authorities. The majority (17 out of 18) of community forests had not paid any dues to the umbrella associations by 2009. *Prunus africana* revenues decreased with the 2009 trade suspension and tourism revenues did not meet expectations. The lack of finances meant that FMIs were demotivated and unable to fulfil their forest management obligations, such as paying for patrols. This turned the forest into an uncontrolled area where unregulated and unsustainable extraction by community members, FMI members, elites, traditional authorities and external harvesters took place. It also allowed new entrants, such as large-scale goat herd owners with economic and social standing, to exploit the void to establish their own new access rights. Contributory factors to this free-for-all situation include the behaviour of Fon Ngum III of Oku setting a negative example by harvesting *Prunus africana* in the Oku sacred forest. Enchaw (2010) construes this as a backlash by traditional authorities to their usurpation of power. The former regional level MINFOF officials were also engaged in illegal *Prunus africana* harvesting and the MINFOF hardly penalised malpractices in community forests (Peter Yamma ASSOKOFOMI, pers. comm. 2007; Peter Bah, ASSOFOMI, pers. comm. 2008 and 2009; Phillipe Evoe, MINFOF, pers. comm. 2007). Community members and members of FMIs also complained of poor governance within the community forests, misrepresentation and misuse of resources. Thus the formerly enforceable customary rights of individuals and communities were rendered passive in and, in some cases, detrimental to, forest governance. The survey data reinforce this, indicating that 50% of respondents believe that the community owns the forest. However in times of conflict with traditional authorities, most turned to the local council as mediator (rather than to the traditional council) – indicating how formal and traditional roles have changed.

In the Southwest around Mt Cameroon, under traditional Bakweri land tenure, natural forests are seen as common property of adjacent villages. Permanent tree crops, such as coffee, tend to be grown in fields near to the homestead with tenure over crops and land exerted by the farming family. The highest level of decentralised authority and organisation is at village level, with the chief and village council seeing themselves as guardians and owners. Conflicts occurred between this traditional system and the Germans in the late 19th century and by subsequent colonial authorities granting rights to immigrants to settle on Bakweri land (Schroder 2000, Watts, 1994) and by state authorities such as the Cameroonian Development Corporation (CDC) for oil palm plantations and logging titles. Forested land has also been claimed by shifting cultivators for subsistence farming. Clashes also occurred as migrants have deforested land. In the ethnically heterogeneous community the already weak traditional authority combined low government implementation capacity and weak formal land tenure arrangements which has led to a low level of clarity over land ownership and regulations (Bellewang 2005). Many immigrants live close to Bakweri villages but do not participate or adhere to Bakweri customs, leading to land and forest management tensions and a degrading adherence by some Bakweris to traditional leadership (Ndam *et al.* 2004).

Savannah forest

The Extreme North is characterised by the political and land tenure hegemony of the Fula customary political powers, the *lamidos*. A lamido is the clan head and spiritual leader, governing people and adjudicating land according to Sharia laws, being judge,

imam and arbitrator. Like the ardos, the lamidos have been stripped of their feudal powers and responsibilities, but are recognised as first degree chiefs by the government. Power is designated hierarchically down through to the village chief (*lawan*) and quarter chief (*chef de quartier* or *djaoro*). These customary institutions have a feudal nature and have been maintained and strengthened following colonisation and independence. They control the plains, traditional livestock pastures and agricultural areas. The lamido's power was strengthened by a post-independence alliance between the newly installed Cameroonian government authorities, mainly representing the interests of groups from central Cameroon, and the Fula chieftaincies of the North. Local government administration has also been captured by the lamido, who organises new incomers' access to land, granting (often precarious) use rights and charging harvest fees. These incomes, as well as farmer-grazier and other social dispute settlement fees, make land-related incomes the lamido's principal sources of revenue (Cotula *et al.* 2007). The savannah forests in contrast are open access, with few informal regulations governing traditional use of commonly collected NTFPs, such as the harvest of *Raphia* spp., palms, bamboo, rattan, fruits, seeds and fuelwood. The main norms are largely connected to the predominant Islamic traditions concerning who is permitted to collect certain products (i.e. women and children collect fuelwood, men *Raphia spp.* and bamboo) and how far they may stray from the family compound, with women commonly not permitted to forage alone or far from the house for long periods.

In the Adamaoua savannah, the Gbaya system of customary land regulation dominates and covers mainly farm land. Claims to fertile riverine gallery forests (*kò zér*) valuable for maize farming and sometimes up to 40 km often near villages where kin live (Burnham 1980) are commonly marked out by individuals. Rights tend to be highly individualised and not characterised by a hierarchy of estates. Land is passed on through families, and headmen and elders are generally not responsible for land allocation (Burnham 1980). Individual sales of land close to towns have been occurring more frequently since the 1960s. Fulbe pastoralists living or passing through a forest area may claim some areas for grazing, particularly if it contains water points. An open access, multiple use of forested land is tacitly permitted, with beekeepers, hunters and grazers taking account of each other's activities (e.g. beekeepers place their hives high in trees so that it is not damaged by bush fires caused by hunters or grazers). Beekeeping and honey hunting do not require permission and usually take place in the immediate forest area of a village up to around a 10 km radius of the village. Whilst hives are owned, the trees in which they hang are not. Beekeepers tend to return to and use the same forest area, and the low population densities mean conflicts between beekeepers are uncommon. Certain scarcer resources, such as rattan and bamboo, are often claimed by whole villages. Access is free to villagers but restricted for others and is often granted free of payment upon request to the chief or any villager also collecting in the area. The gathering of wild fruits, yams and seeds such as kofia (*Lophira lanceolata*) is also open access, on a first come first serve basis. Fruit trees in the village are usually common property, unless, rarely, they are known to be planted, when it can be claimed by an individual. Hunting, often in a group, occurs in gallery forests once cleared of maize with ownership of caught animals on a first come basis, regardless of where they are caught (Burnham 1980).

Lowland humid forest

In the lowland forests of the Southwest region, the traditional council headed by a chief is considered the highest customary authority at village level. The council's influence has traditionally been strong, and is considered the owner of resources and legitimate ruler over land use and resources and thus controls access to NTFPs, particularly by outside parties. The council enforces customary law and order in the village and typically serves as an administrative link between the village and the local administration. Although women are represented in the village council, they often do not have the power to oppose unfavourable decisions about income-generating resources. For example, in some villages around Takamanda in the South West, women pay a token fee to the council before harvesting *Gnetum* spp. for sale, whereas men hunt and sell without restrictions. Also influential are the *ékpe* (leopard) and *makwo*, powerful and respected sacred societies to which many men in the Anyang, Boki, Bayangi and Banyang tribes belong. The village society 'house' is the highest indigenous village authority, working alongside traditional councils and managing regional and long-distance trade (Hacket 1989; Zapfack *et al.* 2001a). Societies uphold laws, with a vigilant group acting as police. In Anyang villages, serious laws pass through the council to the makwo and then to the village. The makwo oversees edicts. Both institutions also solve conflicts, including access to resources and tenure and reinforce council decisions. Focus group interviews also indicated that these cultural practices remain strong but are deteriorating among youths, who are becoming increasingly disaffected and that societies have weakened with outmigration. Youths in some communities believed that they are being deprived of their rights by both stringent informal and formal controls on resource use, especially timber. Council decisions are increasingly criticised by community members if they do not benefit from revenues, such as from forest resources, and conflicts with 'society elites' are common.

Customary rules dictate that high value NTFPs such as *Irvingia* spp., *Gnetum* spp., bush pepper vines (*Piper guineensis*) and cattle stick bushes (*Carpolobia* spp.) are not owned by individuals or families and that access to the resource is generally on a first-come, first-served basis. In practice, the same families tend to harvest in the same area each year with tacit acknowledgements of resource access and ownership. This system leads to most (99%) harvesters from the village requiring no prior authorisation from any authority before collecting the NTFPs. Trees planted or maintained on farmland are owned by the landowner, with their permission required for harvest. As species have increased in value, practices have changed. People have started to clear land around *Irvingia* spp. trees in the forest and others have claimed trees hosting abundant *Gnetum* spp. vines to establish long-term collection rights. The extension of tenure through clearance usually relates to only farmland, with retained trees also considered as owned by the family clearing the land. In response to domination of the *Irvingia* spp. trade by Nigerian Igbo buyers, in early 2000 Matene villagers purchased *Irvingia* spp. to sell in Nigeria with revenues proposed to go to a community fund controlled by the village council. Interviews in 2008 found that this practice was effective with some visible benefits, such as the construction of village hall in 2002.

When harvested by outsiders and 'strangers from Nigeria', NTFPs, particularly those of high value, are controlled and 'taxed' by the traditional authorities and permission required from village chiefs or traditional councils. Some communities require *Irvingia* spp. buyers to register and pay before harvest. There is no standard rate: in Kajifu a buyer pays 11 US$ for the whole season (7 US$ for indigenes) while in Mbilishi the

cost is 4.7 US$ and an unspecified amount of palm wine for the council. This practice has increased since recorded in 2001 (Mdaihli *et al.* 2002) when neighbouring villagers could collect resources freely 20% of the time and paid traditional council in 80% of cases, and 25% of Nigerians paid the traditional council and occasionally the chief or others directly. Encroachment by Nigerians is a cause of much conflict in Obonyi I, Basho, Matene and Mobilise. Because of such conflicts, the Mbilishe people began planting both *Irvingia* species. Other traditional controls include prohibitions on felling individual *Irvingia* spp. trees and on climbing trees to harvest unripe fruit, restricting harvesting to ripe fruit that has fallen to the ground. Many villages also have rules regarding the harvesting of *Gnetum* spp. (see Chapter 7). Norms stipulate that only the leaves should be plucked and that the stem must not be uprooted, promoting regrowth. Although generally adhered to, Kajifu, Takamanda and Obonyi villages reported problems with destructive methods such as tree felling. Outsiders also require permits from the council for *Gnetum* spp. in some villages, registering and paying taxes varying from 0.03 to 0.40 US$ per head load (about 1 kg of leaves) to 4.50 US$ in Obonyi, with collecting periods restricted to four or five days per month.

Across the humid forest zone, shifting cultivation has been a dominant mode of forest use for decades (van den Berg 2000; Dkamela 2011). Property and user rights are claimed by families on fallow and abandoned farmland, and parts of forests, particularly those destined as future farmlands. Tree tenure and property rights for forest resources vary according to the use, location, individual or collective claims and investments (Van den Berg 2000). Valuable trees, such as *Irvingia* spp., *Garcinia kola* and *Baillionella toxisperma* belong to the individual or group who has planted them, and often, but not always, wild trees are appropriated by the family whose compound and farms are closest. These owners can then allocate use rights to others. Trees further away are open access for individuals and the community, unless rights are established, such as by clearing around them or marking them. Clearing primary forest, planting fruit trees and oil palm is also a way of demarcating land ownership. However, enforcement is often difficult to enact. Free holding has been the reserve of urban centres where the value of land has rapidly increased due to increasing demand by ‘foreigners’. Private ownership however has gradually permeated the rural milieu, changing traditional tenure relations closer to larger urban areas and accommodating differences of power and decision-making roles. Such changes have occurred between Bantu and Baka, Bagyeli and Bakola communities around the Dja and Campo Ma’an National Parks.

The Baka in the humid forest zone have very different customary arrangements, largely at odds with the formal land tenure and forest governance arrangements. In the forest no tenure is acknowledged, with dwellings being temporary and lands not traditionally seen as owned. The entire forest is seen as belonging to them, given by a supreme deity, *komba* or *jengi*. Everyone has the right to use all the forest resources (game, wild fruits, tubers, medicines, etc.) on the condition that they do not destroy the forest or resource. Such traditional use leaves no permanent and little visible evidence of valorisation and occupation. This has left Baka forest to be considered ‘vacant land’ and classed as permanent state forest (CED *et al.* 2010).

Voluntary and market-based governance instruments

Voluntary instruments have been used to change the behaviour of actors along value chains and govern trade, often with ethical focus on economic, environmental, social

and cultural values. Market-based governance refers to institutions which control demand and supply transactions in markets and chains and the interactions of actors, such as collective action (for example through unions and associations); the delegation of traditional governmental functions to private players; and voluntarily adherence to national and transnational schemes governing the production and sale of products, services and chains such as certification schemes. The use of market-orientated policy instruments is nothing new, but as a mechanisms to delegate traditionally governmental functions it has been recently associated with decentralisation and privatisation, with resulting questions of legitimacy and effectiveness (Gebers *et al.* 1998; Cashore 2003) and accountability (Donahue *et al.* 2002).

The European Union has been behind several voluntary schemes in Cameroon. The Honey Monitoring Residue Scheme adopted by the European Commission in 1996 (European Council 1996) aims to ensure the quality of honey imports to the European Union, detailed in Chapter 8 and Box 8.1. Voluntary in name, compliance is essential if exporting countries wish to sell to the European market, effectively making them commercial requirements.

Geographical Indication (GI) (*appellation d 'origin*) is regulated by EU Directives concerning protected 'designations of origin', 'protected geographical indication' and 'traditional speciality guaranteed' promoting the quality or authenticity of products based on their geographical location and culture (European Council 2006). GIs are used to protect and preserve intellectual property related to traditional cultures, geographical diversity and production methods. Conditions for recognition are that it relates to a product which has qualities, a reputation or other characteristics clearly linked to its defined geographical origin. The GI procedure involves identifying the product, qualifying it, ensuring reproduction and finding means for remuneration mainly from commercial activities. The goal is to brand a product which consequently protects it and increases its value, leading to other advantages such as tourism, investments, environmental and economic benefits. The GI concept runs the risk of being usurped as copycat products take market share, placing the focus of international and European trade law on legalising and protecting GIs internationally. The GI for White Oku Honey, focussing on Kilum-Ijim in the Northwest is elaborated in Chapter 8.

Certification is a market transformation mechanism aiming to ensure sustainable commerce (Auld *et al.* 2008). It has sought to convince or pressure harvesters and producers to voluntarily adhere to standards and practices, driven largely by western consumers and NGOs and persuade, cajole or force consumers to purchase these products, via advertisements, public procurement schemes, and/or shame and blame campaigns. It creates a barrier to market entry for those outside of schemes and seeks to create a competitive opportunity for adherents. Certification has many faces: a marketing method, providing information on the impacts of products, and a tool to gain market access or advantage, capture price premiums and demonstrate responsible forest management through independent third party certification. It can influence how forests are managed and promote sustainable forest management, supply and consumption and mitigate risks for investors (Chupezi and Ndoye 2004). By 2008 around 50 NTFPs had gained certification through numerous schemes worldwide (Shanley *et al.* 2008). Whilst NTFPs are explicitly addressed in the 2009 FSC Forest Management Standard for Cameroon, no NTFPs have been certified in the Congo Basin, in contrast to NTFPs in Asia and the Amazon (Rametsteiner *et al.* 2001). As certification is driven by a variety of sometimes conflicting interests, if information or awareness is missing or low at one more points of

the chain, it is unlikely to be adopted, however enthusiastic external, driving actors are (Chupezi *et al.* 2004). The International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP) (FairWild Foundation 2010) has been proposed in Cameroon for *Prunus africana* by support and donor organisations (Chupezi *et al.* 2004; Ekpere 2007; Akoa *et al.* 2010), but has not commenced. This is due to a lack of actor connectedness, accessibility, enabling conditions and the chain, reflecting issues raised by Walter (2003) and Shanley *et al.* (2008).

Organic certification is a process for producers of organic food and agricultural products. Organic is a 'whole system' approach to farming and food production, recognising the interrelationships in the production system from the soil to consumer. It uses agricultural, social, environmental and food-processing principles to guide standards. Standards vary by country, certifying organisation, and, in Europe, EU directives. They generally involve standards for growing, storage, processing and packaging that involve no synthetic chemical inputs (e.g. fertiliser, pesticides, antibiotics, food additives, etc.), genetically modified organisms or irradiation; farmland free from prohibited synthetic chemicals for a number of years (often, three or more); maintaining an audit trail of detailed written production and sales records; adhering to a strict physical separation of organic from non-certified products and undergoing periodic on-site inspections, overseen by the government and/or independent certification organisations. Commercial use of the term organic is legally restricted. Certified organic producers are subject to the same agricultural, food safety and other government regulations as non-certified producers. In Cameroon, both the UK Soil Association – which maintains the strictest and highest organic standards in Europe – and the French Ecocert have certified agricultural products. Just one NTFP, honey, has been certified organic and ethical trade, by a small enterprise, Guiding Hope. The process and implications are detailed in Chapter 8.

Ethical or fair trade is an umbrella term for business practices promoting socially and/or environmentally responsible trade and practices in a chain. Such trade seeks greater equity by offering better trading conditions to, and securing the rights of, marginalised producers and workers. The European Fair Trade Association, Fairtrade Labelling Organisations International (FLO) and the International Federation for Alternative Trade (IFAT) collaborate to promote membership-based global networks of fair trade organisations, promote fair trade using certification and encourage people to change consumption patterns by buying fair trade. Commodity chain audits, certification and labelling distinguish members adhering to a code of practice governing their chain. In Cameroon, in the honey sector, Guiding Hope has been certified as an ethical trade company with the Soil Association since 2010. There are also corporate ethical and environmentally based supply chain schemes. The Body Shop International, a multinational producing cosmetic and personal care products, has registered NTFP suppliers, including honey and beeswax from Guiding Hope, as community trade suppliers, detailed in Chapter 8.

Voluntary chain-based certification can provide potential benefits, but may only be suitable for certain products and markets (Walter 2003; Ekpere 2007; Shanley *et al.* 2008; Vantomme 2010). The high set-up, maintenance and awareness-building costs and the uncertain environmental and social effectiveness of certification combine to pose challenges for small, remote, poor harvesters with often limited market connections and capital. Given this context, few schemes have been implemented in the Congo Basin, although several have been considered (Vermeulen *et al.* 2009). These schemes

form an additional set of governance arrangements, using national legislation as the base to go beyond regulatory requirements.

Governance through international agreements and conventions

International standards incorporated into national law and voluntarily complied with by states add another layer of arrangements. They are dynamic, reflecting species status, social-economic and political developments over time. They include the IUCN Red List of Threatened Species, which aims to guide and evaluate the status of plant and animal species worldwide. Since 1994 species conservation status has been determined using a baseline and subsequent monitoring of changes. If data is available, the level of threat is categorised, ranging from 'extinct' to 'critically endangered', 'endangered', 'vulnerable', 'near threatened' and 'least concern'. A red listing can trigger conservation actions from NGOs, governments and researchers (Thompson 2009). For example, a new coffee species helped justify protected area designation for the Oku Plantlife Sanctuary and Bakossi Forest Reserve, and inventories in the Southwest contributed to the Programme for the Sustainable Management of Natural Resources in the Southwest Province (PSMNR-SWP) lobby to upgrade Mount Cameroon and Takamanda Forest Reserves into national parks.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a voluntary, international agreement between governments in force since 1975 to which Cameroon acceded in 1981. It aims to ensure that international trade in wild animals and plants does not threaten their survival, which together with factors such as habitat loss, may deplete populations and cause species extinction. CITES accords varying degrees of protection to over 30,000 animal and plant species. Appendix I lists the most endangered species threatened with extinction, for which international trade is prohibited except for non-commercial reasons. Appendix II lists species not necessarily now threatened with extinction but that may become so unless trade is closely controlled though agreeing annual quotas. Although legally binding on its Parties, it does not replace national laws but provides a framework for implementing CITES within national legislation. By 2011, 18 animals were CITES Appendix 1, 186 Appendix II and 29 plants (including *Prunus africana*) Appendix II listed.

The Convention on Biological Diversity (CBD) entered into force in 1993 and was ratified by Cameroon in 1994. It aims to conserve biological diversity and the fair and equitable sharing of the benefits arising from the utilisation of genetic resources, ensuring the rights of countries and communities over their biological resources are respected. Also that access to traditional knowledge occurs with the approval of such knowledge holders, who should participate equitably in the resulting benefits, establishing a system for access and benefit sharing (ABS). It recognises that access to these resources must be subject to the prior informed consent of the provider country and based on mutually agreed terms. These rules are enshrined in a National Biodiversity Strategy and Action Plan, developed and heavily supported by donors. It addresses trade and benefit sharing of products covered by this study (*Prunus africana, Gnetum* spp. and honey). To comply with Article 10(c) concerning the protection and encouragement of customary use in accordance with traditional cultural practices compatible with conservation or sustainable use requirements, support and lobby organisations for indigenous peoples and local communities documented sustainable customary uses (Forest Peoples Programme 2010). This resulted in ABS studies on *Prunus africana,* influencing bodies

such as CITES (United Nations Environment Programme 1998; Schippmann *et al.* 2002; Ekpere 2007; Rosendal 2010; Samndong 2010). The status of the NTFPs studied according to these three standards varies from unclassified to highly conservation status, shown in Table 6.1.

Table 6.1 Status of the NTFP species with respect to standards and conventions

Species	IUCN Red List		CITES	CBD
	Category	*Status*		
Gnetum africanum	Near threatened	Pop. trend: decreasing	Not listed	
Gnetum buchholzianum	Near threatened	Pop. trend: decreasing	Not listed	
Apis mellifera adansonii	Not listed		Not listed	
Prunus africana	Vulnerable A1cd	Needs up-dating	Appendix II and Cameroon	Case study: *P. africana*
Cola acuminata, C. nitida, C. anomala	Not listed		Not listed	
Irvingia gabonensis	Lower Risk/ Near threatened	Needs up-dating	Not listed	
Irvingia wombulu	Not listed		Not listed	
Raphia farinifera, Raphia vinifera, Raphia hookeri	Not listed		Not listed	
Raphia regalis	Vulnerable B2ab(iii)		Not listed	
Bambusa vulgaris, Yushania alpina, O. abyssinica	Not listed		Not listed	
Acacia spp.	Not listed		Not listed	

Sources: (United Nations Environment Programme 1998; Chupezi *et al.* 2004; Ekpere 2007; Laird *et al.* 2008; CITES 2008; IUCN 2010; Samndong 2010).

Project governance arrangements

For the same reasons that Cameroon is much researched, it has become a donor darling and playground for experimentation by forestry projects (Topa *et al.* 2009). The terms project and programme refer to a collaborative activity, planned to achieve a particular aim, constituted by teams within or across organisations to accomplish particular tasks within a specific time frame, funded by foreign governments, the state, international development and financing originations (‘donors’), development and conservation NGOs and philanthropic organisations through grants or loans to implementing organisations, national and local government, local and international NGOs and/or civil society organisations (CSOs), consultants and private sector organisations. As each funder and implementer has their own objectives and associated rules, these have added a layer of governance arrangements, having a significant effect on conservation and management practices (Sharpe 1998). Projects have compensated for deficiencies and voids in state services, particularly in protected areas. Where projects have had a long-term presence this has sometimes provided little incentive for the state to take on these activities. The scale of projects enacted ranges from product-specific, short-term projects of six months to a year, such as the NTFP value chain projects funded by SNV, to projects covering large geographical areas with long timescales of decades, several of which have particularly impacted governance of the value chains studied in two of the ecoregions, and so are elaborated in more detail in the following sections.

Bamenda Highlands forest projects

In 1932 the British colonial administration proposed a forest reserve around the Oku Mountain Forest, as a buffer zone for food and fuel. This was rejected by the local authorities as unnecessary interference, given the elaborate customary rules, taboos and sacred areas governing forest use (Fisiy 1994). State management commenced from 1961 when a protected area was again advanced by the administration. This led to forest guards in the 1960s, a penal sanction on the Kwifon in 1970 and demarcation of a forest-farm boundary in 1975. Between 1963 and 1987, an estimated 50% of the forest was destroyed or modified (Nurse *et al.* 1994), indicating that traditional institutions were unable to deal with increased population pressure and use by non-indigenes. The government also remained unable to adequately respond, despite prohibitions and prefectural orders against degradation in 1983 and 1985.

In response to this history, from 1986 to 2006, projects were continually active in the Bamenda Highlands, affecting the four NTFP chains originating from this region: bamboo, cola, honey and *Prunus africana*. All the projects were led by BirdLife International in collaboration with MINEF and later MINFOF and communities adjacent to the Kilum-Ijim forest. Totalling over 2.35 million US$, they were funded by the Global Environment Facility (GEF/UNDP), the British Department for International Development (DFID), the Dutch Ministry of Agriculture, Nature Management and Fisheries through the International Nature Management Programme and WWF Netherlands. The first two projects, the Kilum Mountain Forest Project starting in 1987 and Ijim Mountain Forest Project in 1992, later combined into the Kilum-Ijim Forest Project (KIFP) focused on forest conservation, using education and awareness raising. They "took over the forest" (Chi 1999): 8). The Bamenda Highlands Forest Project (BHFP) started in 2000, building on the former projects with a focus on conservation and development. The projects, realising a need to work with the traditional authorities to have credibility, make impact and push through change, officialised "Fondom Agreed Wide Rules" in June 1998 with representatives of the three Fondoms (Birdlife International 2007). These rules aimed to support the attribution and management of community forests, by reinforcing and formalising customary forest management rules. The projects provided awareness raising and environmental education[16], the posters of which were seen in shops, bars, public places and private homes in 2010. Formal regulations were implemented as new institutions for community forests were set up, trained and heavily supported. Livelihoods projects concerning honey, *Prunus africana* and bamboo harvesting and processing were supported. A forest and biodiversity monitoring system was set up to measure the effect of activities. After project closure in 2004 a much smaller UK Darwin Initiative-funded project focused on capacity building of the FMIs and two umbrella associations from 2004 to 2006. Local NGOs joined together as an umbrella conservation and development network, WHINCONET, in response to and with support of the BHFP. Post-BHFP, they were supported technically and financially by SNV from 2004 to 2008 to conduct self-determined activities.

The dual aims of integrating conservation and development resulted in some early successes (Abbot *et al.* 2001; Gardner 2002). By 2003 7.8% of forest area had been regenerated and the forest boundary was marked with signs and trees, within which the forest remained fairly intact compared 1987 (Asanga 2002; Langley 2003; Royal

[16] URL: http://www.birdlife.org/action/ground/bamenda/bamenda4.html. Retrieved 15 June 2009.

Botanic Gardens Kew 2003). The project's presence provided a political and social motivation, a multiplier effect and sufficient direct income generation (from per diem payments for attendance at workshops, direct project employment, revenues from visiting researchers, students, officials and tourism and alternative livelihood activities), to enable sustainable forest governance for the project duration (Asanga 2002).

However, little evidence of a more permanent conservation and development legacy indicates that many of the successes have not been sustained. The government had no real ownership with few capacities transferred from the projects (Global Environmental Facility 2009) and was only partially able to enforce rules once the projects ended. This capacity has been noted as important in maintaining governance (Van Tatenhove 2003; Ostrom 2009; Persha *et al.* 2011). Anthropomorphic threats have continued and increaseed, with resulting forest degradation and losses to biodiversity (WHINCONET 2005; van der Waarde *et al.* 2006; Nsom *et al.* 2007; Stewart 2007a; Mzeka 2008; Solefack 2009; Enchaw 2010). The over-extraction of *Prunus africana* and low level of management of the Oku Plantlife Sanctuary are examples of how institutions set up by the project did not continue protection and enforcement, whereas harvests continued at higher rates than prior to and during the BHFP's lifetime (Stewart 2001; WHINCONET 2005; Ingram 2007; Nsom *et al.* 2007; Stewart 2007). Small income-generating projects providing alternatives to forest-degrading activities and forest value-enhancement, monitoring and raising awareness of increasing forest degradation and biodiversity loss have been conducted by WHINCONET members since 2004. Despite these activities to fill the gap left by the project (Fonjong 2006), their lower level of resources and reliance on grants meant that only a piecemeal focus was possible. These affected *Prunus africana* and honey chains using and enforcing formal and customary governance arrangements, and resulted in setting up new hybrid government arrangements, such as the collection and re-distribution of ecotourism revenues and geographic indication for Oku white honey.

As Enchaw (2010) notes, the failure of the projects to provide long lasting solutions to conservation and development dilemmas in the Bamenda Highlands can be attributed to the incompatibility and presence of overlapping customary and formal regulations, combined with new and often competing governance and management structures – notably the Community Forest Management Institutions, umbrella Community Forest Associations and tourism association – and decentralisation of powers to Councils. All of these were promoted by external project actors to govern forest and resource use, largely overlooking the intricacies of institutional functioning and interactions.

Southwest forest projects

A series of projects from 1988 to 2002 encompassed the montane and humid forest areas of the Southwest: the Limbe Botanic Garden and Rainforest Genetic Conservation Project (LBGRGCP) and the Mount Cameroon Project (MCP), financed by UK Department for International Development (DFID) and later the German Technical Cooperation (GTZ). These initially strongly conservation-focused projects encouraged the conservation and sustainable use of forests by establishing reserves and renovating the Limbe Botanic Garden (Watts 1994). The final phase reconciled conservation and livelihood needs by including practical projects benefitting villagers around the proposed reserves (DFID 2000). The Programme for the Sustainable Management of Natural Re-

sources in the Southwest Province (PSMNR-SWP)[17] has run from 2003 to date. It is funded by the German Development Bank (KfW) (GTZ 2010) through a 7 million euro German bilateral grant to the government and 10 million euro direct to the programme. Overall, the MINFOF Provincial Delegate for the Southwest is responsible, although the PSMNR-SWP is managed by the German GFA Consulting Group. It is implemented by these two organisations together with GIZ[18] staff, consultants and service providers through technical support, capacity building, village development and livelihoods projects, and by the World Wildlife Fund (WWF) and the Wildlife Conservation Society (WCS) for conservation activities. The programme aims to implement sustainable forest and wildlife management with affected stakeholders in and around high conservation value forest ecosystems of Mount Cameroon, Korup and Takamanda-Mone Technical Operations Units for their benefit and to alleviate poverty.

Many of the MCP and PSMNR-SWP's conservation and livelihood activities concerned NTFPs. NTFP-based alternative livelihood projects concerning honey, eru, snail farming domestication and marketing, and ecotourism were implemented (Wilson 2007) and a regional, strategic plan for developing NTFPs was produced in 2010. Long-term attention has been given to sustainable harvesting of *Prunus africana,* with harvester unions supported and a local, community-based company, the Mount Cameroon Prunus Management Common Initiative Group (MOCAP). Conducting inventories, developing standards and harvesting guidelines informally and then formally as part national management plan for *Prunus Africana* were also part of the activities. The PSMNR-SWP's interventions had significant impact on the national management plan and changed customary practices for many harvesters and buyers in the Southwest (see Chapter 9). There has been less impact on the governance and trade of other NTFPs, except for eru, due to the work of an NGO initiated by the MCP, the Centre for Nursery Development and Eru Propagation (CENDEP), which promotes *Gnetum* domestication (see Chapter 7).

The PSMNR-SWP supported and pushed for upgrading of the protected area status of Mt Cameroon to a 58,178 ha national park from 2006 onwards, leading to a decree in 2009[19]. Its final attribution in February 2010 was subject to significant conflicts[20] with the local population and traditional rulers, concerning that the park boundaries and rules limiting customary and income-generating activities, particularly access to NTFPs, such as *Prunus africana* and bushmeat. The media reported the Mt Cameroon National Park as "the brain child of KFW with GTZ, DED, WCS and WWF" with conservation perceived as more dominant than livelihood benefits[21]. Raising awareness and understanding of conservation issues was carried out through meetings, school lectures, booklets and posters and tours of the Botanic Garden. The project is currently piloting a Reducing Emissions from Deforestation and Forest Degradation (REDD) scheme to support

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17 In 2008 the administrative unit of 'Province' to 'Region' was altered by ministerial decree. Names and boundaries of the ten units were unchanged, but some Divisional and Sub-divisional boundaries changed.

18 Gesellschaft für Internationale Zusammenarbeit (GIZ), formerly the German Technical Cooperation (GTZ) and German Development Organisation (DED).

19 Decree number 2009/2272/PM of 18 December 2009 concerning Mt Cameroon National Park.

20 URL: http://www.postnewsline.com/2006/11/indigenes_resis.html and http://the-news-from-cameroon.com/article.php?category_id=32&article_id=1495. Retrieved September 2012.

21 Nkeze Mbonwoh "Buea- Mount Cameroon national park launched" Cameroon Tribune 22 February 2010 URL: http://allafrica.com/stories/201002221515.html. Retrieved June 2011.

conservation and community development. Time will tell if REDD payments will compensate for lost NTFP incomes and provide income alternatives, or lead to further resource access restrictions without compensation.

The PSMNR-SWP has impacted NTFP governance indirectly by restricting the harvesting of NTFPs in the national parks (Ingram *et al.* 2011c). Awareness raising and 'sensitisation' on conservation has been criticised as undermining local usufruct rights, failing to compensate for losses and leading to unexpected outcomes that may not benefit biodiversity conservation or local livelihoods (van Vliet 2010). Some of the park-related activities have also been strongly debated and criticised (Brockington *et al.* 2006; Curran *et al.* 2009; Schmidt-Soltau 2009). The project has been mistaken for a government institution, so strong has been its presence (Chia *et al.* 2004): 58). This observation continues to be valid, as the combined political, human and economic project capital is equivalent, and in some areas exceeds that of MINFOF's in the region. The projects have reinforced MINFOF activities, particularly in remote areas where it has previously been largely absent. The PSMNR-SWP promoted the formalisation of forest governance and increased implementation and enforcement of formal laws above customary and supported new institutions, such as village development committees and council forests, and hybrids of community-NGO-businesses, such as MOCAP and the Mount Cameroon Ecotourism Organisation. The focus on integrated landscape scale land-use planning to manage and sustainably allocate space has not always been accepted by the local communities, leading to the need for conflict management and mitigation in all the Nationals Parks concerning land use, access and boundaries (Chia *et al.* 2004; Mambo *et al.* 2007; Ayuk 2008).

Although developed in collaboration with the government, the funders have had the major say in forming and implementing governance arrangements. Their strong presence has led them to be perceived as extensions or replacements of the state, particularly when they have aided the enforcement of formal regulations and participated in creating new regulations. One recurring result of this has been a clash between project's conservation and livelihood objectives. This is despite activities to support or compensate local populations for lost opportunities due to changes in perceived ownership and access to forests and their resources. This impact is common in Cameroon and Africa (Ros-Tonen *et al.* 2005a; Diaw *et al.* 2010; Freudenthal *et al.* 2011). Whilst some of the institutions set up by projects have disappeared once projects ended, some have been maintained or picked up by other projects and actors, often morphing into yet other institutions, a process termed neo-African governance (Siloma *et al.* 2005). This creates more plural institutions and governance arrangements and is an example of institutional bricolage (Cleaver 2001) practised by actors to sustain their NTFP chains. This is most clear in the Bamenda Highlands, where a sufficiently long period post-project enables the reconfiguration of institutional and governance arrangements introduced by projects to be seen.

This overview of a handful of influential projects operating in the study areas does not aim to critique their results or achievements, nor the implementing organisations and funders, but to highlight how they created changes in governance arrangements. Their long and sustained presence, power and significant capital injections ushered in new institutions strongly influencing forest governance. They, sometimes intentionally, created or allowed completely new institutions to rise and subjugate former institutions. Such use of biodiversity protection arrangements, particularly through the appropriation of parks and new rules for land use, has been construed as ecological-social colonialism

(Nguiffo 1998) and eco-imperialism (Dietz 1999). Many of the social, political, economic and environmental impacts of setting up new institutions appear not to have been thoroughly considered ex-ante, and in many of the current and post-project evaluations have not been addressed, or if addressed, was often too late such that largely reactive responses to conflict situations were possible. External onlookers, from researchers to NGOs with different agendas, have been attentive, supportive and also highly critical of such projects (Curran *et al.* 2009; Schmidt-Soltau 2009). The existing governance arrangements prior to the projects were largely customary. Some NTFPs were consequently promoted as important and sustainable. Support was given for production and commercialisation of some NTFPs (such as *Prunus africana* and honey) building on customary rules with more formal rules all projects, whereas other products – notably bushmeat and bush mango – were outlawed in newly created parks.

Discussion: An incongruent bricolage

The analysis in this and the previous two chapters of the historical and current economic, social, political, business and institutional contexts highlights that the NTFP value chains operate in very dynamic, changing and complex settings. Most notable is the legal pluralism, messy with overlapping and multiple layers of institutions, the configurations of which have changed over time. There is also a fair share of holes in this patchwork: where no institutions can be found governing certain practices and chains. Some actors, notably NGOs and project-related actors, fulfil roles normally the reserve of the state. In other situations and places the state performs it duties, in others not and customary authorities or projects govern. It is this incongruence that makes it difficult to entangle how the bricolage impacts livelihoods and the need for specific chain analyses so important.

Regulatory and institutional pluralism in NTFP chains in Cameroon mirrors experiences in many other African countries. The changing and apparently increasing pluralism of governance arrangements concerning forests and NTFPs appears to be lesser known and understood. This context seems unlikely to be smoothed into a mono-governance arrangement anytime in the near future. This is evidenced by the chequered history of different governance arrangements and slow rate of land and regulatory reforms, the still firm grasp of customary governance in some areas, the insidiousness of corruption and the increasing influence of new arrangements such as projects and voluntary schemes. Thus, for actors in NTFP value chains, it seems that they are forced to stay and become even more adept bricoleurs. They make the best of the arrangements in which they both find themselves, and creatively use capitals available, building on natural capital to construct new governance arrangements and/or remould existing ones to best suit to their current objectives, circumstances and livelihoods. This situation reflects notions of institutional bricolage: the dynamic and multiple identities of the bricoleurs and multi-purpose institutional arrangements (Cleaver 2002) and the crafting arrangements which advance livelihoods, individually and collectively. It also reflects productive bricolage with its focus on livelihoods as the flexible and dynamic crafting of livelihood options and associated impacts on landscapes (Ros-Tonen 2012).

Examining the governance contexts in which NTFP value chains operate shows that before statutory rules existed, and in the continued absence of a functioning and legitimate legal framework, many, but not all, NTFPs were customarily regulated. This analysis also shows that differences occur due to the social and economic contexts of the

areas where the chains operate. Over time this has altered as demand and business operating environments have changed. Particularly for species under strong commercial pressure such as *Prunus africana* and *Irvingia* spp. (see Chapters 7 to 11) statutory law appears an important and often necessary element and a complement to customary law. Dramatic changes are clearly needed on a number of fronts to develop and implement a governance framework for NTFPs that supports harvesters, traders and rural communities, encourages a vibrant commercial NTFP sector, and promotes sustainable and equitable practices.

Despite evidence that a single, unified system does not work, it has been strongly promoted. External agencies (i.e. the World Bank, the High Level Commission on Legal Empowerment of the Poor, the Food and Agriculture Organisation of the United Nations (FAO) and donors) have prescribed 'modernising' regulatory systems, particularly land tenure. There has been an implicit assumption of the benefits of monism and a homogenisation of national land laws. The harmonisation of NTFP laws in Central Africa is an example of this (Walter *et al.* 2006; Bonannée *et al.* 2007; FAO *et al.* 2008; Ingram 2010b; Logo 2010). Whilst regulatory pluralism is only one aspect of pluralism in governance arrangements, it is important. Legal empowerment has been seen as fundamental to sustainable development and achieving the Millennium Development Goals (CLEP *et al.* 2008). Dealing with regulatory pluralism however is not easy. McAuslan (2004) sets out twelve precepts to make regulatory pluralism effective. Considering the social, economic, regulatory and political contexts of the value chains, many of these preconditions are not met, making pluralism, in McAuslan's terms, not 'do-able'. He stresses that pluralism and monism concerns who has political power and over whom that power is exercised. The 'who' and 'whom' are the individual or groups and regulators (both formal and informal) in value chains, and the object is the forest and its products. History shows that governance arrangements are continually changing, such that these conditions can sometimes be met or crafted.

The culmination of legal revisions over the past 15 years and forest, conservation and development politics, albeit largely under pressure from outside agencies, have resulted in an inconsistent and incomplete statutory framework with limited government capacity and political will. Conflicts between texts and policy objectives are compounded by the absence of pragmatic implementing regulations. The current regulatory framework thus undermines rather than enhances sustainable livelihoods. The very low level of awareness among harvesters, traders and government authorities, particularly local and regional delegations that interact with rural communities, of the laws that exist hinders their effectiveness. The products are not well-defined and so uncertainty dominates. NTFPs are taxed formally and informally, inconsistently and often heavy-handedly. The long-term management of species populations is not considered in quotas, nor are there controls or monitoring to limit overharvesting. Bureaucracy and costs eat away at profits and limit the effectiveness and efficiency of actors to legally participate in the sector, if this was a viable option. The regulatory framework undermines the livelihoods of small-scale actors in favour of the politically powerful few *qui mange*[22]. With community land and resources under ambiguous legal title, individuals, entrepreneurs and groups must jump enormous bureaucratic hurdles to become legal entities managing, harvesting and trading what they consider their own assets. Without the requisite politi-

[22] A common saying meaning 'those who eat': indicating those gaining economically and becoming fat on illicit winnings, sometimes literally, as obesity is seen as a sign of wealth.

cal power to acquire quotas or finances to buy waybills from quota holders, illegal NTFP trade is thus the norm.

The context of property rights to forest lands and resources reflects the contested, overlapping and unenforced rights characterised by confusion and insecurity that are common in other tropical and African countries. This has been seen to undermine forest governance, as without secure rights forest holders have only economic incentives – and often lack legal status – to invest in protecting and managing their forest resources. While secure property rights cannot ensure sustained protection and investments, they are often a necessary condition (Tedder *et al.* 2002; White *et al.* 2002). De Soto (2003) emphasised the need to unify informal local tenure systems to aid development. However, in practice in Cameroon, unification has not been as linear and consensual as De Soto describes. Individual land titling has not been the 'silver bullet' hoped for (Larson *et al.* 2010a). So, if private property is not the foundation for sustainable governance and management, then what?

Concurring with Hoekema and colleagues (2009), the answer may lie in adapting local conditions: working with stakeholders, taking their needs seriously, respecting their (sustainable) ways of managing land and using simple but robust arrangements. In situations of weak customary law, well-crafted and implemented statutory law could play an important role in NTFP governance. Statutory law could support sustainable and equitable practices when commercial pressure on resources is great and traditional structures are undermined by this pressure. Experiences of brokering between customary and formal rule systems highlight that local systems are sometimes of ambiguous functionality and may co-exist with continuous internal conflicts over resources. This finding is contrary to that implied in a recent desk study promoting formal tenure (Alden Wily 2011). Any adaptation and unification of formal and customary regulatory and tenure systems thus needs to look critically at the functionality and effectiveness of both systems. The collective sharing of resources de facto promotes inequity. 'Westernisation of rules' has meant replacing sometimes ambiguous collective with unambiguous private, individual rights, benefitting some and disadvantaging and marginalising others. This has led to existing rights to be defended and advocacy to enable the marginalised and those least able to benefit (the illiterate, poor, specific ethnic groups and minorities etc.) to access these 'new' private rights. The low level of overt conflicts may be due to the high costs and social capital needed to contest rights, noted also by van Dijk (2008). Collective customary rights of equal (and unequal) access can thus support vested local interests and elite capture of forest and land. Elites and traditional rulers are often unwilling to abandon these interests and power for public benefit. Using De Soto's analogy, some of the dogs have a very large bone to lose, and so not only bark, but also bite!

As Dia (1996) points out, the disconnect between transplanted formal institutions and indigenous African institutions is not necessarily a governance crisis. Traditional authority in Cameroon is a crossroads (Cheka 2010), where citizens are 'bound' by modern law and traditional values, even if some state institutions object to certain traditional values and find it difficult whether and how to integrate customary regulation into formal governance. The benefits of traditional authority and reason why it continues, is the institutional stability and certainty it offers, which elected officials and government staff (who come and go) do not. Traditional authorities are also often active in local development, and closer to their subjects than a distant state. Thus customary regulations remain de facto institutions, but often not the only forms of governance. This has led to arguments that traditional institutions should be integrated into formal institutions

(Cheka 2010) and that plural institutions are essential and inevitable. Formal institutions need to adapt to the local context and build the legitimacy needed for enforceability. If at odds with societal behaviours, expectations and incentive systems they lack legitimacy. Informal and customary institutions, embedded in local culture and values tend to have more legitimacy, accountability and self-enforcement – being linked to peoples' sense of identity. However customary discrimination on age, gender and ethnicity can weaken their power and competitiveness in increasingly complex, global and plural arrangements. Dia (1996) recommended that such processes of synergy and convergence are managed. For plural or 'bricolaged' governance to work all chain actors would need to be involved and their differing needs integrated, negotiated and balanced. And that, given the context and nature of the chains, is not easy.

7

Gnetum value chain[1]

This chapter presents the results of the in-depth analysis of the *Gnetum* spp. value chain originating from the Southwest and Littoral regions of Cameroon and extending to consumers in Nigeria and Europe. The findings are based on interviews, observation, value chain analysis, resource assessments and trade data (see Chapter 3). The values provided have been verified and triangulated with literature and in workshops with stakeholders and are believed to be valid for the specific chain, its geographic locations and population sample for the time period of the data collection. The sections deal respectively with the second research question of how the value chain is arranged in terms of the species it is derived from, the products, location, actors, activities and values; the third question on how the chains are governed; the fourth on their importance to livelihoods and sustainability and the fifth on product sustainability. The conclusion focuses on how governance arrangements influence sustainable livelihoods.

The Gnetum value chain

This section addresses the second research question of how the *Gnetum* spp. value chain is configured in terms of the products, their uses, sources, actors, activities and values.

Gnetum species, products and their uses

The term *Gnetum* is used to refer to two ancient species: *Gnetum africanum* Welw. and *Gnetum buchholzianum* Engl. The leaves of this forest liana are known in Anglophone areas of Cameroon as *eru,* a Bayangi term originating from an ethnic group in Manyu division in the Southwest region. Also in the Southwest, the Anyang ethnic group calls the leaves *gelu,* the Boki *ecole* and the Ovande *ikokoh.* In Nigeria they are known as *afang* by the Ibibio and Efik ethnic groups located in Cross River and Akwa-Ibom States, and *ukasi* or *okazi* by the Igbo. In Francophone areas the leaves are generally known as *okok,* a Béti term and as *koko* by the Maka. The leaves are ranked as one of the ten most important NTFPs in the Congo Basin countries and one of the top nineteen most used and valued NTFPs in Cameroon (Ingram *et al.* 2012a).

[1] Data for this chapter is derived from (Ingram 2010a; Ingram *et al.* 2011c; Ingram *et al.* 2012e).

Photo 7.1 Gnetum africanum leaves, Takamanda, May 2011

The two *Gnetum* vines are very similar, both climbers growing to around 10 metres, but distinguishable by leaf shape and the male reproductive organs (Shiembo *et al.* 1996). Macro morphological variation has been observed in form, leaf margin, inflorescence type, fruit shape and colour. Although the leaf length, internode and spike varies between species, there is little significant difference (Agbagwa *et al.* 2005). Entire and lanceolate leaves appear peculiar to *Gnetum buchholzianum* while the bead-like inflorescence distinguishes *Gnetum africanum*. These morphological variations may be in response to different habitats. The leaves are well adapted to low light levels, resulting in strong pigmentation and leaf fibres. Weaker fibres and lighter pigmented leaves are more common in disturbed primary and secondary habitats (Feild *et al.* 2007). In Nigeria the species are differentiated by colour, taste, bitterness and fibrousness (Isong *et al.* 1999). In Cameroon, 16% of harvesters distinguished between species by leaf size (*Gnetum africanum* is larger), texture (*Gnetum africanum* is more fibrous, especially when older) and taste (*Gnetum buchholzianum* is more bitter), confirming reports by (Nkwatoh 2005; Lingondo *et al.* 2006; Nguimalet *et al.* 2008). *Gnetum buchholzianum* was reported by harvesters to have a higher leaf yield per vine, and the rigid, broad, dark green large leaves were easier to pick and cut. *Gnetum africanum* has lighter green to yellow/reddish coloured, narrower, elongated leaves. Although *Gnetum buchholzianum* is most preferred by harvesters, traders and consumers, both species are gathered and sold under the product names of eru or okok.

In Cameroon *Gnetum* leaves are used for food, cooked and occasionally fresh. Unlike *Gnetum* species in Asia, the seeds are not eaten. Consumers confirmed studies stating that it is eaten by almost all societal strata (Mialoudama 1993; Abia *et al.* 2007; Mensah *et al.* 2008). Contrary to Nkefor (2000) and anecdotal reports, no *Gnetum*-based distilled alcoholic drinks were found in Cameroon or Nigeria except a wine produced in Ebolowa sold in small quantities in Ebolowa and Yaoundé. On the western Cameroon-Nigeria border and across southeastern and coastal Nigeria, the leaves are used raw in salads and cooked in soups (Burkill 1994). Okazi soup is popular among the Imo, Abia and Anambra ethnic groups, in parts of the Delta states and Afang soup in Cross Rivers and Akwa Ibom states. *Gnetum* is the major component in these soups (Iloh *et al.* 2009), which are sold fresh and canned. Substitutes for *Gnetum* include the similar tasting leaves of the shrub *Lasianthera africana* P.Beauv. The nutritional value reported by traders and consumers is confirmed by research. The leaves contain ashes and lipid (Mialoudama 1993; Mensah *et al.* 2008) and have a high mineral content, with *Gnetum africanum* having higher calcium and magnesium levels (Abia *et al.* 2007). They have a high calorific value (438.83 kcal/100 g) (Okafor 1995), are relatively high in carbohydrates and protein (Isong *et al.* 1999) and rich in fibre compared to other common leafy vegetables in Central Africa (Mensah *et al.* 2008).

Gnetum dishes are traditional ceremonial delicacies across southwest Cameroon, eastern and southern Nigeria. Historically, the leaves were consumed as an accompaniment to staple starches by ethnic groups such as the Bayangi in Southwest Cameroon and Eastern Nigeria (Poubom Ngundam 1997; Tekwe *et al.* 2003) and the Bassa and Ewondo in the Centre region. *Gnetum* is sold in towns and cities such as Lagos, Abuja,

Ibadan and Makurdi in Nigeria and in 75% of the southern humid forest zone markets in Cameroon, constituting the largest volume NTFP traded. It is now eaten by ethnic groups with no tradition of consuming it and in areas where it was not previously consumed, such as the Northwest. Its popularity has grown in the last forty years, transforming from auto-consumption and a small, local trade into a staple and comfort food industry, such that it even has its own Facebook page[2]. Its use extends to the Central Africa diaspora in Europe and North America. This is demonstrated by the number of recipes on the internet, its inclusion in African cookbooks (Charles 2006 ; Gibbon 2008), and the sale of fresh, dried and canned *Gnetum* in African supermarkets in Europe and the USA and via internet (Ingram *et al.* 2012e). It is competitively priced compared to other leafy vegetable based dishes in Cameroon, costing around 500 FCFA (1.13 US$) a meal.

The large, supple stem of the liana is sometimes used as rope and to tie bundles of leaves for transport. *Gnetum* spp. has been used in the Southwest to ease childbirth (Jiofack *et al.* 2008), to treat anaemia (Thomas *et al.* 1989), haemorrhoids, hangovers, boils and fungal infections on the fingers, as a disinfectant for wounds and an enema against constipation (Schippers 2004; Schippers *et al.* 2004). The Bulu ethnic group use the leaves to cure colds, increase blood production and treat spleen problems (CIFOR 2008). In Nigeria, it is used to treat piles, high blood pressure, cholesterol, enlarged spleen, sore throats and as a purgative (Okafor 1983; Isong *et al.* 1999). Raw leaves are eaten as a mild laxative and to prevent constipation (Bako *et al.* 2002). Purgative and laxative effects vary with leaf age: with 6 to 12 month old leaves having a stronger laxative effect (Isong *et al*. 1999). Laboratory tests have shown positive effects on weight gain, haemoglobin and white blood cells (Iweala *et al.* 2009). Interviews did not corroborate the extensive use reported in the literature: 10% of harvesters reported medicinal use and nearly 6% indicated its use to stop wounds bleeding, 5% to promote blood production in pregnant women and as an enema to ease child birth. The main retailers and traders in the major markets did not mention medicinal use as a selling point. It may be that traditional medicine practitioners and healers are the main buyers for medicinal use and were not captured by the survey. The leaves are eaten by primates, including endangered species such as Western and Cross River Gorillas (*Gorilla g. gorilla* and *Gorilla g. diehli)* (Nishihara 1995; Remis *et al.* 2001; Rogers *et al.* 2004; Doran-Sheehy *et al.* 2009).

Ecoregion sources and chain locations

Of the forty *Gnetum* species worldwide, only two are found in Africa, both in the Guineo-Congolian lowland humid forests (Chapter 4). *Gnetum africanum* is widely distributed across Central Africa (Schippers *et al.* 2004). *Gnetum buchholzianum* is found principally in Cameroon and Nigeria, extending into Gabon and the Central African Republic (Maheshwari *et al.* 1961). Blench (1994) suggests that *Gnetum buchholzianum* has been spread from its present centre of diversity in Southeast Nigeria by the eastward expansion of Bantu tribes. The two species are Red List classified as near threatened (Fraser *et al.* 2008; Baloch 2009).

Both species can be found in the same location (Hutchinson *et al.* 1927; Chevalier 1951), as they co-exist in the same ecological niche: the densely shaded understory of

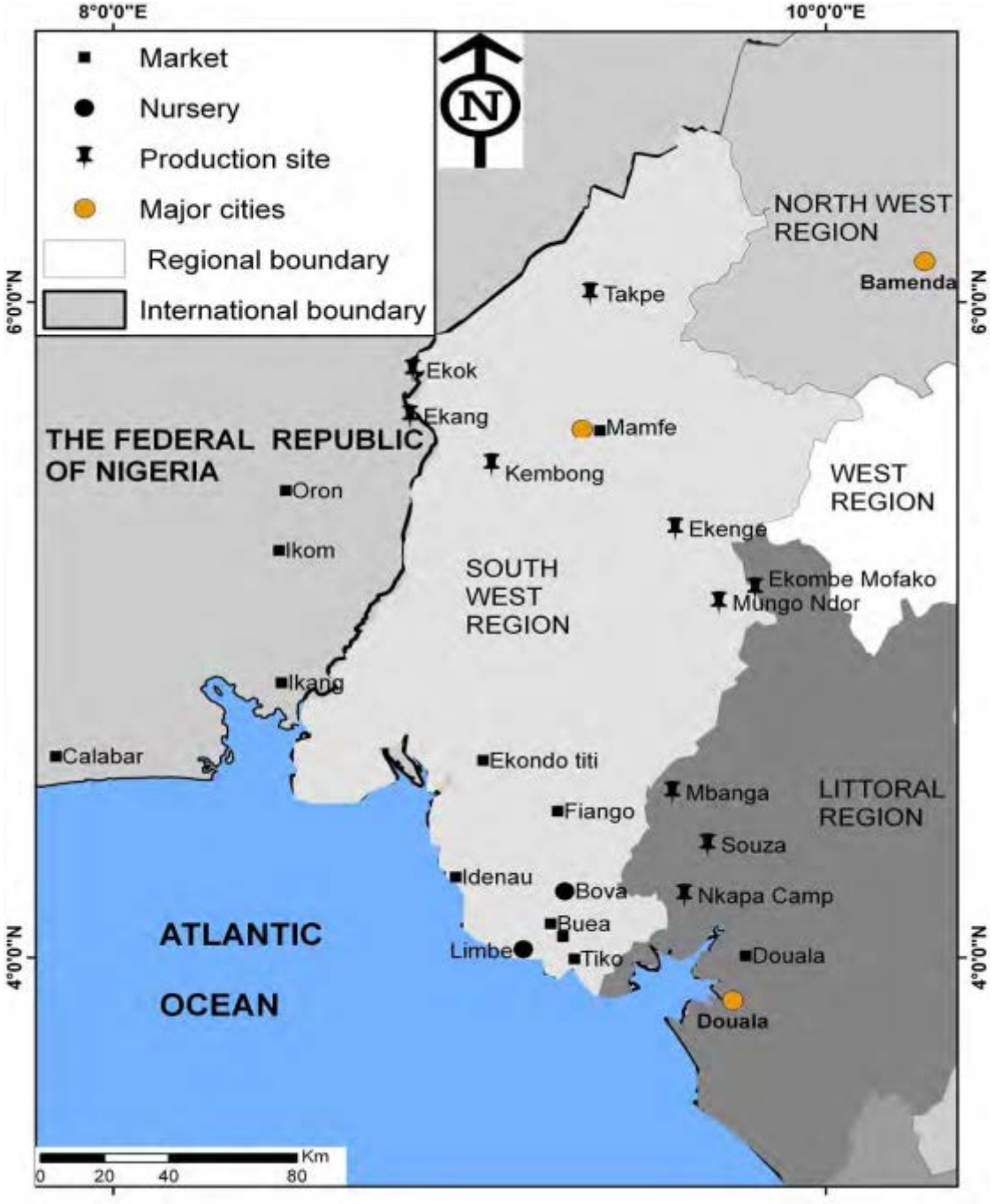
[2] URL: https://www.facebook.com/group.php?gid=97447450602.

wet, primary lowland tropical and swamp gallery forests, often near slow-moving rivers (Clark *et al.* 2004). They also occur in more brightly lit and disturbed habitats such as understory patches of degraded primary and secondary forests, gallery forests, farmlands, fallows and plantations (Gockowski *et al.* 1999; Fondoun *et al.* 2000; Mathot 2002; Clark *et al.* 2004;Biloso *et al.* 2009; Wirsiy *et al.* 2010; Awono *et al.* 2012). *Gnetum buchholzianum* has been found in savannah forest areas in CAR (Nguimalet *et al.* 2008). Outside lowland rainforest, the vines originate as re-sprouts from deep-rooted, underground tubers, appearing to survive primary forest clearing (Clark *et al.* 2004). In the study area, harvesters reported that *Gnetum* spp. prefer shady sites with acid to neutral, sandy and well-drained soils but will tolerate infertile and shallow soils and swampy areas. *Gnetum buchholzianum* was found mainly in primary forest, predominantly in Ndian and Korup divisions and *Gnetum africanum* more frequently in secondary forests, including fallows and oil palm plantations, mostly in Meme and Manyu divisions.

Shown in Figure 7.1, major *Gnetum* production areas in Cameroon include the Centre Region in Lekié and Nyong et Kéllé districts around Sa'a, Esekea, Obala, Evodoula, Batchenga and Monatélé; Haut Nyong in the Littoral region; around Lomie in East region (Awono *et al.* 2002; Kanmegne *et al.* 2007; Clause 2010) and the Southwest region (Malleson 2001; Clark *et al.* 2004; Ingram *et al.* 2012e). Over a decade ago the majority sold was sourced from the Centre and Littoral regions (Clark *et al.* 1998). Interviews, traders and informants indicated that around Lekié and Nyong et Kéllé the production zones have extended considerably with a radius of around 160 km to Mbam en Kim, Mefou et Afamba, Nyong et Mfoumou and Haute Sanaga divisions in the last five years and that in the East the zone is expanding.

From these production areas, *Gnetum* is sold in all market types (see Chapter 3): Type I (small local), Type II (medium-sized, domestic) and type III (urban) markets across the lowland forest zone and up to Ngoundéré in Adamaoua and Bertoua in the East. The largest markets are in the cities of Douala and Yaoundé, selling Gnetum for at least the last fifteen years (Ndoye *et al.* 1997/1998; Shiembo 1999). Two Type IV markets (export hubs) have operated since at least the mid-1990s: the largest is Idenau port in the Southwest from which *Gnetum* travels by boat to Nigeria. A smaller volume route from the Centre and East regions is by road via Ambamto in the South region to the border towns of Kye-Ossi and Abang-Minko'o to Gabon, Equatorial Guinea and Congo-Brazzaville (SNV *et al.* 2010). A third regional channel is by head-load along the porous border between the Southwest and Northwest regions to Nigeria, a route existing since at least the late 1980s (AEERD 1993; Fuashi 1997; Malleson 2001; Clark *et al.* 2004). A fourth channel is the small but increasing trade by vehicle along the improving road network in the Southwest from Kumba to Mamfe via Eyumojok to the border towns of Ekok and Ekang. A fifth export route is to European markets, mainly to speciality African supermarkets in France and Belgium since at least the 1980s (Tabuna 1998) and to the USA.

Figure 7.1 Map of *Gnetum* spp. value chain study area in Cameroon and Nigeria

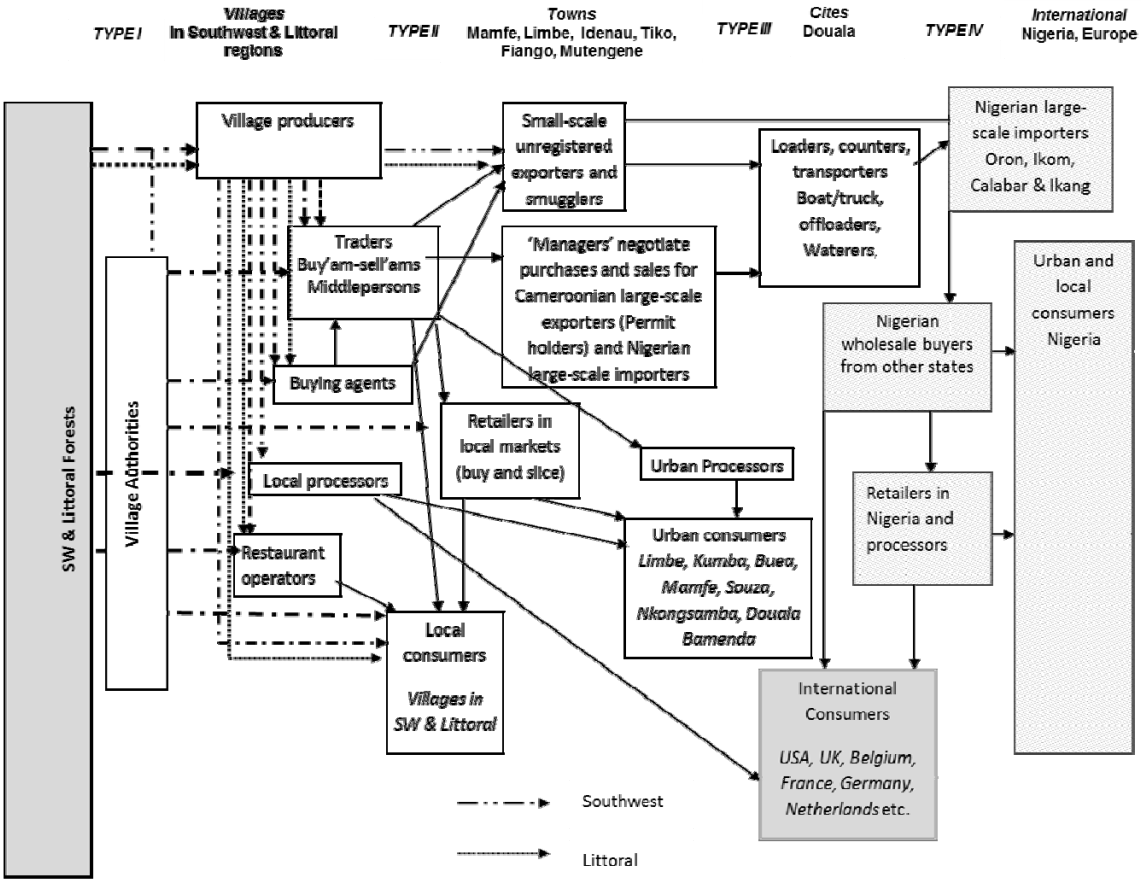


The channels for *Gnetum* from Littoral and the Southwest are shown in Figure 7.2. The main circuit from the harvest areas of Bachuo-Akagbe, Kembong, Eyomojock, Etoko, Ekenge and Ekombe, and Souza in the Southwest and Mbanga in Littoral, flows via two routes to local, rural, small volume (Type I) markets in Wone, Nguti, Manyemen, Mundemba, Mbonge and Ekondo Titi. The main Type II markets are close to the two largest towns in the Southwest. Higher volumes flow to the medium-sized, urban markets of Fiango in Kumba, Mutengene, Soppo in Buea, Tiko and Limbe (Type III). Kumba is a distribution point for sellers from Mungo, Manyu, Kupe Muanengouba and Ndian and onto the Northwest, West and Littoral regions. *Gnetum* from the Southwest

and Littoral does not supply the five markets in Douala and Yaoundé, which rely on the Centre and East regions, confirming other studies (Ndoye *et al.* 1997/1998; Bell 2004; Makoumsong 2004; Kanmegne *et al.* 2007).The export circuit extends to three Type IV Nigerian markets: the beachside Oron market in Akwa Ibom state is the main wholesale depot for buyers from other states, trading in only *Gnetum* from the incoming boats every Tuesday, Thursday and Sunday night to the next morning. It is then retailed in at least ten other Nigerian (Type III and II) markets (in order of size): Port Harcourt, Aba, Oyo, Oweri, Iket, Ikot Epene, Calabar, Onitcha, Omuahi, Lagos, Ogoja, Abuja and Kaduna. Kaduna, in the far north, was reported as the limit of the trade. Calabar in Cross River state, Watt market and Calabar market (also known as Symmetry or Beach Market) are the two other type IV markets. Watt is a large daily market with a dedicated eru wholesale section and retail sales. Ikom is a daily market River State.

The current value chain, channels and types of actors mapped out in Figure 7.2, has changed little since the 1990s (Ndoye *et al.* 1997/1998; Besong *et al.* 2001). However the volumes and consumers in urban areas have grown considerably. Increasing urban populations, improved access to market information through mobile phones and speedier, larger, more reliable boats has allowed greater volumes to be sent faster to cities, especially those in Nigeria. The trend appears uninterrupted by the introduction of permits from 2006 onwards. Internet sales and gradually improved transport links with Yaoundé and Douala have also improved access to Type III markets and aided exports to the USA and Europe.

Figure 7.2 *Gnetum* value chain from the Southwest and Littoral regions



Source: Research results

Gnetum chain actors

This section introduces the main actors in the chain. Table 7.1 shows that an estimated 2,951 people are active in the chain from the study area. Although the total number of actors involved in the chain is significant, this is approximately 0.2% of the total population in the Southwest and a much lower proportion in Littoral and the states in Nigeria.

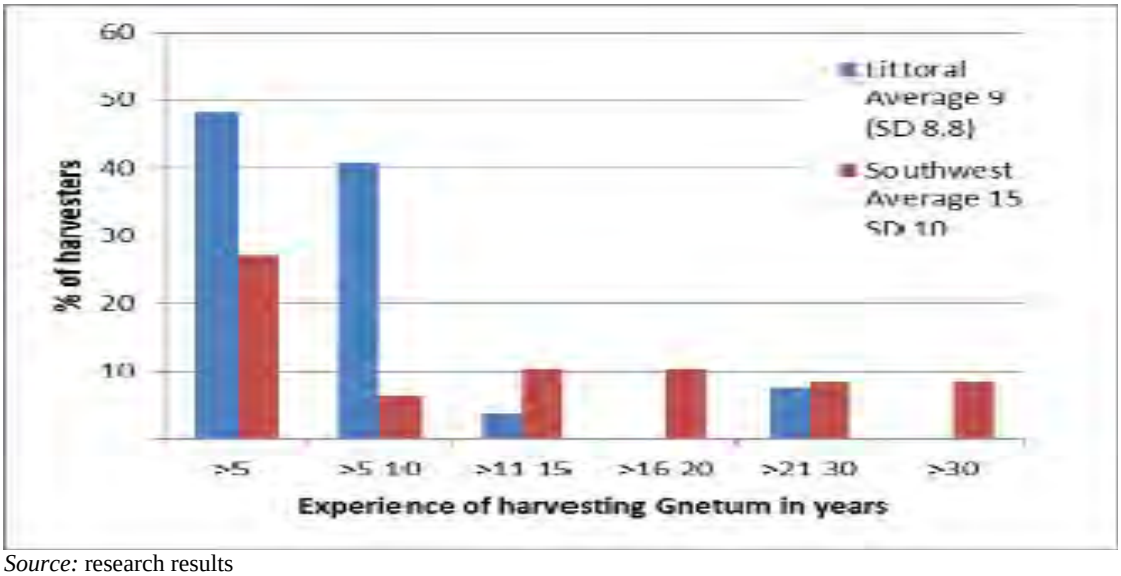
Table 7.1 Population statistics of *Gnetum* chain study area

Country	*Region/State* Division	Capital	Surface area km^2	Population[1]	Popln. density km^2	N^o value chain actors[3] Harvesters	Others[4]	% total popln.
	Southwest -Total	*Buea*	*24,571*	*1,316,079*	*34*	*670*	*1,644*	*0.20*
	Fako	Buea	2,093	466,412	222	-	1,094	
	Meme	Kumba	3,105	326,734	105	-	408	0.20
	Ndian	Mundemba	6,626	122,579	19	35	1	0.14
Cameroon	Kupe Muanengou-ba	Bangem	3,404	105,579	31	39	14	0.00
	Manyu	Mamfe	9,565	181 039	19	596	127	0.01
	Littoral – Total	*Douala*	*20,239*	*2,510,2631*	*109*	*344*	-	*0.07*
	Mungo	Nkongsamba	3,723	379,241	102	344	-	0.00
	Cross River	Calabar	20,156	2,892,988	188	-	186	0.00
Nigeria	*Akwa Ibom*	Uyo	7,081	3,920,051	876	-	107	0.01
Total						1,014	1,937	

Sources: [1] Population totals for entire region. For Cameroon, population estimates for 2005 based on 1987 Census (National Institute of Statistics 2010); for Nigeria 2005 census (Federal Republic of Nigeria,2006). [3] Based on research results. [4] Traders, retailers, processors, exporter, importers and nursery staff.

The direct actors in the chain are categorised as harvesters, processors, labourers, exporters, importers, traders, retailers, restaurants and consumers. Indirect actors include regulatory authorities, support actors such as development and conservation NGOs and research organisations.

Figure 7.3 Length of time harvesting *Gnetum* by region



Source: research results

In the 22 villages studied, at least 1,014 harvesters gather *Gnetum* leaves. On average 3,466 kg were collected annually (Southwest 3,310 kg, SD 2.4; Littoral 3,662 kg, SD 0.9). Incomes and profits are specified in the section on governance and livelihoods. A typical harvester is female (79% of harvesters), middle-aged (35 years), married (64%) with primary school education and a household of five. Most are not active further in the chain, stating a lack of transport, high costs, long distances and unwillingness to leave farm and family. On average harvesters had been collecting for 10 years (SD 8), with nearly 40% starting collecting five years or less ago, and the longest 40 years ago. Figure 7.3 shows the regional variations, with longer experience in the Southwest. This confirms the history of use and trade indicated in literature.

An estimated 221 traders, known as middlemen (although most of them are female), intermediaries or buy'am-sell'ams, buy, store and transport *Gnetum* to markets. They travel from 50 to 100 km over largely poor, unpaved roads to buy directly from individuals or village buy'am-sell'ams. Some Nigerian traders reportedly recruit Nigerian men to harvest. Of the traders, 40% supply directly to retailers, exporters, importers or other agents, a third favouring specific retailers or purchasing upon command and 60% supplying wholesalers. Payment mechanisms are buyer-seller i.e. credit or cash upon direct delivery using informal non-contractual arrangements, based on trust and often ethnic ties. Approximately 141 traders, mainly Cameroonian, are commissioned by Nigerian unions, buying and transporting to border markets or into Nigeria. Known as managers, they organise teams of young men to water or dry and pack the leaves. Around 55 traders and 28 exporters work in Idenau. The Union of Eru Workers has about 100 members, with sub-unions for activities such as tying and watering. In Nigeria, dealers were all members of market-based unions, the Associations of Afang Dealers (ASOFAD) in Oron, Ikom and Calabar, recognised by the Ministry of Agriculture. The associations control trade by permitting only members to trade, providing equal access to the market for all members by using a quota system to control presence on market days, and providing credit.

At least 542 retailers in the Southwest markets (Soppo and Muea markets in Buea, main and Bota markets in Limbe, Ekondo Titi, Tiko, Mutengene; and Main, Railway and Fiango markets in Kumba), buy leaves in kilo bundles for on average 827 FCFA (1.87 US$) (SD 335 FCFA, 0.67 US$). There are an estimated 45 eru retailers in Manyem Nguti, Wone and Mamfe markets. *Gnetum* is sold on average at 1,357 FCFA/kg (3.07 US$) to households and restaurants, generally at a significant profit, shown in Table 7.3. The majority (85%) of retailers process and sell sliced leaves and 15% sell both fresh whole and sliced leaves. Despite 91% of traders storing *Gnetum* specially, on average 13% of stock perishes annually. Retailers were all women, largely local, married with children, in their mid-thirties, educated to secondary school level, with on average a household of six people. They tend to specialise in *Gnetum* although 31% trade in other mainly agricultural products, on average 3.5 (SD 1.3). A substantial proportion (42%) of retailers in Tiko, Fiango and Mutengene markets have been members of unions for between 2 to 10 years, on average 4 years. Unions provide credit, social support and help in settling conflicts. The majority (77%) do not belong to other organisations, although 23% belong to other trading associations. No unions exist in Limbe and Muea. Over 70% of trader's eru-based income is used for basic needs, with food, education, clothing and healthcare rated the most important. The 152 retailers interviewed in the three Nigerian markets have comparable social profiles. The female retailers also have their own union and president.

Four small enterprises with about 20 staff were engaged in processing *Gnetum* leaves for immediate and long-term use. All started operating in the last five years. The Manyu Indigenous Spice Processing Ekemco Group (MISPEG) processes and sells packaged, dried, *Gnetum* in Cameroonian cities and exports to Europe and the USA. The retail price is 1,000 FCFA (2.27 US$) for a 250g bag, with a profit of 150 FCFA (0.34 US$) per kg. Taless in Yaoundé has similar operations but buys from the Centre region. The Limbe Botanic Garden, the Centre for Nursery Development and Eru Propagation (CENDEP) – which grew from the Mount Cameroon Project (MCP), and MISPEG operate plant nurseries, employing approximately 12 part-time staff.

An estimated 330 labourers work in the chains, the majority in Idenau (150 to 250 young men) during the thrice weekly market days. Other actors include transporters (taxi, canoe, boat and truck drivers); knife and cutlass sharpeners; transporters (head-load carriers, cart pushers, motorbike, truck and boat drivers); traditional authorities exercising customary control in villages; agents from the police, gendarmes, quarantine, customs, Ministry of Commerce, Ministry of Forestry and Wildlife and the Programme to Secure Forestry Revenues carrying out regulatory and control duties; and Councils collecting local market taxes.

In the markets surveyed, 25 restaurants offered *Gnetum*-based dishes and employed an estimated 63 staff. The most common dish is eru, made with waterleaf (*Talinum triangulare*), shrimps, smoked dried fish, cow-hide, palm oil, seasoning and served with water-fufu (fermented cassava). A portion sells for 50 FCFA (0.11 US$), the total meal costing 150 FCFA (0.34 US$). All restaurants were run by women, typically married with two to three children, aged 30 with primary schooling and a 6 person household. With an average profit of 550 FCFA SD 44 FCFA (0.48 US$, SD 0.09 US$) per kg, their average income is 740,087 FCFA (1,676 US$) (SD 212 FCFA, 0.43 US $). This pays mainly for food (35%), clothing (30%), school fees (20%) and health care (15%).

An estimated 136 exporters transport *Gnetum* to border towns and ports, using intermediaries or travelling themselves, using 20 ton trucks and canoes with outboard motors. All exporters incurred product losses, on average 26% of stock, despite 86% using different storage techniques to reduce degradation. Exporters are typically married with just over half women (58%), with secondary level education in their mid-thirties. Starting capital was obtained from *Gnetum* or other trade (66%) or borrowed (33%). Around 24 large-scale exporters sell from Idenau to Oron.

In Nigeria, around 152 importers purchase on average 51 tons of *Gnetum* each annually from Cameroon, although Oron importers purchase on average 140 tons each. They sell to small-scale Nigerian wholesalers and retailers, who as in Cameroon, process and sell to consumers. The Nigerian trade is entirely conducted through unions, mirroring the federal state system, with officially recognised, registered associations of *Gnetum* dealers in each state.

At least eight Cameroonian exporters offer fresh and dried Gnetum through internet trading sites such as Alibaba and Weiku. Exporters also sell dried and fresh *Gnetum* to retailers in European cities (Amsterdam, Rotterdam, Brussels, London, Paris, Lyon, Marseille, Toulouse, Bordeaux and Montpellier), Canada and the USA. In Brussels and Rotterdam 11 importers annually import around 24 tons of mainly fresh *Gnetum*, valued at 170,172 US$ annually. These findings echo the quantities, locations and customers identified over a decade ago (Tabuna 1998). The majority of fresh *Gnetum* continues to originate from Cameroon, although importers could not specify the region of origin.

The consumers are individuals and restaurants of Cameroonian and Congolese origin in Brussels and Cameroonian, Nigerian and Congolese in the Netherlands.

Gnetum chain activities

Harvesting *Gnetum* leaves is largely women's activity, viewed in the cultural context where cooking, farming and marketing staple foods is a female task. Although available year round, collection is mainly in the dry season – the low season for agricultural work – and festive periods. A harvester typically ranges on average 5 km for on average 2.2 hours collecting, on average twice a week. Some take their children. School children and students also harvest during the holiday periods. Men and whole villages may be active if large orders are placed by middlemen. The equipment used in harvesting and processing are not specialised, being commonly available household machetes and knives, costing on average 1,000 FCFA annually and last one to two years. These low costs do not present a significant entry barrier for harvesting.

Harvesters target easy-to-reach plants, particularly larger vines with larger or tender leaves. Of the five methods noted, the most common (reported by 44% of harvesters) was to fell the trees on which the eru vine climbs to harvest the entire vine. The second most popular method (43%) was to pluck the leaves and stems, leaving part of the vine to regenerate and using young stems to tie the leaves into bundles. Fewer than 13% climb the support trees to harvest parts of the vine, less than 1% uproots the entire vine and less than 1% plucks only the leaves, leaving the main stem and using small parts to tie bundles of leaves weighing approximately one kilo. These methods reflect common practices in the Southwest (E. Wirsiy pers. comm. 2011; Shiembo 1999) and other areas of Cameroon (Bell 2004; Lahjou 2008). On average 44 kg (SD 22 kg) was transported on each trip by women in traditional rattan rucksacks or men head-portering in sacks of 80 to 100 kg, to their village or forest-edge point of sale. The leaves are either used directly by households or packed into trucks or taxis for transport to market.

Annually an average of 2,344 tons was harvested in the 22 surveyed villages from 2007 to 2009. The total quantity however decreased annually by 42% over the three year period studied. Regional differences are apparent, shown in Figure 7.4, with the rate of decrease slightly higher in the Southwest (14% and 46%) than in Littoral (7% and 38%). Variations in production between villages, shown in Table 7.2, are attributed to the number and density of harvesters, abundance of *Gnetum* and other NTFPs, alternative income-generating possibilities and distances to market. Average production per harvester varies by region, with Southwest harvesters collecting slightly less (3,310 kg annually) than in the Littoral (3,662 kg) over the period. The majority (86%) of *Gnetum* harvested in the villages was sold: 80% to traders from outside the village and 20% to neighbours. A small proportion was consumed (11% on average, with a higher rate of 16% in the Southwest and 5% in Littoral), 4% was given as gifts or exchanged and 5% perished.

Gnetum is perishable, deteriorating within four to six days: if too moist, it rots and if too dry, it shrinks and desiccates, both conditions being unsellable. Young, tender leaves were reported by traders and transporters as being of lower quality, rotting and drying out more rapidly. To prevent losses on route to the market, the leaves are sprinkled with water or spread out to dry, depending on their state. Leaves are sold fresh and whole in sizes ranging from a bundle to 100 to 150 kg sack. The activities are performed mainly by young men with descriptive titles such as 'tiers', 'loaders', 'off-loaders', 'counters' and 'waterers'. The leaves are processed by retailers at the point of

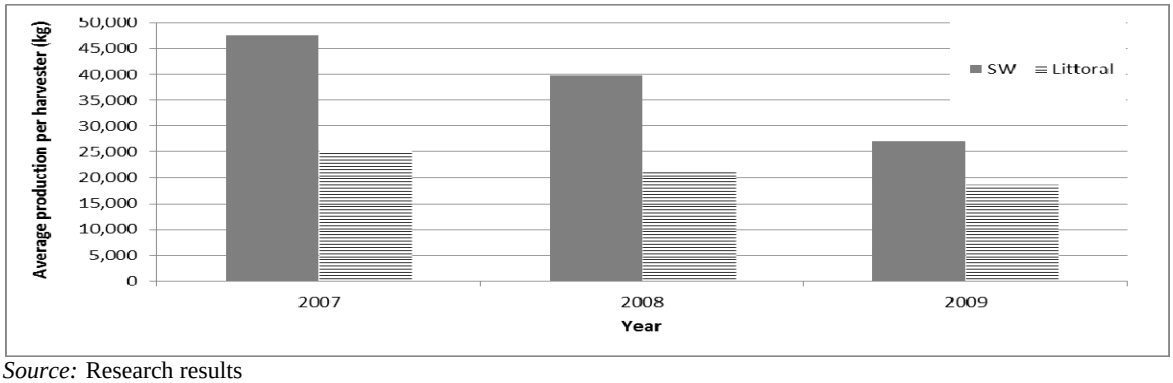
sale in markets by slicing finely with a knife. The sliced leaves are sold in units of small heaps or plastic bags of on average 250 g. Processing by small enterprises involves slicing, drying in ovens followed by packaging in sealed plastic bags.

Table 7.2 Annual *Gnetum* harvest per village 2007 to 2009

Region	Village	Estimated number of harvesters	Village production (tons) 2007	2008	2009	Annual average 2007-2009	Harvester annual average (kg) 2007-2009
Southwest	Kembong	70	200	196	113	170	2,425
	Obonyi 1	68	5	-	-	2	24
	Assam	24	10	-	-	3	138
	Nyang	117	30	-	-	10	10,000
	Mukonyong	75	15	-	-	5	5,000
	Eyomojock	40	262	233	288	181	6,527
	Nchang	42	122	97	59	79	2,200
	Okoyong	25	34	29	12	22	1,003
	Bache	30	87	91	41	64	2,430
	Takpe	20	72	62	101	56	3,923
	Bachuo-akagbe	45	504	457	168	339	8,368
	Etoko	40	326	240	88	199	5,455
	Ekenge	25	56	44	30	37	1,737
	Mungo Ndor	14	1	1	-	-	33
	Ekombe Liongo	20	67	51	36	43	2,576
	Ekombe Mofako	15	22	14	14	14	1,120
	Total	*670*	*1,813*	*1,516*	*952*	*1,224*	*52,958*
Littoral	Souza	200	672	568	514	499	2,924
	Mbonjo II	30	90	221	88	118	3,080
	Bonamateke	18	92	55	43	56	3,533
	Nkapa Camp	30	104	88	82	78	3,043
	Mbanga	50	200	180	105	156	3,703
	Mojuka	16	297	244	69	213	5,450
	Total	*344*	*1,456*	*1,357*	*902*	*1,120*	*21,734*
Total		1,014	3,269	2,873	1,853	2,344	74,692

Source: Research results

Figure 7.4 Average harvest production in kg per region from 2007 to 2009



Source: Research results

Gnetum markets and values

Shown in Table 7.3 the volume of *Gnetum* sourced mainly from the Southwest and Littoral and traded in the five Southwest type II and III markets, averaged 528 (SD 138) tons a year. The largest market is the export market of Idenau. The annual average market value of *Gnetum* from the study areas is estimated at 1,678,015,333 FCFA (3,653,457 US$) in the period 2007 to 2009. The market has grown considerably since 1996, when it was valued at 23,334,000 FCFA (46,668 US$) (Ruiz-Pérez *et al.* 1999).

Around 81% of the total *Gnetum* traded in the Southwest and Littoral from 2007 to 2009 was exported to Nigeria. The majority (83%) was sold through Oron market. The proportion of *Gnetum* from the Southwest and Littoral regions traded in Idenau decreased in the last two decades. Reports corroborate the declining harvests and harvesting in increasingly remoter areas in late 1990s, due to increasing scarcity in the Southwest (Awono *et al.* 2002). An analysis of the CIFOR NTFP databases confirms the importance of Idenau for export to Nigeria. In the period 1997 to 2004, 90% of volume of trade in *Gnetum* in Cameroon's humid forest zone was conducted in Idenau, followed by 4% in Ekondo Titi, 3% in New Bell market in Douala, and less than 1% each in Limbe, Mfoundi market in Yaoundé, Abong Mbang on the Gabon border and Sa'a in the main Centre production zone. On average 220, 76 and 294 tons were exported annually through the border town of Ekok to Ikom and small ports of Bota Wharf near Limbe to Calabar and Ekondo Titi to Ikang respectively from 2007 to 2009. Anecdotal reports that *Gnetum* exports have increased in the last three decades (Shiembo 1999; Clark *et al.* 2004) are supported by data shown in Table 7.4, indicating around a tenfold increase from 1991 to 2009.

Table 7.3 Values and volumes of *Gnetum* in Southwest markets 2007-2009

Annual average sales		Market							
		Muea	Limbe	Tiko	Mutengen	Fiango	Idenau	Total	Average
2007	*kg*	*120,000*	*93,000*	-	*53,800*	*321,600*		*588,400*	*147,100*
	$	415,512.97	271,585	-	157,672	321,998		1,166,768	*291,692*
2008	*kg*	*191,500*	*80,900*	*30,800*	*68,700*	*253,400*	*4,290,000*	*4,915,300*	*819,217*
	$	709,273	252,705	126,446	215,362	271,384	4,594,469.46	6,169,640	*1,028,273*
2009	*kg*	*114,600*	*39,500*	*35,400*	*48,700*	*132,700*	*2,639,000*	*3,009,900*	501,650
	$	403,278	117,229	138,081	145,050	135,028	2,685,297	*3,623,962*	603,994
Annual average	*kg*	*142,033*	*71,133*	*22,067*	*57,067*	*235,900*	*3,464,500*	*8,513,600*	*1,418,933*
	$	509,355	213,840	88,176	172,695	242,803	3,639,883	3,653,457	811,125

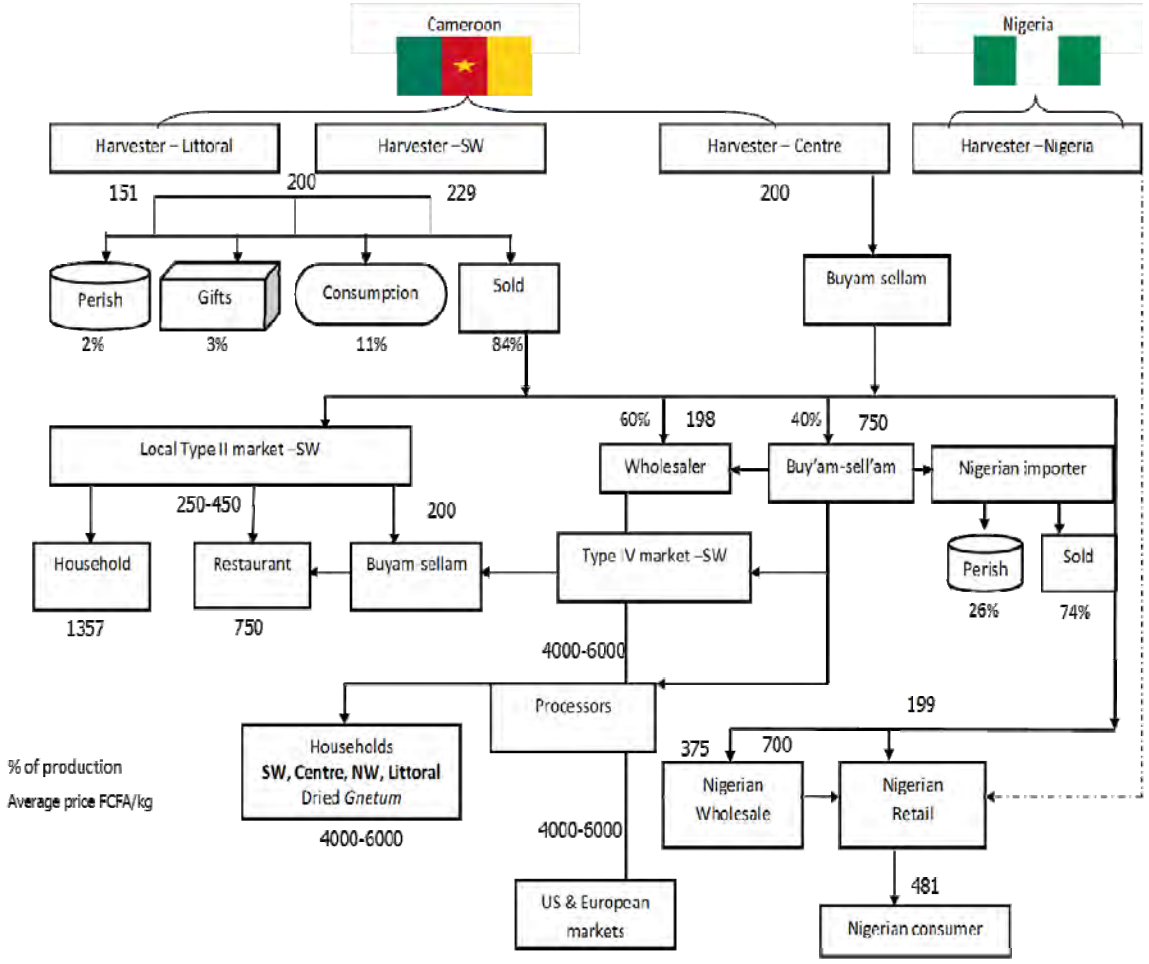
Source: Research results. *Key*: – signifies no data.

Table 7.4 *Gnetum* exports 1992 to 2009

Annual export (tons)	Details	Export date	Source
324	Annual average exports (3 year period)	1992-1994	Nembot 1998
429	from Idenau	1992	AEERD 1993
600	From Idenau	1993	Bokwe *et al.* 1994
50	To Europe	1998	Tabuna 1999
3,276	From Idenau	1999	Besong 2001
3,741	447 tons (6 week period) from Idenau	2002	Mbolo 2002
1,553	4,599 tons (3 year period) from Idenau	2003-2005	Asseng ze 2006
1,078	Annual average in Idenau	1997-2004	CIFOR NTFP database
2,964	17 to 21 tons daily, thrice a week Idenau	2007	Lingondo *et al.* 2008
3,464	Annual average (2 year period) Idenau	2008-2009	Research results

Average prices are shown in the value chain map in Figure 7.5 and vary seasonally, increasing by 6% on average in the dry season. Variations are caused by demand and supply, with less harvested during the rainy season (including festive periods, the cocoa and bush mango harvest and when other vegetables are seasonally substitutable). Supply increases in the dry season when harvesting is easier and with school holidays. Prices vary between markets, being on average 76% higher in Muea and 42% less in Fiango, due to transport costs. However, the data from the CIFOR NTFP database indicates that national selling price in the humid forest zone from 1997 to 2004 has been relatively stable, despite increasing volumes and 3% inflation (Trading Economics 2011).

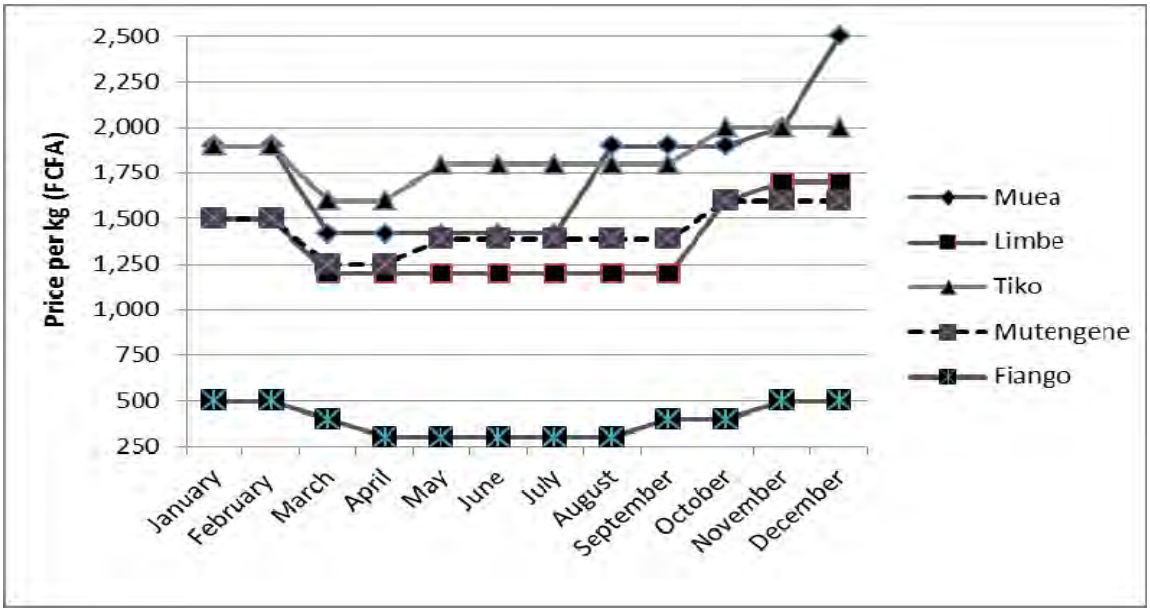
Figure 7.5 *Gnetum* spp. prices and chains from Southwest and Littoral regions



Each market has its own pricing structure. There are annual price variations of up to 500 FCFA (1.13 US$) per kg, shown in Figure 7.6, due to variations in supply and demand. There are also price variations by market type. The type II regional domestic markets are shown in Figure 7.5. In 2008, the same factors affecting the profits in individual traders in each market also create price differences between markets, such as the number of traders, clients, quantities and costs, access costs. This results in price differences between markets of up to a buying price of 800 FCFA (1.81 US$) and a selling price of 1,000 FCFA (2.27 US$). The average buying price for all markets was 828 (SD

108) (0.24 US$, SD 1.88 US$) and the average selling price was 1,357 FCFA (SD 204 FCFA) 0.46 US$ (3.08 US$ SD).

Figure 7.6 *Gnetum* price fluctuations across markets, 2008



Exporters in Manyu selling via Ekok to Ikom and in Meme to Ikang make lower profit margins per kilogram, due to higher transport costs as they often accompany loads due to the poor roads, longer distances and high informal 'taxes' paid to police, forestry officials, customs, council, commerce and quarantine, as none have permits: "There is no permit holder for eru trade here in Manyu" (Divisional Delegate MINFOF, pers. comm. 2009), confirmed by the 2007 to 2009 lists of Special Forestry Products permits. The procedure to obtain a permit is difficult and favours the large-scale exporters and big companies, disadvantaging small-scale exporters. Exporters from Fako exporting to Calabar through Bota Wharf in Limbe incur lower transport costs as they do not accompany their product but use managers. Exporters at Bota Wharf legalise by purchasing way bills at higher than actual acquisition cost. Large-scale exporters and permit holders exporting via Idenau to Oron incur the lowest costs due to volumes of scale. No exports were made to neighbouring Equatorial Guinea or Gabon, either from the Southwest, Littoral or other regions (SNV et al. 2010).

In the Nigerian markets, the average buying price per kg in 2008 was 198 FCFA and average selling price 418 FCFA. Due mainly to differences in transportation costs involved, there are large variations of up to double the price between markets, shown in Figure 7.6. Larger variations in prices, for example in Ikang, were attributed by traders to fluctuations in demand and supply, with high levels of supply lowering prices. Exporters to Ikom make the highest average profits, although this varies per exporter. Exporters' average costs include transport (23%), council and quarantine taxes (32%) and bribes to police and forestry services (37%). Transport costs can be up to five times higher for the sea route from Idenau to Calabar and Oron, around 88 km and 66 km respectively, and Ikang, around 53 km. Motorised pirogues or speedboats carry smaller

volumes (around 1.5 to 2.5 tons) than the trucks using the Mamfe to Ikom road route, although these often face delays due to poor roads and corruption.

More than 90% of *Gnetum* marketed in Nigeria in the study period was of Cameroonian origin. The pockets of forest in which *Gnetum* is found in Nigeria (Akwa Ibom, Okobo, Ikot Ibassi and Ikom in Cross River state) were reportedly insufficient to meet consumer demand; hence there is no competition between domestic and Cameroonian supply. The dynamics of the Nigerian market have led to exporters having established networks of buyers at different depots and maintaining intensive communication to respond to fluctuations in supply and demand. This dynamism affects the variability of the price at any point in time, with transportation costs reflected in selling prices.

While 89% of traders reported having access to information on other markets, particularly Mutengene, Tiko and Buea, no mention was made of Nigerian markets. Traders generally obtained information through colleagues and 32% had experience from trading in different markets. The perceived advantages were increased sales, although a quarter indicated this entailed higher travel costs and paying market fees. Risk taking and access to market information were seen to influence profit and volume, in common with other agricultural and perishable product chains (Webber *et al.* 2009). Traders, NGOs (such as the Fondation Fritz Jakob (Fonjak), the Centre pour la Protection Durable de l'environnement (CEREP) and IUCN) and the media (Network of Community Radios of Cameroon and Radio Environment) stressed the need for more market information during the Market Information System (MIS) pilots. In the second phase of the MIS focussing on the Centre, South, East and Northwest regions, *Gnetum* was one of the products about which information was most sought after.

In conclusion, this section presented in detail why *Gnetum* leaves sourced from the humid lowland forests and of the Southwest region are valued as the most important cash-generating NTFP, as part of a diversified livelihood strategy, for most harvesters. It is also the most important NTFP for consumers due to its high nutritional and cultural value and for a small proportion has an additional medicinal use. The chain is susceptible to corruption, seasonal price and supply variations, and high losses due to its perishability and difficult transport routes to markets. For all actors *Gnetum*-based incomes are critical to meeting basic, daily needs. For consumers, this product also has social value as an affordable, year-round food source providing food and nutritional security for numerous urban consumers in Cameroon, Nigeria and internationally, where it is a cultural comfort food. The *Gnetum* chains studied have a market value of over 3 million US$, and *Gnetum* is one of the largest volume and value NTFPs sold in Cameroon with fast growing regional and international exports. Although the study area is a production zone, it is no longer the most important harvest area, but has developed in the last forty of so years to be the main land and sea route to Nigerian markets. For a chain so important and a species near threatened as *Gnetum* the governance arrangements in place are weak, fragmented and poorly coordinated as will be seen in the next section.

Governance of the Gnetum value chain

To answer the third research question, this section presents and analyses the governance arrangements and trends in the *Gnetum* chain. This trade is regulated on paper, although practice is often far removed from the intention of the law. Although the NTFP sector and the small business context in which it is played out is notable for its regulatory and policy void, governance arrangements are present in the form of customary regulations

which have some, albeit weak, influence on the chain and livelihoods, in contrast to the significant impact of market-based arrangements.

Statutory regulations in theory and practice

In 1995 *Gnetum africanum* was declared as an endangered species in Cameroon due to declining quantities and a ban was considered (but never implemented) in 1999 (Fondoun *et al.* 2000). Since 2005 eru has been listed (literally) as a Special Forestry Product (SFP) for which annual quotas are set and permits for transportation are needed (see Chapter 6 and Table 7.5). The majority (85%) of permits over the period were for either all regions or did not specify a region, making monitoring difficult. Over the period, 57 organisations requested permits, 10% of which have requested in more than one year. No *Gnetum* spp. population surveys were reported to have ever taken place, as required by the 1994 forestry law. Since 2005, 82% of the requested quantities of *Gnetum* were granted. Instead permits are allocated on a demand basis, rather than supply, primarily to larger enterprises who often re-sell the waybills. The allocation process was reported as arbitrary and dogged by corruption, a fact noted by other studies (Ndoye *et al.* 2010). *Gnetum* is one of the most popular SFPs, accounting for half of all SFP permits. Interviews also confirmed the widespread lack of permits. Comparing individual company permits with waybills reveals that two companies over-exceeded their permits in 2007 and 2008 and by four in 2009. Traders indicated that even when possessing a permit, corruption is common, amounting on average 25% of trader and exporter's costs. Corruption costs have increased since the early 1990s, when bribery accounted for between 5 to 15% of transport and cross-border costs (AEERD 1993). Bribery leads to delays which can be ill afforded given *Gnetum*'s perishable nature. These reports contradict a 2007 independent newspaper report (Nkwain *et al.* 2007), stating that the eru trade in Idenau is legal and regulated, with official interactions between Unions, customs, MINFOF and immigration authorities. Despite the open and well-known international trade, *Gnetum* is not listed in the government's COMCAM database of exported forest products. Although data is patchy and inconsistent over time, Table 7.5 shows that the estimated total quantity traded from Cameroon regularly exceeded per-

Table 7.5 SFP quotas, production and trade in *Gnetum* spp. in tons 1992 to 2010

Year	1992 to 1994[1, 2]	1998[3]	1997 to 2004[1, 4]	2005[5]	2006	2007	2008	2009	2010	Average
SFP permits[6]				2,035	6,800	7,195	1,700	3,925	2,300	3,993
Southwest & Littoral production[7]						3,269	2,873	1,853		2,665
Traded in Southwest markets			108			588	625	370		528
Traded in East, Centre & Littoral markets			5							
Exports Idenau to Nigeria	973		1,078	1,553		2,964	4,290	2,639		2,250
Exports to Europe		50						24		37
Total quantity produced & traded	973	50	1,190	1,553		6,821	7,788	4,886		5,479

[2] *Sources:* Nembot 1998 [3] Tabuna 1999 [4] CIFOR NTFP database [5] Asseng Ze 2006 [6] MINFOF annual Special Forestry Product quotas from 2005 to 2010 [7] Research results production from villages in study area. Blank areas indicate no data available. *Key:* [1] Annual average

mitted quantities except in 2007, when, for reasons unknown, a record number of 27 enterprises were granted permits.

Given that 79% of *Gnetum* harvested in the study area is sold and sourced from national domain forests (see Chapter 6 and following section on Sustainability), all production that is not permitted is illegal. This problem is not restricted to *Gnetum*, but is a major flaw of the regulatory system and its application (Assembe-Mvondo 2009; Alden Wily 2011).The permits are also granted to traders, rather than actual harvesters, who harvest in a grey area of the law: as customary user rights allow harvesting but not selling. Most harvesters reported being unaware of their user rights under the 1994 Forest Law or that the forest belongs to the state. The majority reported believing that forests belong to them and can be freely exploited for commercial use. The regulatory system thus works contrary to its objectives, inadequately monitoring and controlling trade, inefficiently collecting government revenues and allowing ample opportunities for corruption. The difficult, non-transparent and inefficient permit and waybill system does not protect a species deemed to be near threatened. Combined with the current lack of knowledge about the abundance and quantity of *Gnetum* across Cameroon and lack of control at major markets and border crossings, sustainable governance is difficult, if not impossible under current formal governance arrangements. Despite proposals for regulatory and institutional reform since 2008 (Ebamane 2008) and specifically for *Gnetum* including inventory and mapping of past and current production areas and a revision of the demand-based permit system (Ndoye *et al.* 2010), changes have not occurred. Given the current lack of enforcement and low government presence in the study area – situations typical of remote and upland tropical forests which prove difficult to centrally govern (Scott 2009; Colfer *et al.* 2011) – any revision to the law is foreseen to have little impact on current illegal and unsustainable practices. Better control of the quantity of *Gnetum* harvested in practice is possible only if significant political and administrative changes occur.

Dollops of dash

Corruption is prevalent in the chain, not all along but focussing on low-hanging fruits of statutory permitting procedures controlling access to the resource and access to markets during transport and especially to export markets, indicated by bribes comprising 37% of exporter's costs. The lack of statutory regulation of this high value trade and the small number of channels through which it flows – particularly the large volume channelled through Idenau port, presents an easy to capture opportunity for corrupt officials and creates a perfect hotbed for corruption. This then further exacerbates regulatory failures. Corruption also aggravates the difficulties small-scale traders have in operating legally, promoting rather informality and illegality as the (slightly) easier business operating environment. State officials (MINFOF officers, police, customs agents and army) at decentralised level have no legitimacy to promote reforms and little incentive, given the personal revenues that can be gained from bribes that are an everyday part of the trade. Corruption thus becomes an insidious, predictable but incalculable governance arrangement. This is why alternative, but risky routes through the porous, land-based border through the forest to Nigeria have remained in use for decades. Corruption, whilst adding to costs and often creating delays, is viewed as a necessary cost to ensure that the fastest and lower risk sea route works. The *Gnetum* chain mirrors other high value, high volume forest products in Cameroon, such as illegal artisanally chainsawn

logs, which have high levels of corruption and well-established domestic and regional markets (Blackman *et al.* 2010).

Customary regulations

Customary land tenure varies across communities in the study area. In general traditional authorities are custodians of forested lands outside family forests and farm areas and are responsible for forest management. In the study area, only men have the right to inherit land property, with women given land when they marry. Women in most communities interviewed indicated they had free access to village and family forest, and family farmlands and are free to harvest from and cultivate NTFPs on their husband's lands. But if the men (husbands of those married and in-laws of those who are widows) want to create cocoa farms and plantations on the land, women do not have a say.

Harvester's access rights to *Gnetum* were generally open access (88%). This differs per region, as no harvesters in the Littoral region indicated there were areas to which access was restricted, whereas 25% in the Southwest indicated that there were areas to which access for harvesting is restricted. Tenure largely determines why access is restricted, as access was restricted or not permitted in community forests, in traditional village forests, in privately owned areas, protected areas and national parks. Rights to *Gnetum* were asserted by 13% of harvesters, by land owners, community forests and village councils. This is mainly in the form of payments for harvesting by outsiders and 'foreigners'. Most respondents (89% in the Southwest and 96% in Littoral) indicated that they do not have to pay for entering the forest or for harvesting. Payment, if required, is made to a village traditional council (in the Southwest) or the forest owner (in the Littoral). In some villages around Takamanda, women pay a token fee to the council before harvesting *Gnetum* spp. for sale. For most 'outsiders' (i.e. non-residents), the traditional authority authorises harvesting for a negotiated fee. In some villages, the cost was 2,000 FCFA (4.53 US$) per week paid to the traditional authority and with the buyer obliged to buy all the eru harvested by villagers that week. In other areas, buyers may operate freely in village forests for a specified time period upon paying a fee of 2,000 to 3,000 FCFA (4.53 to 6.80 US$) per month up to 20,000 FCFA (45.31 US$) to traditional village councils for usually an unlimited quantity of *Gnetum*. These 'elite' decisions were sometimes criticised by community members who do not benefit from these revenues. This critique was also reported by Mhadaili *et al.* (2002). Traders and exporters in Manyu division must register with the village traditional council to obtain supplies. At Kesham in Akwaya, traders pay a yearly fee of 10,000 FCFA (22.65 US$) without any 'commission'. In other villages, traders pay 2,000 to 5,000 FCFA (4.53 to 11.33 US$) per week for 'booking' plus a 'commission' of 10 FCFA (0.02 US$) per bundle and foreigners (Nigerians) pay 10,000 to 20,000 FCFA (22.65 to 45.30 US$) to enter village forests and harvest eru for defined periods. This fee is paid to village traditional councils and is used for village development, although some villagers suggested that it was not always used for this purpose.

All respondents in the Littoral region indicated that there had been changes in forest access. One third indicated that local communities had not previously been aware of the economic importance of eru and their forests, but now that they are aware, those who are not members the community no longer have free access. Payments were therefore demanded from the 'forest owner'. The majority (70%) indicated that forested land is now being bought and owned by individuals, who prohibit free access. In the Southwest 18% of respondents indicated that there had been access changes. One third of these

changes related to the upgrading of protected areas and the fact that harvest from the National Parks in Takamanda (since 2008) and Mt Cameroon (since 2010) were prohibited (see section on Project governance arrangements in Chapter 6). However, in Takamanda harvesting continued to take place. Two thirds of respondents who noted access changes indicated that with the increase in the knowledge of the value of eru, communities now restricted harvest from their own forests. Access is also gendered. The women of the Abos ethnic group in Mungo division of the Littoral region do not go to the forest to harvest eru, despite the potential and its presence in this region. During the focus group interviews, female producers in Mungo division indicated that they had no ownership rights. All the harvesters in this region were 'foreigners': either Nigerians or from the Northwest region.

In the Southwest, privately owned and planted *Gnetum* was reported as vulnerable to theft, as it is still perceived as a wild, open access NTFP. This indicates how customary tenure and access rules have not adapted with the transition of *Gnetum* from a wild to a cultivated product. However, villages working with CENDEP in the Southwest reported that using customary rules and institutions, enhanced collective action and domestication offered a pragmatic solution to control harvesting. Combined with local quotas, sustainable harvest methods and 'no-go' or regeneration areas, these could form a multi-pronged approach to manage *Gnetum* more sustainably. These findings indicate that if land tenure is defined and producers 'own' or manage land, harvesting tends to be controlled. The general lack of control and ownership over lands may be a reason for the lack of domestication. Whilst limiting access, customary rules do not control harvest methods or techniques. Local traditional regulation however neither fills the voids in the formal system nor ensures sustainable extraction, but is an important factor influencing livelihoods, mainly the income derived from trade in *Gnetum*.

Market-based governance

Most of the eru marketed in Cameroon is traded informally, by unregistered, individual entrepreneurs. Although harvesters generally do not use collective action, traders do, with unions covering around 40% of the traders working in the markets of Tiko, Fiango in Kumba, Mutengene and Bota Wharf in Limbe. The unions do not bar entry to new traders but support traders and provide credit. In contrast, the Eru Workers Union in Idenau has a powerful control of the trade. It accounts for a high percentage of employment in the small town and is open to everyone of working age, in possession of a National Identity Card and who has resided in Idenau for at least six months. Both managers and traders are members, and the majority of support workers, who are paid according to their tasks (offloading lorries, filling bags, counting bundles and loading them into speedboats). The union controls the market and maintains income security by keeping prices and profits high. For instance, setting quotas for quantities traded within defined periods, restricting the number of traders operating at a given time, placing restrictions on who buys or sells, harmonising prices through the commissioned middlemen in Idenau and Nigerian markets, setting high registration fees to limit the number of traders and regulating purchases by credit (zero or part payment) systems. The result is that excess supplies are frequent occurrences at Ikom, although not in Ekok, where traders are not unionised and supplies are not regulated. The trader unions aim to counter Nigerian union strength and vagaries and the frequent surpluses and losses, confirmed by other studies (Lingondo *et al.* 2006). Communication technology has aided merchants in Nigeria and Cameroon: over the last five years they have increasingly

been conducting transactions more easily by telephone and email. Over 40% of retailers in four of the Cameroon markets and all retailers in Nigeria were union members. Whilst the unions in Cameroon do not control trade, they provide a supportive enabling environment. In Nigeria, trader unions in the markets fulfil a similar empowering function for members and regulate trade, punish thieves, provide security guards, regulate who trades on which days, provide financial security by backing all transactions – even when losses are incurred – and resolve conflicts. Unions are voluntary in name but obligatory if traders wish to trade in the markets. The Nigerian unions affect the prices paid to Cameroonian importers. The retailer unions in Cameroonian markets exhibit similar, but far less extensive, power.

There are no dominant enterprises setting parameters and exercising power and control along the chain. However, the activities of various groups of actors, although not premeditated, coincide to affect prices and the level and distribution of profit among actors in the chain. Current configurations of the chains mean that the intermediaries, particularly buy'am-sell'ams and wholesalers, are some of the most powerful actors in the chains. Their power is derived from their knowledge of demand and supply, although this is incomplete, with information on long-term supply lacking. Supply is on-command, limited more by the number of harvesters and their physical capacity to harvest than by demand. In the short term prices (and thus incomes) are affected by seasonal agricultural activities which divert attention from harvesting *Gnetum*. At transporter and intermediary level, power is in the hands of corrupt officials and transport companies, costing time and losses. Harvesters experience occasional conflicts over access to resources, but these are minor. Conflict has a minor influence on relationships in the chain, compared to other high value products (Tsing 2005; Exenberger *et al.* 2010). As *Gnetum* remains an open access common pool resource, power is fairly evenly spread among harvesters. However, access has become restricted as customary resource owners exert control as its high economic value is associated with increasing demand and scarcity. This is illustrated in some villages near the Cameroon-Nigeria border. A knowledge-power relationship can be seen among harvesters, where those with better knowledge of the location of *Gnetum* can harvest greater quantities and thus benefit economically.

International agreements

Whilst Gnetum species are on the IUCN Red data list, there are no international agreements or conventions in force which have specific implications for the chain.

Limited project influences on governance

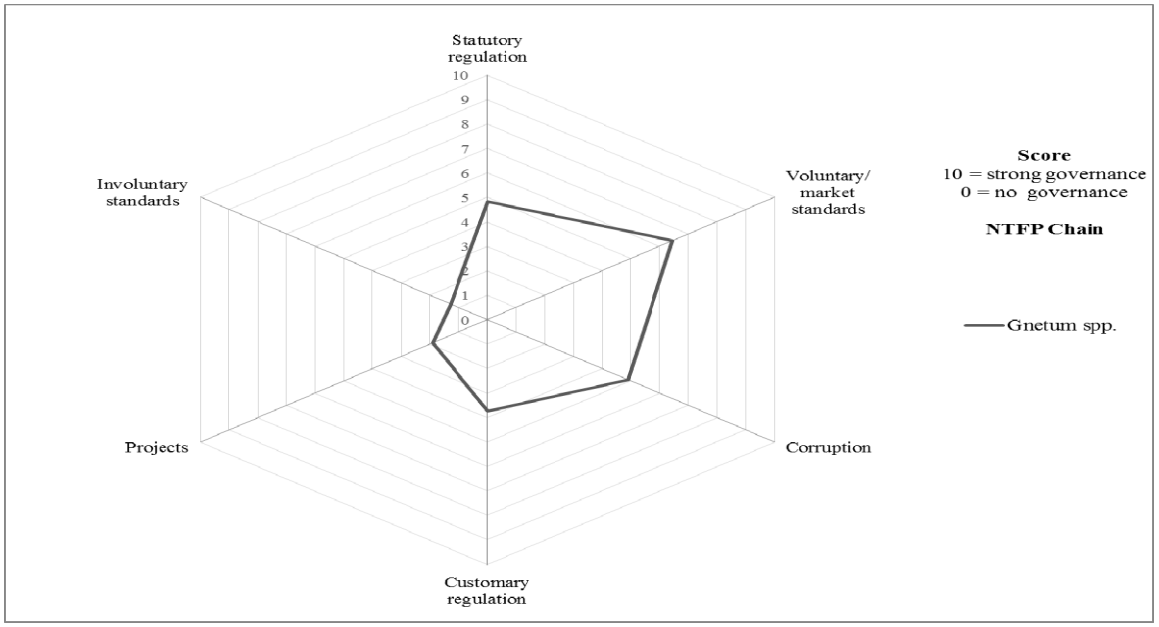
Projects have had limited influence on governance arrangements in the Southwest. They stimulated collective action by setting up plant nurseries and providing training in the domestication and cultivation of *Gnetum*, starting with the Forestry Research Project led by the government's Institute of Agricultural Research for Development (IRAD) in Kumba, which initiated domestication in the early 1980s, followed by the MCP in the late 1990s around Limbe and Mt Cameroon (Tekwe *et al.* 2003) and most recently by CENDEP since 2000 in about sixteen villages around Korup and Limbe. A result of these activities has been to stimulate collective control of access to markets through increasing processing and sales, but these groups produce only a tiny percentage of total regional production which is not visible in the market. The main impact of these projects has been to send signals about the decreasing resource, livelihood value and possi-

bilities of cultivation. These appear to be very gradually accumulating into sufficient political capital to influence behavioural and policy changes. For example, the work of the MCP resulted in the first regulations concerning *Gnetum* in the 1990s. It also stimulated the creation of NGOs such as CENDEP and ADIE (Association for the Development of Environmental Initiatives) in Lekié, Centre region, on which development and research actors such as the FAO, ICRAF and CIFOR have built further[3]. These activities have provided a basis for recent government interest, leading to the Programme for the Support of Okok Domestication (PAPCO). This Ministry of Agriculture and Development (MINADER) sponsored programme supported the establishment of 149 nurseries for 76,296 plants located in 35 villages in 2010-2011 in five production areas in the Centre region (PAPCO 2010). Around 500,000 US$ per year has since been allocated to develop *Gnetum* cultivation across the country. These projects indicate that the *Gnetum* chain is slowly creeping into and up the forestry and agriculture agendas. This is justified, as the majority is still wild sourced, but creates a possibility for future supply from cultivated sources. Projects have highlighted corruption in the chain (Ndoye *et al.* 2010; Tieguhong *et al.* 2010) and pushed for government support and recognition. Changes to regulatory arrangements have however been slow and efforts to counter corruption non-existent.

An entwined bricolage

The arrangements governing the trade of the leaves of this climbing liana are a mix of formal regulations, inconsistently applied and enforced, and topped with corruption; weak but changing customary arrangements controlling resource access – notably in the Southwest; collective action in the form of unions controlling access to markets, and some limited project arrangements attempting to introduce cultivation norms. Scored using the system introduced in the methodology in Chapter 3, and detailed in Appendix

Figure 7.7 Governance arrangements in the *Gnetum* spp. chain in Cameroon



[3] See for example http://blog.cifor.org/11455/taming-okok-domesticating-forest-foods-in-cameroon and http://www.fao.org/docrep/014/am803e/am803e00.pdf.

13 the arrangements are illustrated in Figure 7.7. The prevalence of unions of traders and retailers highlights how these actors have crafted institutions attempting to secure livelihoods and increase profits by controlling supply and demand in the face of government vagaries and corruption. Attempts, albeit very small-scale, at cultivation and groupings of harvesters and farmers also represent a form of bricolage seeking to control production and the production environment. Equally, the growing tendency of traditional authorities and landlords to demand payment for harvesting represents a claiming of new ownership rights in realisation of the growing economic value of this product.

Governance and livelihoods in the *Gnetum* chain

This section addresses the fourth research question of how governance arrangements affect the livelihoods of actors along the chain, using the sustainable livelihoods approach.

The ways in which the chains are organised and governed mean that *Gnetum* is an easy source of income for all involved in the chain. Unlike many NTFPs, it can be easily harvested and sold year round; is mainly gathered in open access forests with restrictions on access resulting costs due to forest tenure; it requires minimal processing prior to sale and is in high demand with well-developed and multiple market channels. This results in approximately 2,402 people benefitting directly from *Gnetum*-based incomes in the Southwest and Littoral regions of Cameroon and in Cross River and Akwa Ibon states in Nigeria. Taking into account the average household size of 5.9 people, around 14,098 people in total benefit from *Gnetum*-based incomes, for on average a decade.

Harvesters generally profit from *Gnetum*, earning on average 562,798 FCFA (1,148 US$) annually, equivalent to 1,541 FCFA (3.14 US$) per day, with an average profit of 133 FCFA (0.30 US$) per kg The variations in selling price, profit and costs between individual harvesters, with profit margins of up to 57% of the selling price and also post-harvest losses, are explained by harvesters not including all or some costs for equipment, transport and labour. The major cost for harvesters is transport. In both regions harvesters enter the forest on foot and 82% use a motorbike to bring the Gnetum to a sales point or village and 18% by car or bush taxi. Costs are lower in Manyu and Mungo divisions as traders generally tour villages. In Ndian and Kupe Muanengouba divisions, transport to Type I markets in Mbonge and Nguti is more expensive.

Most harvesters have diverse income sources. Agriculture provides on average 44% and NTFPs, including hunting and fishing, contribute on average to 51% of annual household income. A third of harvester households also use these NTFPs for food. The large income variances between villages (Table 7.6) are related to preferences and availability of other revenue sources and distance to markets. For example, in Bachuo-agagbe village, an NGO promoting cultivation and processing operates, and access to Mamfe is easy, whereas Mungo Ndor access is difficult due to its location 15 km from the main Mamfe-Kumba road and in remote Mukonyony post-harvest losses occurred in 2007 due to high transport costs. The two main income sources were agriculture (93% of harvesters) and NTFPs (89% of harvesters). On average three (SD 2) NTFPs were harvested, with *Gnetum* rated the most important, comprising 62% of NTFP-based incomes. Thirteen NTFPs were also collected in the Southwest and nine in the Littoral, the most popular being bush mango (*Irvingia* spp.), njangsang (*Ricinodendron heu-*

Table 7.6 Gnetum harvesters' annual average profit and profit per kg per village

Region	Division	Village	Access to market	Harvester annual average profit (FCFA) (2007-2009)	Average profit per kg (FCFA) (2007-2009)
Southwest	Manyu	Kembong	E	495,453	181
		Eyomojock	D	285,480	27
		Nchang	D	360,311	164
		Okoyong	E	167,110	185
		Bache	E	605,748	305
		Tapkwe	D	713,558	174
		Bachuo-akagbe	E	1,294,453	168
		Nyang	D	472,200	10
		Obonyi 1	D	45,000	46
		Mukonyony	E	100,000	202
		Assam	D	150,000	77
	Kupe-Muanengouba	Ekenge	E	411,897	242
		Mungo Ndor	D	3,333	67
	Ndian	Ekombe Li-ongo	E	596,800	238
		Ekombe Mofako	D	256,000	233
		Average		471,862	179
Littoral	Mungo	Souza	E	484,225	168
		Mbonjo II	D	476,480	155
		Bonamateke	D	609,707	180
		Nkapa Camp	E	509,933	170
		Mbanga	E	447,898	122
		Mojuka	D	505,000	93
		Average		505,541	148
		Overall average		*428,123*	*133*

Source: Research results *Key*: D = difficult access E = easy access.

Table 7.7 Relationship between profit and group membership

	Membership of group	N°	Mean	Std. Deviation	Std. Error Mean
Profit from Gnetum in 2008 (FCFA)	No	34	592,392	556,148	95,379
	Yes	5	321,024	158,529	70,896

Profit in 2008 FCFA	Levene's test for equality of variances		Independent Sample Test t-test for equality of means						
	F	Sig.	t	df	Sig.2-tailed	Mean difference	Std. Error difference	95% confidence interval of difference	
								Lower	Upper
Equal variances Assumed	1.48	0.23	1.0	37	0.29	271,367	252,803	-240,860	783,595
Equal variances Not assumed			2.2	22	0.03	271,367	118,841	25,287	517,447

Source: Research results

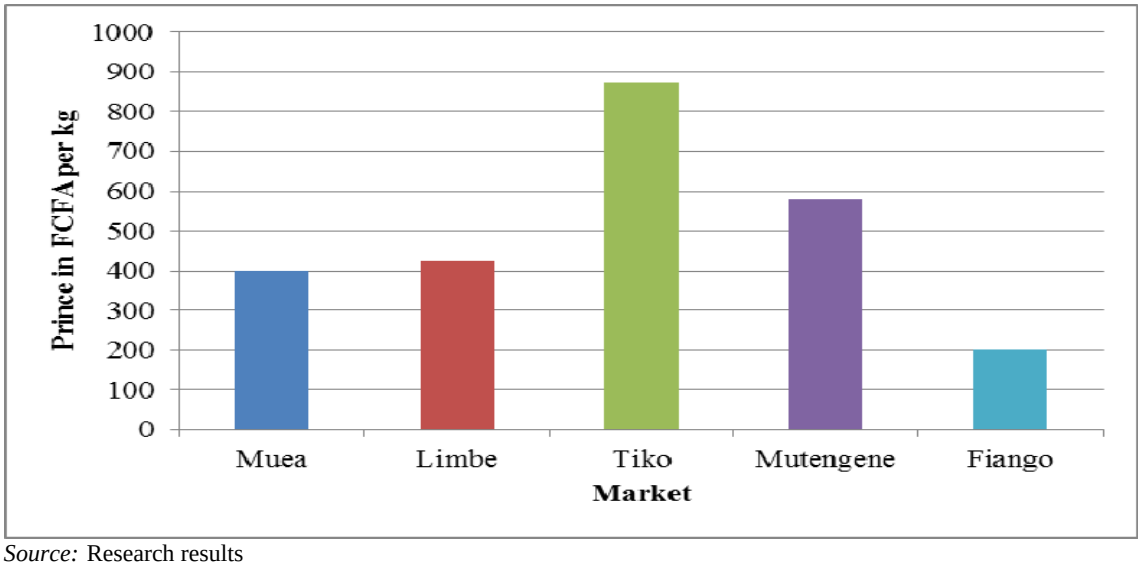
delottii), bush pepper (*Piper guineensis*) and bush onion (*Afrostyrax kamerunensis*). Up to nineteen other minor income-generating activities were noted, such as petty trade, taxi driving, animal breeding, hunting and fishing. The majority (93%) of harvesters, whilst collecting companionably with others, sell individually. Some harvesters act as

'assemblers' or agents, buying from harvesters on behalf of wholesalers and bulking up. Income generated from *Gnetum* is used for basic needs with food, education, clothing, healthcare and house rental constituting over 90% of expenditures. A growing number of 'foreign' (mainly Nigerian) harvesters were reported around in border areas.

Average profit margins earned by harvesters who are members of a group, compared to those working individually show no significant statistical difference, shown in Table 7.8. Individual harvesters have higher average profits than those in groups, ascribed to increased costs of domesticating *Gnetum* and less time spent harvesting and existence of shared, group profits.

A typical intermediary trader earns an annual average of 720,000 FCFA (1,469 US$) (SD 351,780 FCFA, 703 US$). Managers (traders commissioned by Nigerian unions) earn on average 1.44 million FCFA (2,880 US$) annually, with *Gnetum* being their primary income source. There is a wide variation in trader's profits between markets (SD 351,780 FCFA or 718 US$). These profits are higher than the average net profit of 221,000 FCFA (inflation indexed equivalent in 2007) of *Gnetum* traders recorded in 18 markets in Cameroon from 1995 to 1996, indicating the increasing value of the trade. Shown in Figure 7.8, traders in Tiko and Mutengene have the highest profits. This is attributed to the many Nigerian buyers, high volumes, lower costs due to their scale of transactions and unionisation. Prices and profits are lower in non-unionised markets in Limbe and Muea markets. In Fiango market the increased competition arising from high volumes, proximity to production zones and harvesters selling directly leads to lower prices and profits. In Fiango exporters using Ekondo Titi Beach generate higher average profits than those in Manyu. They mostly do not have permits but trading is controlled by the Union, which specifies the maximum quantity that members can export. This avoids flooding the market and maintains higher prices. The lower profit made by traders at Bota Wharf was attributed to the majority (63%) of *Gnetum* sold there originating from secondary forests and plantations, which are subject to continuous disturbance from agricultural activities. The younger leaves rot faster and dry out more rapidly, lowering the price to 400-550 FCFA (0.82-1.12 US$) per kilogram bundle.

Figure 7.8 Average *Gnetum* trader profit margin per market



Source: Research results

Table 7.8 *Gnetum* retailer's average profit per kg and profit per annum, Cameroon

Year		Profits per annum (FCFA)						
		Muea (Buea)	Limbe	Tiko	Mutengene	Fiango (Kumba)	Average profit per retailer	Standard deviation
Market type[1]		II	II	I, IV	II	II		
2007	Total profit	473,791	536,222	-	1,920,000	1,072,000	1,000,503	669,221
	Profit per kg	395	403		1000	200	500	347
2008	Total profit	650,809	561,333	1,099,200	1,400,900	799,200	902,288	6345,510
	Profit per kg	340	486	1000	571	189	517	307
2009	Total profit	168,754	139,722	579,000	489,143	210,733	317,470	201,850
	Profit per kg	295	495	916	563	191	492	281
Average profit per kg		*343*	*462*	*639*	*711*	*193*	470	212
Average annual total profit		*431,118*	*412,426*	*839,100*	*1,270,014*	*693,978*	729,327	351,780

[1] Using Ruíz Pérez *et al.*'s (2000) market typology, see Chapter 3. *Source:* Research results – signifies no data

Table 7.9 *Gnetum* exporter's total profits per annum

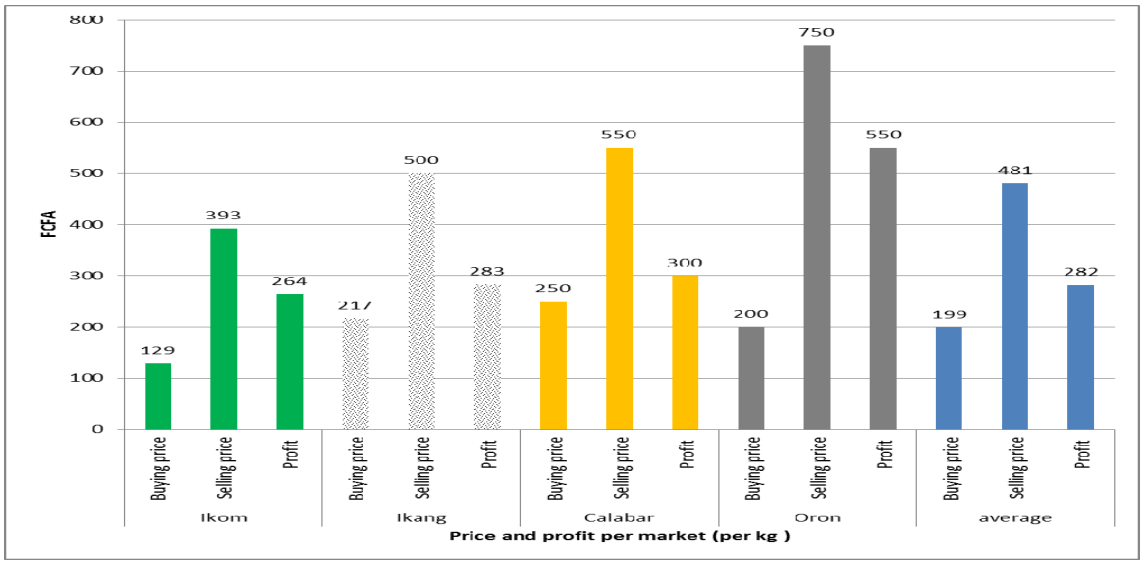
Market	Market type[1]	Profit per annum (FCFA)				
		2007	2008	2009	Annual average	Std. deviation
Ikom	III	-	3,100,000	1,106,846	2,103,423	1,409,373
Average profit per kg			149	346	247	139
Ikang	III	33,360,000	10,800,000	930,000	9,358,400	16,623,655
Average profit per kg		579	563	160	434	237
Calabar	III	7,104,000	6,168,000	14,803,200	368	4,738,503
Average profit per kg		370	367	367	247	2
Oron	IV, III	-	57,148,750	n/a	n/a	
Average profit per kg		263	118	30	212	118
Average annual profit		20,232,000	6,689,333	5,613,349	10,844,894	8,147,255

[1] Using Ruiz Pérez *et al.*'s (2000) market typology, see Chapter 2. *Source:* Research results

Exporters make annual average profits of 3,060,393 FCFA (SD 2,160,000) (6,121 US$, (SD 4,409 US$) (Table 7.9). Female exporters earn on average 19% lower profits than men with 15% higher standard deviation. *Gnetum* was their major income source, contributing to 58% of average household incomes, with 28% having on average three other sources, largely agricultural products. *Gnetum* mainly is used for basic needs: food (22%) and children's education (26%). On average a Nigerian importer earned just over FCFA 3 million profit annually (6123 US$$). Large differences in profits were found between markets and during the period 2007 to 2009, shown in Figure 7.9, with 2007 being a high volume, profitable year. Nigerian wholesalers make higher profit margins at 425 FCFA/kg (0.87US$/kg) than their Cameroonian counterparts at 32 FCFA/ kg (0.47 US$/kg). This can be explained by the lower level of collective action among Cameroonian exporters. Profit levels are also strongly affected by delays leading to product losses, corruption and taxes.

Gnetum contributes on average up to 76% of annual household income of retailers. Although there is a wide variation between markets (Table 7.8) on average retailers earn 729,327 FCFA (1,458 US$) (SD 351,780 FCFA, 703 US$) annually with average profits of 470 FCFA (1.06 US$) (SD 212 FCFA, 0.42 US$) per kg.

Figure 7.9 Nigerian *Gnetum* importers' average annual profit 2007 to 2009



Source: Research results

The analysis of the *Gnetum* spp. chain shows that the product becomes a major economic asset to actors in the chain once traded. It provides one of, if not the, major source (67%) of cash for all actors in the chains. Whilst this finding is unsurprising given that the methodology focused on actors involved in these products, the contribution is higher than suggested by recent studies of forest products worldwide (Angelsen *et al.* 2010) and in the study area (Ambrose-Oji *et al.* 2002; Mdaihli *et al.* 2002). It is notable that actors towards the consumer end of the chain have a higher dependence on the product, as it provides on average 76% of trader's and 58% of exporter's income, compared to on average 47% of harvester's income. This finding provides a challenge to traditional views of the high level dependence of forest-adjacent people (Das *et al.* 2008; FAO 2008; IUCN 2008a; Rodriguez *et al.* 2009). Harvesters make the most use of forest products, as NTFPs contribute to nearly half of their household revenues. They typically rely on a greater number of income sources, but also have greater access (as farmers) to a wider range of subsistence products. However, wholesalers', retailers' and exporters' livelihoods are more dependent on the one forest product, as they tend to have both a less diverse and smaller range of income-generating activities and thus a heavier reliance upon *Gnetum*. This has implications for policymakers and livelihood interventions, as harvesters are the greatest group numerically, comprising 38% of estimated actors, followed by retailers (24%). *Gnetum* benefits forest-dwelling ethnic groups with good forest knowledge of its location.

For harvesters, *Gnetum* is generally profitable, providing the equivalent of just over a 2 US$ a day. Although incomes vary widely due to distance to markets, seasons and bargaining power, profits of up to 57% are possible. Whilst *Gnetum* income does not raise harvesters much above basic poverty levels, it fulfils a coping function. *Gnetum* is thus a flexible natural asset easily converted into financial capital, with an additional social dimension. *Gnetum* revenues are used primarily to meet basic needs (food, education, clothing and healthcare), with all types of actors spending comparable proportions on these categories. *Gnetum* is also used for specific needs, with harvests timed to finance school fees, ceremonies and festive events. Harvesters gain lower profits and *Gnetum*-based incomes than other actors in the chain due to their lack of access to mar-

ket information, reluctance or inability to travel to markets, lower negotiating power from selling individually, limited ability to increase production and high perishability of the product. Highest profits accrue to exporters, traders and retailers. In contrast to harvesters, for these estimated two thirds of actors in the chain, although little value is added through processing, *Gnetum* is often a highly profitable product, upon which they are highly dependent. For traders and exporters, a proportion of income is invested in other activities, enabling diversification. These findings reflect the diverse strategies for which NTFPs are used in securing livelihoods in the Congo Basin (Nkem *et al.* 2010) and in general (Delacote 2009).

Gnetum's value is increased by the facts that, despite its perishability, if a buyer does not turn up, harvesters can consume or barter it. For a small proportion of harvesters and consumers, it also has medicinal value, unlike in other areas of the Congo Basin (Schippers 2004, Schippers and Besong 2004) and in Asia (Orwa *et al.* 2009), highlighting undeveloped potential. Its high nutritional content, cultural significance, medicinal benefits and economic worth combine to make this a valuable product. *Gnetum* thus provides multiple and important contributions to the livelihoods of actors involved in its chains, mirroring that of *Gnetum* spp. in Asia (Roshetko *et al.* 2000; Mertz 2007). Whilst only the leaves of the two *Gnetum* species are used in Cameroon and Nigeria, unlike the multiple parts and uses in Asia, a shared characteristic is its usage for food. The ecology of *Gnetum* spp. produces a product with nutritional value on a par or above many other leafy vegetables. For consumers, it is valued as a food and also has traditional cultural significance. Commodification has enabled it to become a comfort food for increasing numbers of migrants, urbanised populations both in-country and internationally for diaspora estranged from their culinary heritage, creating a growing demand outside traditional harvest areas and driving the trade.

The social importance of *Gnetum* differs for men and women. Traditional gender roles affect land tenure of forest and farm land and dictate that it is women's role to gather vegetal NTFPs, exemplified by *Gnetum*, for subsistence use. Female survival-based strategies commonly focus on supplementing income sources and diversification (Ruíz Pérez *et al.* 2003). A phenomenon in Central and West Africa is that once a product moves from subsistence to cash crop, men use a welfare maximisation strategy to appropriate the crop and capture economic power (Goheen 1996; Ruíz Pérez *et al.* 2003; Nlend V 2007), often specialising. In the *Gnetum* chain, the majority (73%) of all actors continue to be female, but there is a trend of more, particularly younger, men becoming involved in harvesting as the product's value increases. Women still dominate in harvesting and retailing, echoing studies showing the economic clout of female retailers in the late 1990s (Ruíz Pérez *et al.* 2003). Gender thus continues to be the main basis for understanding who conducts which activities in the chain (Ruíz Pérez *et al.* 2003).

Whilst the Southwest and Littoral regions are not the major production areas in terms of total national production, they contain the major markets and constitute an important source of employment, incomes and benefits. However this financial capital is not translated into political capital. The chain in Cameroon, despite collective action has little political clout, visibility and almost no say in food, agriculture, health, forestry or trade policies. Collective action is limited to actors towards the consumer end of the chain (transporters, traders and exporters). There is no collective action by harvesters or arrangements to assure the quantity, quality or price of *Gnetum*. There is no organisation representing the interests of the chain as a whole. Although in Cameroon actors have created their own forms of collective action, in the form of tontines, to provide an ena-

bling environment do business, these provide more of a safety net, rather than creating *Gnetum*-related political capital. This is in contrast to the highly organised unions in Nigeria which support member's livelihoods by restricting access to the markets, controlling corruption and theft, and positively influencing prices and profits.

The chain is highly segmented with no actors integrating harvesting, processing, sales and export. This means that retailers, exporters and consumers are largely not informed of or engaged in ensuring continued supply and largely unaware of the precariousness of their livelihoods based on dwindling supplies. Most of the actors and activities in the chains are not vertically integrated. Some wholesalers also retail, and most retailers perform very simple processing. But no examples of the integrated chain activities were found. This means that for the lower earning harvesters, the arrangement of the chain presents few opportunities to add value and gain higher incomes, other than increasing harvesting production. The risk of actors being largely only connected to the next stage in the chain, but not chain wide, is that governance and securing a (sustainable) continued supply is not ensured. This is a drawback when the majority of the product supply is wild sourced and thus unpredictable (Van der Kop *et al.* 2006; FairWild Foundation 2010). The lack of integration in value chains has been seen as a major reason to the inability of actors, particularly harvesters and farmers, to add value (Vermeulen *et al.* 2008). Whilst the profits of intermediaries are the greatest, the activities of bulking and transporting these actors carry are essential to ensure this perishable product covers the long distances to diverse markets, dealing with corruption, difficult transport networks and poor infrastructure. The profit gained (and lost) by this numerically small group of actors is the economic reward for taking these high risk but essential activities. Hollier (1985) debunks the myth that these are bogey men profiteering at the expense of harvesters, but are essential actors in chains.

Governance and sustainability in the *Gnetum* chain

This section answers the fifth research question of how the governance arrangements impact on product sustainability.

Currently the value chains are almost completely dependent upon wild sourced *Gnetum*. The majority (41%) of *Gnetum* is sourced from primary or secondary forest and from customarily village owned primary and secondary forest with free and open access for the community (21%). Smaller proportions are from private forests (17%), oil palm plantations (11%), protected areas (3%) and farmlands (6%). The species' preferred habitat, primary Guinean Congolian humid forest, is still common in the study areas, as is secondary forest (see Chapter 4). However, landscape-scale threats arise from conversion to plantations, protected areas and urbanisation, although these are currently on a small-scale. Additionally, regular weed clearing in plantations in Littoral and Southwest regions means that young eru is harvested with often insufficient time for the plant to mature. This practice may contribute to long-term species population decline, and, as young leaves degrade more quickly than older, tougher leaves, the quality is lower and increases losses (E. Wirsiy, CENDEP, pers. comm. 2009). However, some harvesters reported that the lianas regrowth rates in secondary forests, fallows and plantation were good, especially if only lateral stems were harvested. Recent research in the Centre region (Tieguhong *et al.* 2013) suggests forest degradation has led to 97% of *Gnetum* spp. being sourced from human-modified landscapes (fallows, cocoa farms and farmlands), which provide favourable habitats and are characterised by restricted control over ac-

cess. None of the organisations involved in the chain are involved in conservation. As *Gnetum* spp. can thrive in secondary and agroforestry environments, changes in the ecoregion pose less of a threat than harvesting. Concerns were first expressed about increasing demand, destructive and excessive harvesting in the 1990s (Mialoudama 1993; Bokwe *et al.* 1994). In the last decade similar observations have been made (Sunderland *et al.* 2003; Tekwe *et al.* 2003; Nlend V 2007; Nchinda *et al.* 2008; Tanda 2009; Ndoye *et al.* 2010). Although leaf harvesting is rated as of low vulnerability (Cunningham 2001), the techniques used for harvesting are important given the large quantities harvested, the plant's ecology and lack of any regulation or guideline for harvesting. Based on field observations and harvester responses, shown in Table 7.10, around 45% of the harvesting techniques used in the study area are judged as unsustainable, echoing Fondoun *et al.*'s (2000) findings. This suggests that harvesting techniques that take into account *Gnetum*'s initial slow growth and vulnerability are only understood by around half of harvesters. Whilst research is emerging on this aspect (Clause 2010; Mathot *et al.* 2011) it is not accessible to harvesters or support organisations. CENDEP's dissemination of field experiences has been restricted by the organisations' dependence upon projects, and government projects have had no discernible impact on practices in the study area to date.

Table 7.10 *Gnetum* harvest technique and sustainability

Harvest technique	% harvested	Assessment
Fell the trees on which the vine climbs to harvest the entire vine	44	Unsustainable
Uproot entire vine	>1	Unsustainable
Pluck leaves only, leave part of the stem & use part to tie bundles	>1	Sustainable
Pluck stems and leaves, leave part of vine, stem used to tie bundles	43	Sustainable
Climb trees to harvest part of vine	13	Sustainable

Source: Research results

In the Littoral region no harvesters reported planting *Gnetum*. Only 16% of all harvesters, all in the Southwest, indicated they had planted *Gnetum*. Except for one woman farming eru since 1999, respondents indicated that vines planted since 2002 were not yet in production. Just over half (52%) of those cultivating *Gnetum* had been prompted by the opportunity to increase production and 47% because of a perception of increasing scarcity. The majority (73%) of harvesters interviewed indicated no knowledge of cultivation techniques. These rates correspond with data from Korup (Tanda 2009). A small proportion of harvesters (11%) have observed the practices from others but find it difficult and time consuming and 16% saw no need to plant since eru is (still) available in the forest. The proportion of cultivated *Gnetum* entering the value chains to date is negligible, compared to total production. CENDEP indicates that 13,350 *Gnetum* seedlings were planted in the Southwest between 2004 and 2006, 4,500 by 2008 and 1,000 were planned around Korup, with around a 60% survival rate (Lingondo *et al.* 2006; CENDEP 2008a; Nchinda *et al.* 2008) and a lead time of at least two years before harvest and income generation (CENDEP 2009).

The current low level of cultivation is despite over a two decades of projects focused on the Southwest (Leakey 1998; Nkefor *et al.* 1998; Shiembo 1999; Nkefor *et al.* 2000; Nkefor *et al.* 2003). These started in response to the intensification of NTFP extraction after the economic crises of the 1980s and led to a Forestry Research Project in Kumba, which initiated domestication work in the early 1980s (Shiembo 1994) to take pressure

off wild resources. Calls to increase domestication (Tekwe *et al.* 2003);(Nchinda *et al.* 2008; Tanda 2009) led to the projects described in the previous section and the PAPCO *Gnetum* cultivation programme.

However, only a low level of cultivation has occurred despite promising farmer uptake (CENDEP 2008b) and good production levels in trials (Shiembo 1994; Tekwe *et al.* 2003; CENDEP 2008b). Nkefor *et al.* (2000) report that one cultivated *Gnetum* plant can produce 1.9 kg leaf biomass every six months. CENDEP recommends a 2 m x 1 m spacing per plant to produce up to 9.5 tons a hectare and including *Gnetum* in mixed agroforestry systems. Projects have so far not resulted in major changes in harvester or farmer cultivation practices. Innovations such as drying and canning, which reduce losses and appear to be increasing in popularity, have also only started to filter through to farmers as a stimulus to domestication and to increase production (Awono *et al.* 2009; Tabuna *et al.* 2009). The low level of domestication and cultivation is perplexing, particularly when viewed in contrast to practices in Indonesia. There, *Gnetum* species (particularly *Gnetum gnemon*) have been domesticated and the majority of *Gnetum* leaves and seeds have long originated from cultivated sources (Soemarwoto *et al.* 1985; Michon *et al.* 1994; Orwa *et al.* 2009). An explanation is that whilst *Gnetum* species are still available in the forest in Cameroon and not considered as a cultivated crop, wild harvest continues. Interviews indicated that harvesters are only motivated to plant when a critical level of scarcity, forage distance and collection time makes its harvesting economically inefficient for opportunistic harvesters. A higher reliance on *Gnetum* for food and cash and/or knowledge of cultivation techniques appears to prompt planting, particularly as the majority of harvesters are also farmers and women. However, although women have dominated in the participation in training projects, most group leaders are men and only a few young women have been in the executive (Youndjie 2006). The ability of women to continue independently producing, processing and marketing *Gnetum* – even though it is a vegetable rather than tree crop – given the prevailing male cultural dominance of cash crops, remains to be seen. The impact of wide-scale cultivation may alienate harvesters, particularly women, if they do not have access to sufficient land and for whom the open access, generally free nature of access to the resource forms a safety net and diversification.

The combined impact of land-use changes, heavy and sustained extraction over the last two decades and unsustainable harvesting techniques is that *Gnetum* is becoming scarcer in the study areas. Most (97%) harvesters indicated that foraging distances have increased in the past decade and that forests have diminished. This is attributed to clearance for farms (68%) and oil palm plantations (25%), and in Mungo, by logging (7%). Nearly a quarter (23%) of harvesters indicated that longer search times and scarcity are their major problems. Whilst not differentiated by consumers, *Gnetum buchholzianum* is preferred by harvesters and retailers as easier to harvest and slice. But it is less abundant in the study area and most prone to habitat loss, due to its primary forest preference. *Gnetum africanum* was found in higher quantities, but its quality was reported to diminish when forest cover is removed. Half the traders and 67% of exporters indicated that better quality (stronger, darker, larger) leaves are obtained from primary forests, and poorer quality is associated with secondary forest, plantations or farmland origin. For both species, these threats together with rising population density, deforestation and degradation (de Wasseige *et al.* 2009) make both species highly vulnerable.

In conclusion, the combination of a largely wild sourced product, tendency to harvest using unsustainable techniques, growing threats to the integrity of the humid lowland

forest in the ecoregion, and signals of increasing scarcity suggest that in the long term the product and chain is unsustainable given current arrangements.

Conclusions

The analysis of the *Gnetum* spp. chain originating from the Southwest and Littoral regions of Cameroon indicates that multiple governance arrangements exert a major influence on how *Gnetum* spp. products are valued, used, sourced and traded. This section summarises the conclusions, responding to research questions two to five, on how the value chain is configured in terms of products, actors, activities and values; the governance arrangements in place; how these impact the livelihoods of actors and their sustainability; and how these impact chain and product sustainability.

The main product of the two *Gnetum* spp. vines, known as eru or okok, has high economic and social value. The leaves provide multiple and important economic and socioeconomic contributions to actor's livelihoods, predominantly income and food. Although women predominate in the chain and benefit substantially from these values, men are active in the stages of greatest value. In the last forty years *Gnetum* has changed from being a food source for specific ethnic groups, to an object of wealth creation. Commoditisation satisfies demand for a traditional food by consumers in urban areas and for a growing diaspora, and has created a demand amongst new, non-traditional consumers.

There are multiple, plural arrangements governing the chain. Weak statutory arrangements exist, lacking authority and legitimacy and arbitrarily enforced; a myriad of highly local customary regulations; market-based collective action in the form of local, market-based associations, unions and tontines – a bricolaged mechanism to mitigate risk, to control trade and prices, given inconsistent statutory regulations and to counter corruption; and some limited project-influenced rules. This may explain the paradox that such a high value chain is so politically invisible. Customary regulations tend to concentrate on access to the resource, the others generally on access to markets, illustrating the highly fragmented nature of how the *Gnetum* chains are governed, with many channels available to move this perishable product to consumers over long distances nationally and internationally. Fragmentation is caused by the multiple routes between the many sellers and buyers, no individual actors or enterprises dominating the chains (although a handful have a stranglehold on official permits), and very low level of processing prior to consumption and high losses.

The governance arrangements impact livelihoods focusing most on financial capital. They result in generally profitable commerce, with slightly above average incomes for those involved. But they do not assure or promote long-term, sustainable livelihoods. The configuration of arrangements means that power relations in the chains are a mix of market-based and balanced networks, with no dominant or vertically integrated actors with sufficient influence to affect governance arrangements all along the chain. This arises from the largely irregular transactions at harvester level, the many customers and suppliers, limited information flows between actors along the chain, low level of technical assistance, and harvest areas governed by locally, geographically-specific customary arrangements. Obligatory for exporters and retailers in Nigeria, collective action is voluntary in Cameroon and does not extend to harvesters. In consequence, harvesters are the most vulnerable group of actors in the chain, dependent upon largely wild resources, receiving the lowest profits and incomes, with limited opportunities to add val-

ue. However, in contrast to actors specialising in *Gnetum* trade further along the chain, their diversified income-generating streams leaves them less dependent upon the vine. The regulatory framework undervalues the contribution of eru to livelihoods to all actors. It is counter-effective in generating state revenues or meeting conservation or resource control aims. Its inconsistent application aggravates illegality and corruption, adding significant costs and reducing profit margins without denting demand. Many actors reluctantly tolerate corruption, rather than challenge it or operate formally, as permits are difficult and costly to obtain and offer few advantages. Together these arrangements create a highly disenabling environment for sustainable extraction, exacerbating the difficult business operating environment and creating a persistent culture of disobedience. Customary traditions dominate forest access and land tenure, largely concerning access by third parties rather than rules to sustainably manage the resource.

The impact of governance arrangements on product and chain sustainability illustrates trade-offs. Despite the majority of harvesters being indigenes of their harvesting area, customary resource stewardship is rare, focusing instead on financial gains by traditional authorities rather than species and product sustainability. Long held beliefs that *Gnetum* is being unsustainably exploited and needs to be cultivated are based on extensive field experience and anecdotal evidence, but surprisingly, given the level of threat and protected status of the species, have never been supported by resource assessments. The actors framing these perspectives are indirect actors in the chains: researchers, support organisations and projects, whose positions and beliefs are only implicitly, partially shared by harvesters and regulators. Whilst harvesters acknowledge increasing scarcity, a direct relationship with harvesting techniques is generally not acknowledged. Perversely, increasing scarcity forms an economic incentive for more harvesters and actors to enter the chain as prices rise. Such plundering is largely permitted by local chiefs, reinforcing the product's high value. The longevity of the trade belies its unsustainable nature. Whilst the methodology used allowed a retrospective view of harvesting practices, the purposive selection of high production areas means that exhausted harvest zones have not been captured and a full picture of the temporal dynamics of harvesting and trade on a national level over time has only partially been given. However, the value chain approach used meant that the trader's knowledge of geographical and temporal changes in resource availability could be gathered. Together with trade data this supports the finding of steadily increasing volumes of trade and growing markets over the last two decades, quantifying concerns about over-harvesting. Indicators of harvest time and distance, abundance, harvestable volumes and harvesting techniques all point to increasing extraction, low levels of sustainability and increasing vulnerability of the species. Given the expansion of harvest zones, an ecoregion-based approach to verify species vulnerability merits further research, regulatory action and possibly a higher protection level, or at least geographically-based controls in the areas of high harvest pressure. The gradual, but still low level of cultivation highlights the long transition period needed to change from a wild, forest species to an agricultural product. Forest degradation and clearance, particularly in the high human population density areas may positively or negatively impact harvesters' livelihoods – as the availability of not just *Gnetum*, but also other forest products is increased in human-modified and managed, actively resource-enriched environments, or negatively as species density and suitable ecological habitats are reduced. The tipping point between abundance and scarcity is difficult to determine given the lack of data on species population and range. Responses to these pressures on product and chain sustainability have been lukewarm with only occasional,

mostly local-level engagement and discourses between conservationists, pro-domestication researchers and NGOs, harvesters, retailers and the government about threats, domestication and cultivation.

8

Apiculture value chain[1]

This chapter presents the results of the in-depth analysis of the apiculture value chain originating from the Northwest and Adamaoua regions of Cameroon and extending to markets nationally, in Africa and in Europe. The findings are based on interviews, literature, participatory action research, observation, value chain analysis, market surveys, trade data and resource assessments (see Chapter 3). The values provided have been verified and triangulated with literature and in workshops with stakeholders and are believed to be valid for the specific chain and its geographic locations and population sample for the time period of the data collection. The sections deal with the research questions of how the value chain is arranged in terms of the species it is derived from, the products, location, actors, activities and values; how the chains are governed; what is their importance to livelihoods and their sustainability. The conclusion focuses on how governance arrangements influence sustainable livelihoods.

The apiculture value chain

This section addresses the second research question of how the apiculture value chain is configured in terms of products, their uses, sources, actors, activities and values.

Apiculture species, products and their uses

Honey hunting refers to harvesting from wild bees, known as 'going into battle' *asaséé bì ngour-ngou* by the Gbaya in Adamaoua. In contrast, apiculture is the science and practice of domestication and keeping of bees. This study concerns forest apiculture, where man-made hives are placed in forests. As hives are generally made from local natural resources and forests are major sources of nectar and pollen for bees, their products are considered NTFPs (Bradbear 2008). This type of beekeeping has a long history in the Northwest Highlands and in Adamaoua. Nearly half of the beekeepers noted family traditions, indicating apiculture has been practised for at least 150 years. Oral history has it that a century ago, during a period of famine in the Northwest, honey was

[1] Data for this chapter is derived from peer-reviewed published articles written or contributed to by the author (Ingram 2009a; 2011b; Ingram *et al.* 2011b; Schure *et al.* 2013, Tangkeu *et al.* 2013, Tsafack Matsop *et al.* 2011).

used for food and as a medicine. Around sixty years ago it began to be bartered in Nkambe and at the Nigerian border where a 'tin[2]' was exchanged for two tins of red palm oil or salt, the main exchange commodities prior to monetary currency. This indicates the high social and economic value of honey. Literature confirms the existence of a centuries-long regional trade in honey and wax (Kaberry 1952; Paterson 1989), which was incorporated into European colonial commodity trade (Crane 1999).

Photo 8.1 Freshly harvested honeycomb, Oku, May 2007

Apiculture in Cameroon produces two product types – bee and hive products – and ecological and cultural services. Bee products are those directly derived from bees, in this study the African honey bee (*Apis mellifera adansonii*) and solitary bees (*Trigona, Meliponula, Dactylurina, Hypotrigona* and *Liotrigona* spp.). Products include royal jelly, pollen and bee venom. Hive products are produced by bees and include honey, beeswax (*Cera alba*) – shown in Photo 8.1 – and propolis. Honey is a natural sweet substance produced by honeybees from the nectar of blossoms, which honey bees collect, transform and combine with substances of their own and store in the comb to ripen and mature (Codex Alimentarius Commission 1989). Tests of the biochemical composition of Adamaoua and Highlands honey show it contains between 18 to 24% water and 70 to 80% sugars (Appendix 15). The high sugar content means that it has a shelf life of several years. Bees secrete wax to form an energy-rich, protective structure, formed into combs for storing bee larvae, honey and royal jelly. Wax can be melted and processed further and stored for years, although it is susceptible to damage by wax moths (*Galleria mellonella*). Propolis is a resinous mixture created by bees from buds, resins, sap and other botanical sources. It is used to fill unwanted gaps in the hive. Bee and hive products can be processed into a variety of hive by-products (honey beer and wine, candles, soaps, creams, polishes, ointments etc.).

In both areas, all beekeepers use honey as a food. For consumers, 60% in the Northwest and 80% in urban areas use it as a high-energy food with 8% using it as part of a special diet. It is occasionally eaten with the comb, but mainly purchased filtered and eaten with bread and as a sweetener in drinks. In Ngaoundal 29% of beekeepers and 7% of Northwest beekeepers mix honey with water to brew a sweet, openly fermented alcoholic drink called *sha* or *shah* in the Northwest, *ntop* when mixed with raffia palm wine, and *kuri* or *koori* in Adamaoua. This used to be the main hive product but has declined in popularity with the increased availability of bottled beer and adherence to religious codes prohibiting alcohol.

Honey is well-known and valued for its medicinal use in Cameroon. The majority of beekeepers (71% in Adamaoua and 92% in the Northwest) use it to treat coughs,

[2] Appendix 8 for all calibration measures. In the Northwest honey is sold in pots and in kilograms and in Adamaoua in plastic bottles and in litres. One litre of honey weighs 1.5 kilograms.

wounds, skin infections, asthma, stomach ache, burns and gonorrhoea. Knowledge of medicinal uses varies significantly: 80% of consumers in the Northwest and 45% in Adamaoua use it medicinally, compared to 5% in urban areas. Honey is a popular ingredient in medicines prepared by traditional healers, frequently mixed with herbs to treat a wide range of illnesses.

Wax is used by metalworkers in Bamenda and Bali in the Northwest and Bamoun and Foumban in the West region in lost-wax casting for traditional artwork, cultural objects and tourist artefacts. This well-documented technique (Knopfli 1997) originated with the Tikar of Adamaoua, reaching a height of sophistication in the early 19th century (Gebauer 1979), but is now no longer practised in Adamaoua. These sources indicate that wax has been processed, traded and used in the study area on a small, specialised scale for at least two centuries. In the last five years wax has been increasingly processed and exported for use in pharmaceuticals and cosmetics. It is also used, especially in the Northwest, to manufacture candles and shoe polish, in cosmetics such as body and hand creams and to make soap, sometimes mixed with local medicinal herbs, honey and propolis. Around 1% of beekeepers reported using honey for cosmetic use in Adamaoua.

Propolis has medicinal value, confirmed by chemical analysis[3], showing strong antioxidant and antiradical activity and high levels of phenols and flavonoids for propolis from both regions, with Ngaoundal propolis having the highest levels. Propolis extracts from traditional hives were found to be more active than that collected from tree boles, although the reasons for this finding have not yet been established. Propolis is used in traditional medicines, particularly in the Northwest by 42% of beekeepers and by 7% in Adamaoua. It is used powdered or dissolved in alcohol in ointments, creams and soaps for skin complaints, rashes, fungal infections and ringworm, and chewed for stomach upsets, sore throats and toothache. It is perceived as most effective when used fresh. Paterson (1989) reported that while it was used as a gum to plug leaking vessels and in carpentry, it was not sold. It has been increasingly traded locally and exported in the last five years for its antibacterial, hydrating and emulsifying properties for use in cosmetics and pharmaceuticals.

Bees provide ecosystem services, being important pollinators of flowering plants, including NTFP species in this study: *Prunus africana* (Hall *et al.* 2000), *Yushania alpina* (Mazeyose 2011), *Raphia* spp. and *Cola* spp. (Rodger *et al.* 2004). Interviews confirmed this and indicated that in Adamaoua 25%, and in the Highlands 24% of melliferous species are also subsistence food, cash and timber crops and have medicinal uses (see Appendix 18). This confirms studies showing that bees are major pollinators of tropical forests and crops (Cane 2001; de Marco Jr. *et al.* 2004; Eardley *et al.* 2006; Eilers *et al.* 2011). Bee pollination was recognised as important by beekeepers and is promoted as a major benefit of apiculture by beekeeping associations. Apiforestry[4] has been promoted in the Highlands to encourage forest conservation and afforestation, reduce erosion and landslides and to create and afforest water catchments.

Bees also have cultural value as sacred animals, with swarms implicated in witchcraft. In Oku, stylised bees are carved on the doorposts of the Fon's palace and it is believed that a bee entering a home signifies the arrival of a visitor. The relationship be-

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[3] Results presented in workshops (Ingram *et al.* 2010; Kosalec *et al.* 2010) and Appendix 1.

[4] Term coined by the North West Bee Association (NOWEBA) to describe integrating bee farming with afforestation or reforestation.

tween bees and forests is heavily symbolised, with trees being popular symbols on honey packaging from the Highlands. Bees are associated with warriors and fighting in Gbaya history, documented by Burnham and Christensen (1983). Honey is a highly valued cultural product, also derived from its forest origins. It is mixed with camwood (*Pterocarpus soyauxii*) as a body lotion for chiefs during cultural events and ceremonies and given to chiefs and important visitors. These practices date back to at least the 1920s (Chem-Langhee *et al.* 2011). It is also a prized gift around Ngaoundal, with comb-honey given to visitors a symbol of hospitality and *nakia (*honey cake) consumed during wedding ceremonies. The high social value indicated in interviews is supported by studies of the Gbaya (Howard 2005) and the Nso (Kaberry 1952; Mzeka 1996).

Ecoregion sources and chain locations

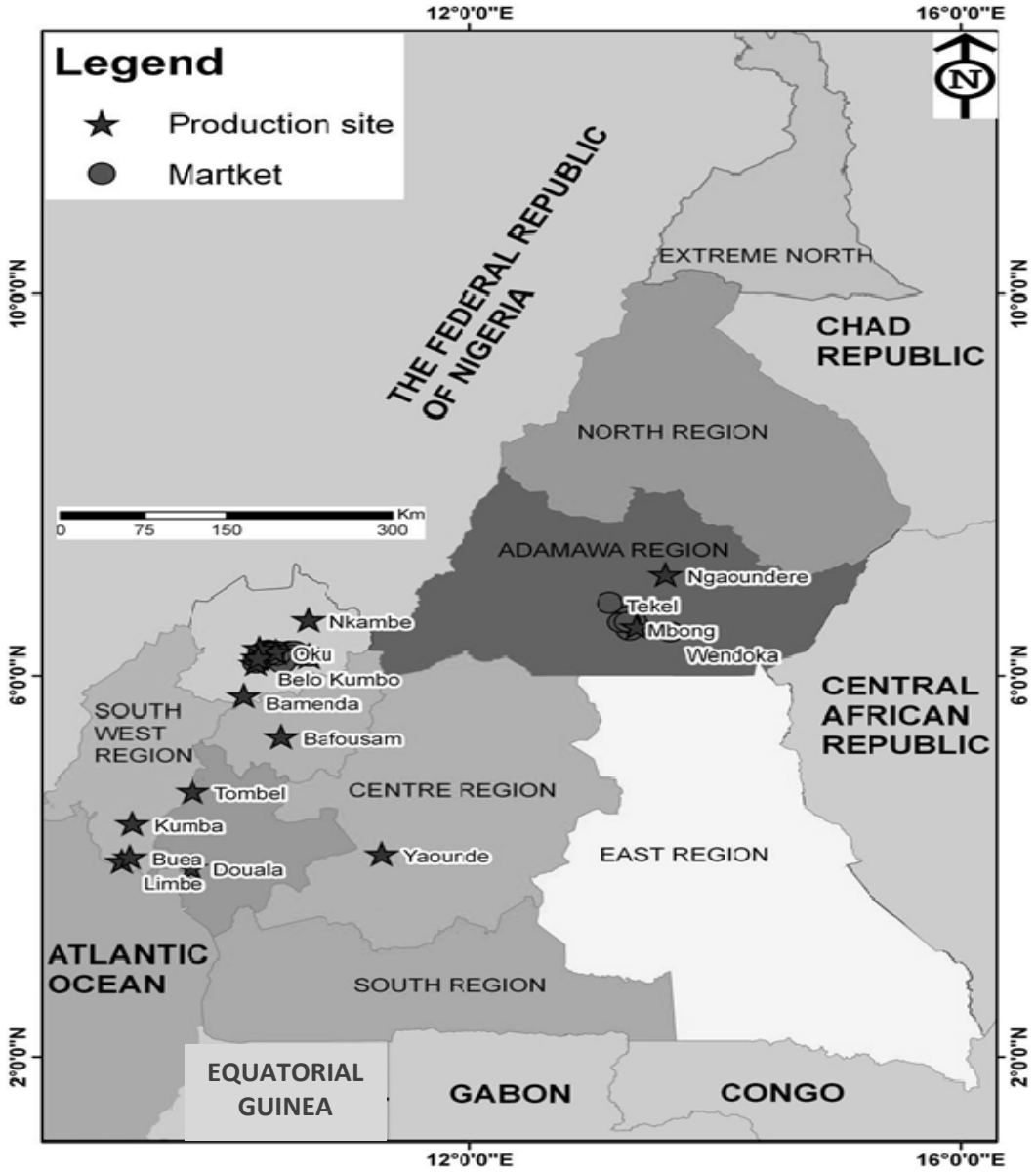
Tropical deciduous forests are some of the most optimum areas of the world for honey production (Gentry 1982). The forests in the savannah and montane ecoregions in Cameroon (Chapter 4) are rich in melliferous plants. Interviews and observations led to 155 melliferous species being noted: 58 forest plants in the Northwest, 34 forest species in Adamaoua and 65 crops and exotic plants in the Highlands (see Appendix 18). Both ecoregions have long dry seasons, allowing bee colonies to build up peak populations to take advantage of good nectar flows. These factors explain why the principal production areas in Cameroon are in Adamaoua and the Highlands, shown in Figure 8.1. In Adamaoua the zone covers around 14,000 km^2, centring on Ngaoundal in Djerem division, stretching from Banyo to Meiganga and up to Ngoundéré. In the Northwest its covers around 9,900 km^2 of the Highlands, covering Bui, Belo, Donga-Mantung and Mezam divisions, focusing on the towns of Oku, Kumbo, Bamenda and Fundong. Smaller scale production zones were found around Mifi division in the West and Fako and Kupe divisions in the Southwest. In the humid forest ecoregions honey is highly prized and is mostly hunted with little beekeeping or trade. Interviews with beekeepers indicated that ecoregion factors influence honey characteristics, particularly where the hive is located, climate (rainfall, temperature and sunlight), altitude and soil quality, as the latter three determine the occurrence and abundance of melliferous species. The bi-annual flowering of many of the main forage species explains the production peaks every alternate year, when two harvests are possible.

The diversity and uniqueness of the flora in these ecoregions results in hive products with unique characteristics, especially propolis and honey (see Appendix 15). Honey from the savannah forest is liquid, rich in minerals and dark brown with a treacly taste. Honey from the montane forests of Kilum Ijim is sweet and citrusy, granulated and white in colour. Honey from the Highlands forest-farm interface is golden coloured and liquid. The colour and texture of propolis also varies according to its botanical source: brown and dry in Adamaoua, darker brown and waxier in the Northwest. Discussions with beekeepers resulted in ecoregion-linked honey profiles being developed using standard physical-chemical parameters (see Appendix 15). The profiles corroborate physical-chemical analysis which emphasise the regional and seasonal differences (Mbogning *et al.* 2011). From the production areas, the chain extends to consumers at different locations through six main channels, shown in Figure 8.2.

In common with other African producing countries (McAdam 2007), the majority of honey is consumed within the country. The largest proportion from the Northwest flows from beekeepers selling filtered or comb honey to processing organisations which retail to consumers. A second channel flows via wholesalers and processors buying and

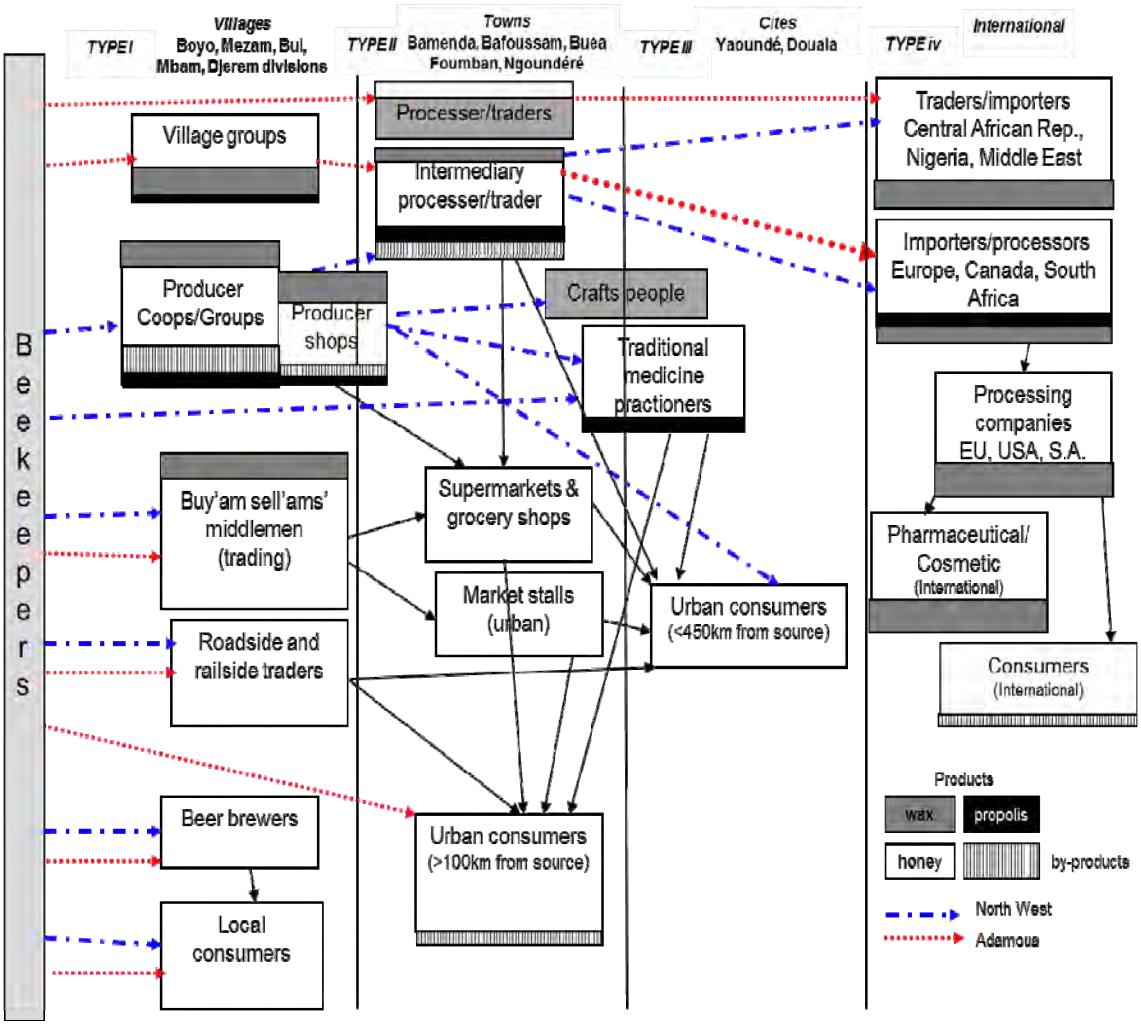
filtering comb honey to minimise adulteration and profit from the large scale. They predominantly sell to local Type I markets and Type II markets in nearby towns. Approximately 60% of Northwest honey reaches Type II markets, supermarkets and shops in towns such as Bamenda and Bafoussam. A third channel from Ngaoundal for approximately 85% of production, is by rail to markets, shops and supermarkets in Type III cities like Ngoundéré, Douala and Yaoundé. A fourth channel for 25% to 33% of production is the traditional, small-scale channel from beekeepers directly to local consumers. A small proportion (estimated 11%) of wax is sold from beekeepers to processing associations to end users. A fifth, well-established export channel for honey (10% of production) and wax (30%) from Adamaoua and small volumes from the Northwest, flows by rail, truck and bus to Ngoundéré and onto Nigeria, Central African Republic, Lebanon, Chad, other northern African countries and the Middle East. The sixth and most recent channel for honey and currently the largest for wax and propolis are through importers of speciality organic, ethical trade and conventional hive products in the Middle East, USA, Canada and the European Union.

Figure 8.1 Map of apiculture value chain study area in Cameroon



The proportion and products sold has changed considerably since the 1940s when the only channels were for honey and wax from beekeepers direct to consumers, or for honey via small traders to Type I markets. Since the mid-1980s honey has increasingly been sold further afield, with Northwest honey sold in supermarkets and shops in Yaoundé (Paterson 1989) and hive products in Type II markets. By 2010 honey was sold in at least twenty one supermarkets, market stalls and pharmacies in Douala, Yaoundé, Bafoussam. Regional differences between longer chains from Adamaoua and the more diversified, shorter chains from the Northwest are apparent in the value chain map in Figure 8.2.

Figure 8.2 Apiculture value chain and product channels



Source: Research results

Apiculture chain actors

This section introduces the main groups of actors in the value chain. In both study areas the numbers of beekeepers and related organisations have been increasing in the last decade and constitute the largest group of actors in the chain. By 2009 there were at least an estimated 21,417 beekeepers in Cameroon, the majority of which of whom are

in Adamaoua (58%) and the Northwest (22%). These beekeepers represent a small proportion of the total population per study area region, shown in Table 8.1.

The way the chain is organised means that once beekeeping and processing skills are acquired there are few barriers to entry for conventional beekeeping. It is a low input activity, largely carried out during the off-season for agriculture. Apiculture produces multiple products with many uses, with not only an economic, but also high social value. These factors mean that a significant number of around 17,663 people) are active in chains from the two study regions. Men dominate all sections of the chain, and in Adamaoua, the Gbaya ethnic group predominates.

Table 8.1 Population statistics of study area and apiculture chain actors

Region/ Division	Capital	Surface area km²	Population[1]	Pop. density km²	N° value chain actors[2]				% total population
					Harvester	*Trader*[3]	*Exporter*	*Nursery workers*	
Northwest	*Bamenda*	*17,812*	*1,728,953*	*100*	*4,615*	*447*	*5*	*56*	*0.00*
Bui	Kumbo	2,297	321,969	32	1,216	60		16	0.00
Boyo	Fundong	1,592	124,887	31	2,241	20		20	0.02
Mezam	Bamenda	1,745	524,127	35	827	75		20	0.00
Adamaoua	*Ngoundéré*	*63,691*	*884,289*	*14*	*12,315*	*190*	*22*	*15*	*0.01*
Djerem	Tibati	13,283	124,948	9	10,000	100	20	9	0.11
Total					*16,930*	*637*	*25*	*71*	

[1] 2005 census population (National Institute of Statistics 2010) [2] *Sources:* Research results [3]Includes traders, retailers and processors.

However, changing governance arrangements, notably collective action, using different hives and increased hive product processing (section below), have increased women's participation and provided them with increased legitimacy and visibility in the chain. Cultural, religious and societal gender biases have been redefined as women perform more than their traditional roles of cooperative secretary and retailers. Role models and increases in education and literacy appear to contribute to changes. These roles are not unique to the apiculture chain: empowering rural women without engendering their capabilities has been recognised as difficult in Cameroon and across Africa (Fonjong 2008; Shackleton *et al.* 2011).

The direct actors in the chain are categorised as beekeepers, processing organisations, exporters, importers and consumers. There are also international and national regulatory authorities and support actors including development and conservation NGOs and research organisations. The beekeepers studied had on average 5.6 years of experience, with 58% in Adamaoua and 46% in the Northwest having up to ten years' experience, ad 23% and 25% respectively having up to 20 years' experience. One beekeeper had 40 years' experience. The average age of a beekeeper in Adamaoua is 43 (SD 15) and 39 (SD 15) in the Northwest. On average 56% have primary education in the Northwest and 18% secondary education, with 76% and 16% respectively in Adamaoua. For the uninitiated, working with bees can be frightening. The majority of beekeepers (61%) in Adamaoua have learnt by observation and hands-on practice passed on by family and friends, whilst in the Northwest, 97% received training from beekeeping organisations, NGOs and projects. Beekeepers tend to be married (94% in the Northwest and 100% in Adamaoua) and heads of their families, which have an average size of 8.25 (SD 4) in Adamaoua and 7 (SD 3) in the Northwest. Beekeeping is traditionally a male activity (Kaberry 1952) (Table 8.2), but an increasing number of women are becoming active. In both areas around a quarter of beekeepers are aided by women and

39% by their children. Although development projects have encouraged communal apiaries, these efforts have not been very effective and most beekeepers own and manage their hives individually.

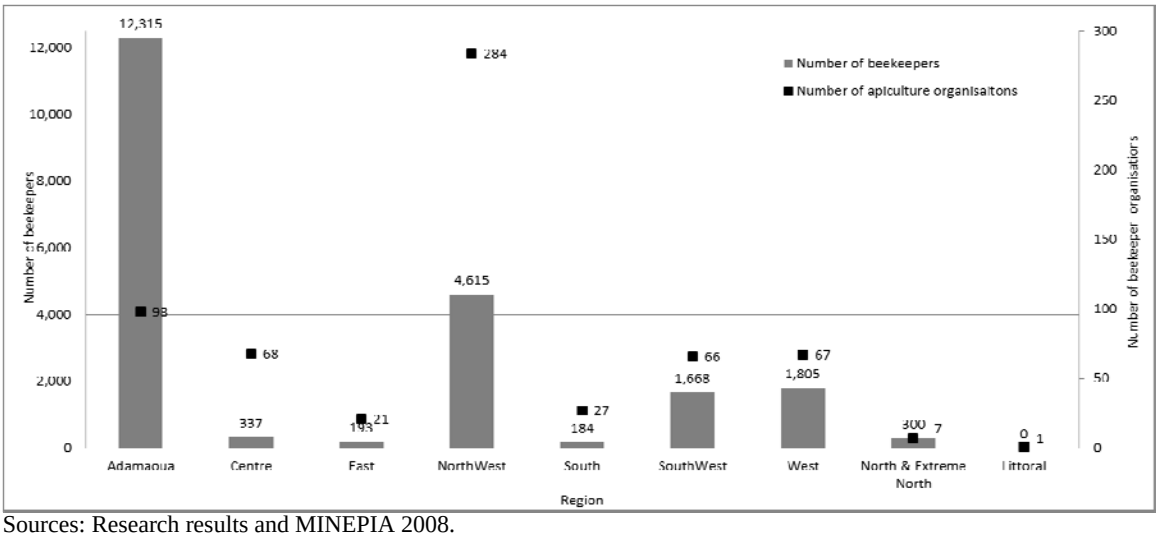
Table 8.2 Beekeepers' characteristics in Adamaoua and Northwest regions

District and Region	% households involved in beekeeping[1,3]	% annual household income from apiculture[1,3]	Ratio male/ female beekeepers	Livelihood (% primary activity)[1,3]	Average national household incomes[2]
Djerem, Adamaoua	68	48	86/14	55%	17% > 1$ day; 50% > 2$ day
Bui, Mezam, Boyo, Northwest	55	45	80/20	34%	
Average	62	47	83/17	45%	

Sources: [1] Research results. [2] UN Human Development Report 2007/2008, United Nations World Prospects Report 2004. [3] Averages over period 2007 to 2009.

Shown in Figure 8.3, collective action varies greatly by region, with at least 8,600 beekeepers members of 639 registered groups in 2008. Reflecting the history of cooperatives and collective action described in Chapter 5, twice as many beekeepers (41%) in the Northwest are members of associations than in Adamaoua (21%). Nationally, the average length of time that associations have existed is six years (SD 1), in the Northwest 9 (SD 3) years and 6 (SD 2) in Adamaoua. This suggests that collective action is well established. In the Northwest, the majority of groups (61%) are registered, mainly (94%) as CIGs and cooperatives (4%). Most operate group savings (*njangi*), share information and techniques and around a fifth of groups met regularly. Just under half were set up by NGOs as a condition to obtain support. In Djerem division a third (36%) were registered and 61% operate *tontines* (saving groups). The majority of these groups have been set up with support of the now defunct Modern Beekeepers of Cameroon (MOBEC) in 2002 and by a group of beekeepers disenchanted with the results of MOBEC, the Djerem Union of Natural Honey Producers (UGIPROMNAD) around 2004 (Howard 2005; Tchana 2010) and 53 by Guiding Hope since 2006.

Figure 8.3 Beekeepers and organisations per region, Cameroon 2008



Sources: Research results and MINEPIA 2008.

At least fifteen processing organisations in the Northwest and three in Adamaoua are currently active. Table 8.3 details the oldest and largest, which have vertically integrated activities to different extents. These organisations cover over 70% of beekeepers in the in the Northwest and around 70% of production, and around 12% and 2% respectively in Adamaoua. Most buy honey from members or beekeepers, process and package for wholesale and retail through their own shops. Four privately-owned honey shops in Bamenda also purchase directly from beekeepers and sell to supermarkets, shops, traders and individuals in cities, largely through ethically-connected and family networks. Most organisations have diversified into related services: training, conservation and development projects, plant nurseries and selling beekeeping equipment. Processing is generally of low quality and artisanal, although labelled and well packaged honey has increasingly appeared in the last decade. By 2010, fifteen brands were sold in Yaoundé and Douala, up from six in 2007. This growth reflects the increase of entrants to the market. In the West, Southwest, Northwest and Yaoundé at least five stores and one market stall dedicated to apiculture products existed by 2010. Processors have introduced innovations such as small honey sachets, media campaigns promoting health and medicinal properties of apiculture products, by-products, recipe books, and use of the media, fairs and exhibitions.

Table 8.3 Overview of major apiculture processing organisations

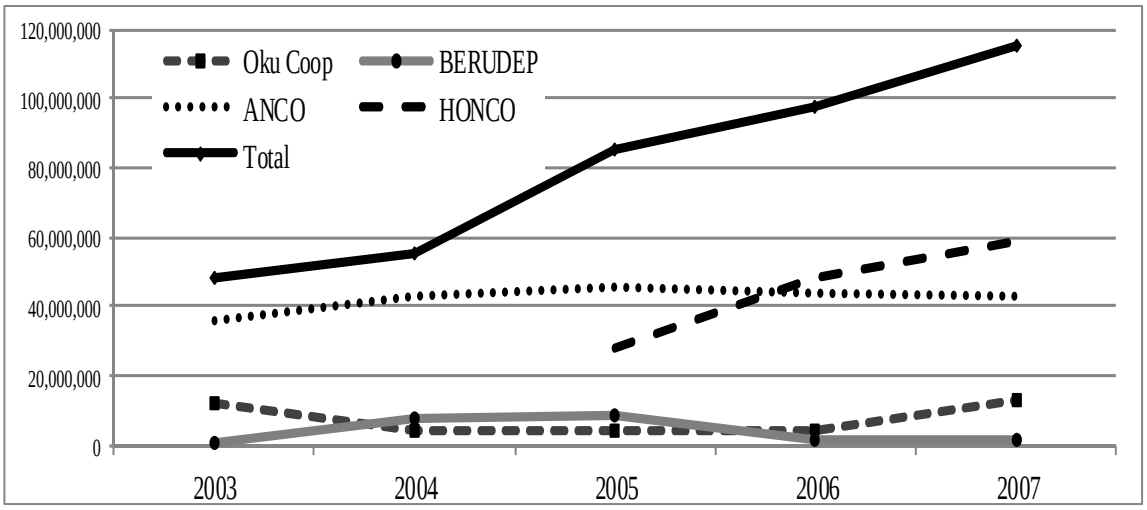
Organisation	Les Meillieries	Guiding Hope	ANCO	HONCO	BERUDEP	Oku Honey Coop	Oku Beefarmers
Location	Yaoundé	Ngaoundal	Bamenda	Bamenda	Fundong & Belo	Oku	Oku
Organisation type	CIG	CIG	NGO	Coop	CIG	Coop	CIG
Date established	2009	2006	2002	1993/2003	1997	1987	1988?
N° of staff	4	22	8	4	5	5	3
N° members		6		1,080	215	216	28
N° suppliers	50	1,400	80	80	1,550		
Average annual production							
Honey (litres)*	est. 5,000	44,000	28,000	25,000	8,250	6,741	4,200
Wax (kg)*		44,000	280	447	est. 50	264	15
Propolis (kg)		70	3	3	est. 5	2	
Honey beer (l)						75	50
Chain activities							
Production			√	√	√	√	√
Agroforestry		√	√		√	√	
Bulking	√	√	√	√	√	√	√
Distribution	√	√	√	√	√	√	
Training	-	√	√	√	√	√	√
Processing	√	√	√	√	√	√	√
Packaging	√	√	√	√	√	√	√
Retail	√	√	√	√	√	√	√
Export	Potential	√	√	√			

Source: Research results. *Key:* *Number of years used to calculate average production varies for each organisation. CIG= Common initiative group Coop= Cooperative NGO= Non-governmental organisation.

At its peak from the late 1990s to 2002, the North West Beefarmers Association (NOWEBA) had 6,000 members, 29% of whom were women. It had 250 cooperative groups with training, credit, collection and sales through its own shops and market stalls in the Northwest. In 2002, NOWEBA split into the NGO Apiculture and Nature Conservation Organisation (ANCO), which focuses on conservation, marketing and processing and the Northwest Honey Cooperative (HONCO), a production and sales organ-

isation. The non-profit Belo Rural Development Project (BERUDEP) generates revenues through volunteers, grants, tourism and apiculture from its own and members' products, financing beekeeping training, farming, conservation and development activities. The Oku Honey Cooperative Society (Oku Coop) and Oku Beefarmers Cooperative both collect, process and market honey, wax, propolis and beer and provide training, equipment and credit to members. Both self-initiated, the Oku Coop has secured several projects and support from the Bamenda Highlands Forest Project (BHFP). A member-manager coordinates its activities, gradually increasing production by building up credit to purchase honey. With BHFP support, low key forays to market honey outside of the production area were made. Annual average turnover ranges from 74,515 to 207,000 FCFA (152 to 422 US$) per organisation for the period 2003 to 2007 (in Figure 8.4).

Figure 8.4 Annual revenue of apiculture processing organisations 2003 to 2007



Source: Research results

In Ngaoundal most beekeepers work individually, supported by families during harvest and in constructing hives. Beekeeping groups generally have a social function, and group sales are not common, although increasingly encouraged by NGOs since the mid-2000s and recently by international buyers. The strongly individualistic culture of the Gbaya ethnic group, large distances between villages, poor infrastructure, established traders and negative experiences with NGOs have combined to make collective action less common in Adamaoua. In Ngaoundal, Guiding Hope and a support organisation Programme d'Appui aux Initiatives Locales à L'Auto-Emploi (PAELLA-E) have been working with beekeepers since 2006. They have legalised, certified, worked with and trained 53 village-based groups to adapt traditional methods to produce organic, ethical trade apiculture products, obtaining Soil Association- certified organic status in 2008 and ethical trade certification in 2010. Wax and honey are sold nationally and exported worldwide. Guiding Hope also has links with ApiTrade Africa, a regional trade organisation. Les Meillieries buys from individual beekeepers and traders around Meiganga and Tibati and sells in Douala and Yaoundé. It is in the process of registering to export to Europe.

Despite collective action, 50% of beekeepers mentioned a lack of coordination and collaboration and the saturation of local markets as problems. This is corroborated by support organisations (WHINCONET 2006; Ade 2009). In response, regional and national associations and unions have been established, with encouragement from donors. The Federation of Beekeepers' Associations of Cameroon was set up in 1995 led by NOWEBA, joining four beekeepers' associations from three provinces. However within a year the Federation failed due to internal conflicts and unrealised funding. Since 2007, apiculture groups, backed by SNV and the FAO, have supported a new association growing from the Southwest and Northwest regions with a strong collective, networking history (Ingram *et al.* 2007). In parallel, Guiding Hope, Les Meillieries and other traders have been collaborating since 2009 with the Ministry of Livestock, Fisheries and Animal Production (MINEPIA) to create an Apiculture Interprofession, a network joining chain actors and regional beekeepers associations. In August 2010, the Interprofession was legalised and is slowly developing national apiculture policies and honey quality standards. Learning from past lessons, the associations are concentrating on low level advocacy for quality standards, export regulations and raising consumer awareness. Guiding Hope and Les Meillieries also formed the Union of Apiculture Exporters in 2007 to represent exporters to the European market. In 2008 this Union set up a Council for National Apiculture Security to secure Cameroon's application to the European Union for a Honey Monitoring Residue Scheme (HMRS) for EU exports (see Box 8.1). In 2009 MINEPIA set up the 50 million FCFA (96,000 US$) 'Projet d'Appui au Développement de la Filière Apicole' (PADFA). This focuses on providing training, equipment and setting up beekeeping groups, with 3,200 beekeepers and 310 groups registered to date. Market information systems have also been piloted to fill information needs, resulting in higher local market sales and prices (van der Goes *et al.* 2009; SNV 2010b).

In the Northwest, plant nurseries have been integrated into the activities of processing organisations. At least fifteen NGOs and enterprises have nurseries of multipurpose and non-native trees and plants, provide plant cultivation and beekeeping training and conduct beekeeping and agroforestry projects. Thirty small-scale planting schemes, some project funded, and forest enrichment by farmers, community forests and councils using native and exotic melliferous species were observed. Almost half of these had multiple objectives to secure water catchment protection, provide NTFPs for fuelwood, food and medicinal use, timber for carving, bee forage and demarcate forests and lands using live fences). These were largely supported by grants, the World Agroforestry Centre (ICRAF) and the government-funded Rural Forestry and Agroforestry Project (PAFRA). PAFRA reported that over 2 million trees, 60% of which are melliferous, were planted on private land, communal, community and council forests from 2005 to 2009. Small nurseries for indigenous and exotic fruit trees, bamboo and raffia were started in 2010 around Ngaoundal, set up by Guiding Hope and MINADER Community Education and Action Centre in Wassande, near Meiganga.

In Adamaoua about 15 Nigerian, Cameroonian and Lebanese intermediaries (known as wholesalers, transporters and 'buy'am-sell'ams') run informal, well-organised operations. They tour villages in Adamaoua and occasionally the Northwest during the harvest season to buy honey and wax. Most also trade in other products and two are also government officials. They often collaborate for large orders and work on command, processing honey for all market types. Some Cameroonian intermediaries work on a trust-based system, paying advance credit system to regular, larger scale beekeepers.

Retailers sell to individual consumers, restaurants, artisans, pharmacies, market traders and supermarkets. The estimated 447 traders in Kumbo and Bamenda markets in the Northwest are predominantly female (66%). Typically they are between 36 to 45 years of age, married (75%), with 35% having attained secondary level education. They buy honey from wholesalers or direct from beekeepers in quantities of about 20 to 100 litres and retail it to consumers. An estimated 150 mostly young male hawkers sell low grade honey in Bamenda, Bafoussam, Yaoundé and Douala markets. In Adamaoua around 50 honey retailers with similar profiles operate in Ngaoundal, Meiganga, Tibati and Ngoundéré. At six of the stations along the Yaoundé to Ngoundéré train route, an estimated 10 to 15 women and children and a few male hawkers of all ages, announce their wares as the once-daily train briefly stops with cries of "*miel, miel, miel*". They sell recycled 1.5 litre plastic bottles of low quality, crudely filtered honey. Honey beer vendors were not surveyed, but observations and informants indicated that they are often middle-aged women who own and operate small, informal bars and stalls in market towns or sell from their houses in remoter, large villages. For many brewers and vendors, honey beer is an additional source of income. Although this activity is not supported by law, it is usually tolerated by local municipalities because of its long history and tradition.

At least 25 projects[5] have been implemented in the last three decades, focussing mainly on the beekeeper, production end of the chain. Apiculture and especially forest-based apiculture has been heavily promoted as a way to attain conservation and development win-wins (Abbot *et al.* 2001; Timmer *et al.* 2005; Mazur *et al.* 2008). This has been encouraged by development and beekeeping circles (Bradbear 2004; DiN 2009; Lietaer 2009) and picked up by local conservation and beekeeping NGOs (API-CAM 1998; Abott *et al.* 2001; Fombad *et al.* 2006; Oyono *et al.* 2012). Evaluations of whether the dual aims have been met are not positive and the evidence presented is general and does not enable conservation 'successes' to be attributed directly, or only, to apiculture (Brown 2001; Purcell *et al.* 2005). Technical support and information has also been provided by API Trade Africa, the Technical Centre for Agricultural and Rural Cooperation (CTA) and CIFOR. SNV has been taking a value chain approach in the last six years. They have supported BERUDEP, the Oku Honey Cooperative and worked with Guiding Hope to develop standards, regional and national platforms. SNV and Guiding Hope are also working with the Kilum Ijim White Honey Association (KIWHA). Since 2010 the African Office for Intellectual Property (OAPI) and French International Agricultural Research Centre (CIRAD) have supported them to develop and implement a Geographical Indication certificate for montane white honey, financed by the French Development Agency (AFD). Final approval is expected in late 2012. Fluctuations in interest by donors appear related to preferences rather than sector performance.

There are distinct differences between women and men's roles in the chain and benefits derived. Men dominate production and wholesale and women retail, determined by the physical work of carrying and climbing trees for hive installation and harvest, as women are traditionally barred from climbing trees. This is in contrast to Ethiopia and Zambia, where women are main beekeepers (Husselman *et al.* 2009). Project-promoted

[5] From WWF, Birdlife International, DFID, IUCN, FAO, SNV, GTZ, INADES, Bees for Development, HIPIC, Heifer International, Bees Abroad, VSO, Peace Corps, Oxfam, religious charities, monasteries and the RIGC project. See list of acronyms for meanings.

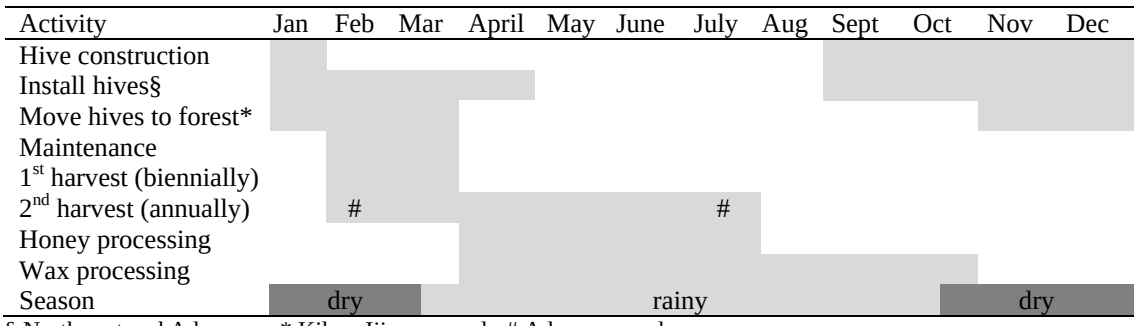
technologies and practices, such as using Kenyan Top Bar (KTB) hives[6] and placing hives close to family compounds and on stilts, avoids climbing and lifting and have encouraged women's participation. Increased processing has also favoured women. Organisations such as ANCO have actively targeted women, with a third of the 6,000 beekeepers trained being female. Promoting collective action and pooling finances have further resulted in their increased participation either in mixed groups and at least seven female beekeeper groups in Adamaoua and 22 in the Northwest. Women however indicated that as their trading activities are largely informal, they are invisible to policymakers, project and government support with little recognition for their multiple roles. Dynamic leading women in BERUDEP, HONCO, Guiding Hope, Paradise on Earth and large-scale traders (such as Jane Lailam, also head of the Kumbo Business Women's Cooperative Women), serve as role models.

Local consumers are of all ages and social status. Consumers belonging to ethnic groups from the major production areas are more knowledgeable about honey and have higher consumption rates: on average 10 litres annually in the Northwest, compared to two litres (SD 19) in Adamaoua. Nearly half (45%) of consumers did not know that honey is produced by bees from plants. In Adamaoua the 25 to 50 litres annually consumed per household was attributed to the prevalence of Islam, as the prophet Mohammed reportedly said honey is a remedy for every illness. Consumption is influenced by quality, price, visual attractiveness, colour and taste. The majority (60%) of urban consumers valued origin and quality (40%). In the Northwest 42% of consumers are influenced by packaging, associated with hygiene and quality. Many urban consumers were unfamiliar and sceptical about the source of different coloured honeys, concerned about adulteration and contamination. Tests, labelling and promotional material are seen as indicators of quality. Honey's multiple uses and benefits are most known in the Northwest and less in urban locations. Most consumers believe that honey is healthy, natural and a good replacement for sugar. Price sensitivity ranges from 500 FCFA (1.13 US$) a litre with no regard for packaging, quality or origin, to half of Northwest consumers paying above 1,000 FCFA (2.27 US$) a litre and 20% indicating they would pay 2,500 FCFA (5.68 US$) or more per litre.

Chain activities

The activities conducted in the chain are strongly influenced by the seasons and climate of the ecoregions, and are shown in Figure 8.5.

Figure 8.5 Apiculture calendar



§ Northwest and Adamaoua * Kilum Ijim area only # Adamaoua only

[6] Hives with sloping sides and bars of wood across the top to which the bees attach the comb.

Hive construction differs per region due to traditional styles, materials and skills (detailed in Appendix 15). In Adamaoua traditional, tapered cylindrical hives are made by 99% of beekeepers, 78% of Northwest beekeepers build cylindrical hives and the remainder purchase or make KTB hives. Hollow log, bark hives and clay pots are no longer used in either area. Hive type does not influence honey characteristics but affects the ease of harvest and management and therefore production, and the volume of propolis harvested. In the Northwest, higher annual average honey volumes were found from KTB hives (112 litres compared to 77 litres from traditional hives), attributed to the ease of harvesting (Tsafack Matsop *et al.* 2011). In Kilum Ijim, hives are initially placed on farms and once colonised, are head-portered and installed in the forest on supports or in trees around 1.5 to 2.5 m height. A small but growing trend of keeping hives around the home and farm was noted. In Adamaoua hives are installed directly high up (2 to 3 m) into trees in the forest. This minimises damage from bush fires and predation by honey-loving animals (ants, snakes, termites, honey badgers (*Mellivora capensis*) and African palm civets (*Nandinia binotata*), which were noted as the major production problem by 42% of Adamaoua beekeepers. Beekeepers indicated that maintenance results in higher colonisation rates, lower absconding rates and higher production. In the Northwest, this involves periodically checking hives for damage by pests, predators, storms, fallen trees, fires or strong winds, performing repairs and lightly clearing undergrowth around the hive. In Adamaoua, hives may be visually inspected once or twice a year.

In the harvest season, combs are harvested in the early evening in Adamaoua and during the day in the Northwest, as night harvesting[7] is increasingly taboo due to the higher bush fire risk. Most beekeepers do not use modern protective clothing or traditional raffia and grass 'suits' but do use smokers[8]. Smoke has a soporific, calming effect on bees but imparts an odour to honey. Most Adamaoua beekeepers harvest all comb from the hive. In the Northwest, 50% of beekeepers follow 'best practice' using metal smokers, leaving unripe combs and harvesting only two-thirds of ripe combs. Propolis is picked off hives in the Northwest and is mainly taken from wild colonies in Adamaoua, where it occurs in larger quantities. The call of the greater honeyguide (*Indicator indicator*) bird may be used to find wild colonies. A few (9%) beekeepers maintain records of hives and quantities harvested. Combs and propolis are then head-portered in buckets to the village.

The first stage of processing is to separate the honey from the wax. The honeycombs are gently crushed and filtered. Most individual beekeepers process at home: those belonging to processing groups send combs to collection centres for bulk filtering, usually within a day of harvest to avoid solidification, ensuring quality and allowing both honey and wax to be obtained. Filtering removes debris but results in losses of up to 30%. All use basic equipment (raffia or plastic sieves, buckets, raffia, stainless steel or fabric filters, recycled plastic food oil containers for storage). Around 33% of Northwest beekeepers package honey in recycled plastic containers, with and without labels. The processing organisations now use dedicated plastic pots for retailing. Four processing organisations have specialised equipment obtained through grants or gifts. After filtering

[7] Bees are poikilothermic and less likely to sting at night.

[8] A device that generates smoke from smouldering selected leaves and grasses to calm bees. Traditionally a verbena and euphorbia leave and grasses 'torch', an imported or locally made metal smoker and bellow.

the combs may be washed and the resulting honeyed-water may be made into honey beer. In the Northwest villages around 50 to 75% of honey is brewed. Two processing organisations make wine using the closed fermentation process, with a shelf-life of over a year.

Crushed, washed combs are melted to consolidate the wax. In the Northwest, a small-scale au-bain-marie method is used to produce a high quality, yellow wax. In Adamaoua, three methods are used. Combs are melted over charcoal and the wax collected in moulds, producing a low quality, dark brown, smoky-smelling black coloured wax. In the second method, honey is separated from combs using solar energy, the wax is then boiled in water in a metal drum over an open fire. The liquid wax is scooped into nylon sacks and wrung into moulds. This produces a slightly smoky, lighter brown coloured wax. While effective on a small scale, both techniques are labour, time, water and fuelwood intensive and produce low quality wax. Guiding Hope has experimented with large-scale solar and electric melting to produce a high quality yellow, smoke-free wax using fewer resources, at lower costs, and with less environmental and health impacts. Propolis is used fresh, stored in plastic or dissolved in alcohol, and then used in tinctures, soaps and creams.

Apiculture product values

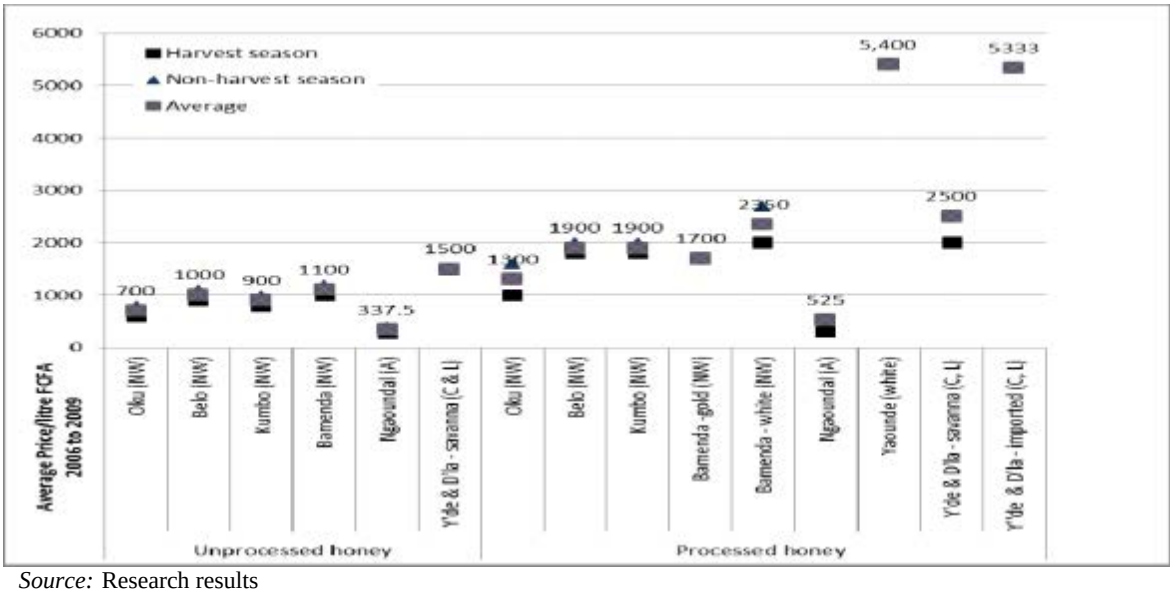
A small proportion of the honey harvest – shown in Figure 8.7 below – is consumed by beekeepers and a smaller proportion is given as gifts. The majority, on average 88% of production, is sold. Most (62%) of beekeepers in the Northwest sell processed honey, the rest sell honey unprocessed. Other hive products are generally thrown away, with 28% of beekeepers extracting wax, although 100% harvest propolis. In Ngaoundal the majority (91%) of beekeepers sell unprocessed honey and 8% filtered. Only a small proportion (2%) also process wax and (7%) collect propolis. Average annual honey yield per hive per year in the Northwest was between 10 to 15 litres in 2009 and in Adamaoua in 2007 on average 7 to 10 litres per hive. This provides a net income per hive (if all by-products are collected) of 26,250 FCFA (54 US$) annually in the Northwest and 19,999 FCFA (41 US$) in Adamaoua[9]. More details about incomes are given in the section on livelihoods.

Honey prices vary per market and seasonally, shown in Figure 8.6. Product prices reflect classical demand and supply theory, with lower prices in the Adamaoua production zone due to high supply and low demand, and the inverse in the Northwest, where the higher population density and use creates higher demand. Seasonal variations in price occur in both regions, with price increases of up to 52% in Ngaoundal in the non-harvest season and 10% in the Northwest. In Type III urban markets, no seasonal retail price variations were noted. Value is affected by labour, hive and processing equipment, taxes, transport, storage and packaging costs. Labour constitutes the highest proportion of total costs for beekeepers at 50% in Ngaoundal and 80% in Oku. Most beekeepers however do not see their input or hives as costs when locally available ‘free’ natural materials are used. This negation of human and natural capital costs is common for forest products (Beauchamp *et al.* 2011; Tsafack Matsop *et al.* 2011). It is also attributed to

[9] The figure is based on average honey production of 12.5 litres in the Northwest and in 8.3 in Adamaoua and a retail price of 1,500 FCFA per litre to earn 18,750 FCFA; 2 kg of wax worth 5,000 FCFA and 0.5 kg of propolis worth 2,500 FCFA.

the low opportunity costs: as apiculture activities commonly occur in the agricultural low season and at night.

Figure 8.6 Average honey selling prices in Cameroonian markets 2006 to 2009



Source: Research results

Around Kilum Ijim, the distribution of average profit margins gained by producers (29%), wholesalers/distributors (46%) and retailers (25%) per litre of white honey. Those with dedicated managers have increased scale and professionalization to obtain higher profit margins through upscaling and accessing more Type II and III markets outside the production areas and vertical integration. However, issues of trust, ethnic ties and cultural relationships have sometimes made the appointing of capable and accountable managers difficult. In the Northwest, the propensity to work in groups has helped reduce individual transaction costs by linking buyers to groups. In Adamaoua, the groups selling to Guiding Hope also benefit from higher prices and long-term contracts. Profit margins in Adamaoua are slightly higher, with beekeepers earning 17% profit, processors 31% and wholesalers 15%. This is due to the larger economies of scale. Associations have reduced costs by cutting out intermediaries, giving producers a competitive advantage. The costs and risks that associations and wholesalers take, particularly in the regional and export channels by bulking volumes, travelling long distances, storing, packaging and exporting are seen as exploitative by some beekeepers and development organisations, due to the fact that on average in the Northwest a wholesaler/processor sells for 100% higher price than a beekeeper and a retailer (15%). Profits are also increased by marketing and packaging. For example, Guiding Hope uses leaflets stating laboratory results by the University of Yaoundé to promote quality and selling in pharmacies at 10 to 15% higher than street-vendor prices. ANCO, Guiding Hope and Rural Development through Apiculture (RUDA), a Southwest-based processer, all sell small 25 g sachets, popular due to their affordable price, while generating higher profits and turnover.

The geography of key production sites in relation to consumer markets, transport hubs and support services has implications for the value of apiculture products. Both production areas are isolated: on average 70 km from regional capitals, largely on par-

tially and unpaved roads and over 400 km from the main cities. The benefits of isolation include sufficient forest forage which is naturally organic. However remoteness also brings disadvantages in increasing costs, difficulty in physically accessing markets, information, equipment and support. Collective action has lowered costs to overcome some barriers. For example, three organisations have retail outlets in regional capitals from where products are marketed to the major cities and sold up to 110% above the production area selling price (US$ 3.3 per kg in mid-2010). Many associations use their strong social networks via ethnic and cultural societies to distribute and sell honey via friends and family. Trust-based credit systems are common, although anecdotes of losses and theft were encountered. To counter this, Guiding Hope has been experimenting with advance purchase and marketing incentives.

With increased commodification the economic value of apiculture products has also risen over time, with (inflation adjusted) prices in Bamenda increasing by 220% from the 1989 average price of 500 FCFA per kg (0.81 US$) (Paterson 1989). The economic and cultural value of honey is reflected in its selling price and differs by region. Figure 8.7 shows that the price of honey from Adamaoua is lower than from the Northwest in all market types. This difference is attributed to lower costs (Ingram 2011a; Tsafack Matsop *et al.* 2011), increased economies of scale, greater supply and lower local demand. The much smaller production quantities and higher cultural and multiple use values of honey from the Northwest and especially Oku, increase the price, especially of white but also golden honey. This means that the price of white honey in type II and II

Box 8.1 Import requirements for honey and wax

Water content, hydroxymethylfurfuraldehyde (HMF) and diastase are used by importers to measure honey purity. This is despite strong criticism (White 1994), as diastase varies largely depending on botanical origin and high water content (up to 25%) and high HMF (over 100 mg/kg) which is common in tropical honey (Sanford 1996). It is even a sign of non-adulteration. Testing is expensive at around 25 US$ per sample. Cameroonian exporters see this as an unfair trade barrier as it translates into an unequal market requirement for tropical honey. They have had high HMF honey rejected as only saleable as lower quality (lower priced) 'bakers honey'. In response, Guiding Hope is trialling different logistics, storage methods and refrigerated containers to reduce transport time and avoid the high temperatures which create high HMF levels. The European Union Honey Monitoring Residue scheme (HMRS) (European Council 2002) regulates pesticide and chemical levels in honey imports to the EU, responding to adulterated honey from large-scale exporters such as China and Argentina. It applies to all imports, regardless of Cameroonian production being dominated by organic, forest-based beekeeping with no evidence found of chemicals used in beekeeping. The Cameroonian HMRS was recognised by the government and approved by the EU prior to any exports being made. Guiding Hope proposed and led the challenging 18 month process with MINEPIA. The HMRS was approved in 2009 (see Ingram and Njikeu 2011). Individual exporters have to register in Cameroon and be approved by the EU. A similar process is required for wax. To date only Guiding Hope has maintained its annual registration since 2009. Annual testing of honey samples is required before honey is accepted for export. Tests can only be conducted in EU-certified labs (which do not yet exist in Cameroon, adding further costs). To date the HMRS costs Guiding Hope around 2,000 US$ annually. Other industry standards requirements add to the considerable barriers small companies face in export (Ingram *et al.* 2011b). For example, South Africa requires imported honey to be irradiated and in certain types of containers. The USA and Canada have different phyto-sanitary requirements. Organic certification does not allow irradiation and the containers specified are not accepted by other exporters, creating further barriers to enter different import markets.

markets is comparable to average honey prices in European and USA consumer markets (CBI 2006). High transaction costs, complicated logistics, small-scale bulking and meeting stringent export standards (shown in Box 8.1) combine to make exported Cameroonian honey expensive compared to honey from major exporting nations such as China and Argentina. This situation mirrors other developing country experiences (Bees for Development 2006; van Loon *et al.* 2006). It means that only high value, niche export markets, such as organic, ethical and fair trade certified, create sufficiently high margins to be economically viable.

Honey is the highest volume and value apiculture product traded in the chains, shown in Table 8.4. Domestic and regional markets for table honey were reported by traders and exporters to have increased in the last three decades. In the Northwest, an estimated 112 tons was produced in 1988 (Paterson 1989) and in 2008 at least 158 tons. Almost 95% of beekeepers reported increasing production in the last three decades and 93% in the last five years. In Adamaoua, production also increased in the last 30 years according to 78% of beekeepers and 85% in the last five years. Honey production and value per region are shown in Table 8.4. Adamaoua is the largest zone producing around 93% of national production followed by the Northwest and West regions. Export data is difficult to verify, with official statistics focusing on the Port of Douala and not capturing the porous road borders. Annually an estimated 30,000 to 50,000 litres is exported to Congo, the CAR and Gabon and 50,000 to 150,000 litres to Nigeria and Chad. Corruption was not as a major cost on road transport routes; however during its exports from Douala and rail it was reported to be increasing.

Table 8.4 Annual average apiculture production and value per region 2003-2009

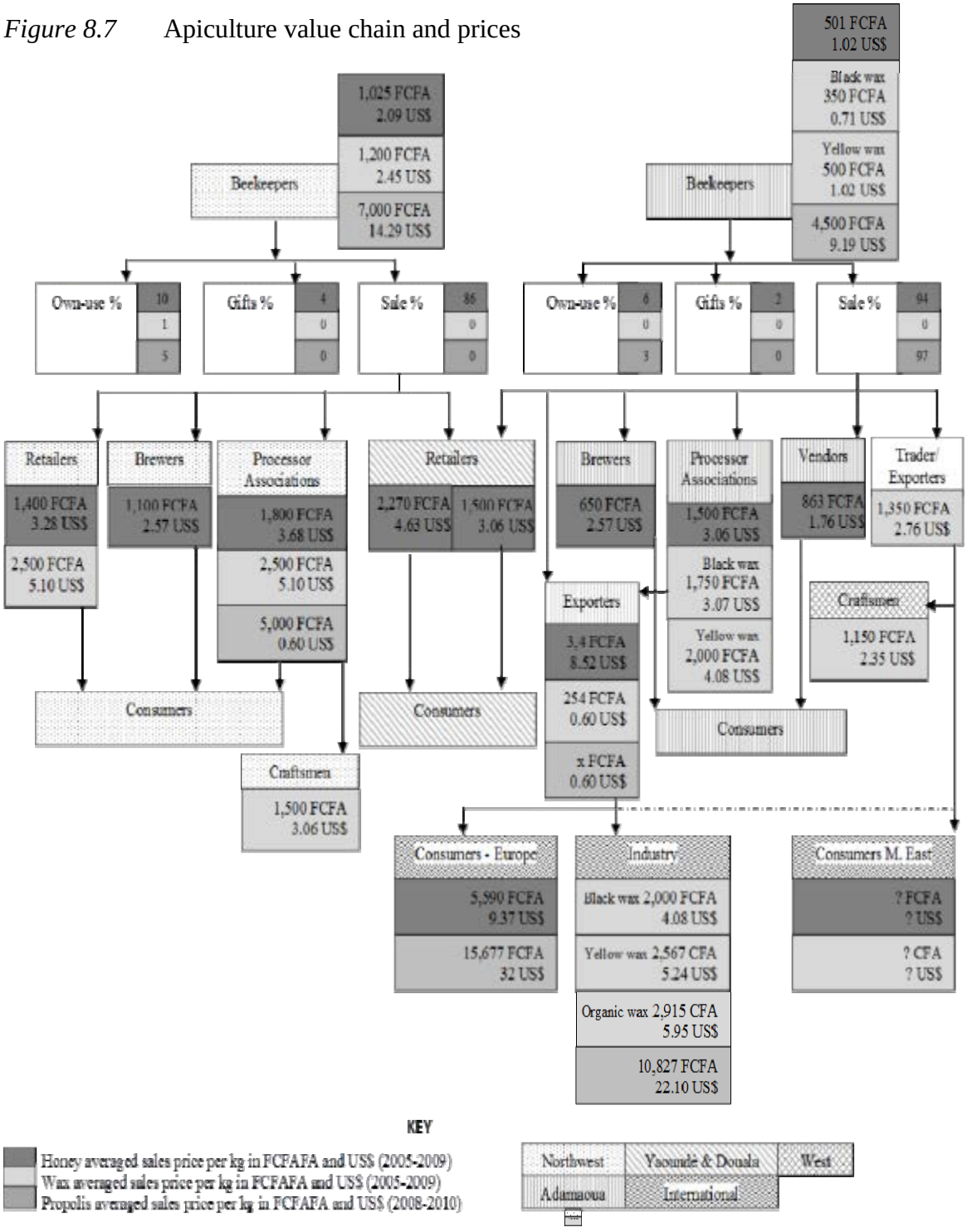
Region	Honey production (litres)	Honey value (FCFA)	Wax production (kg)	Wax value (FCFA)	Hive product value (FCFA)	Total value apiproducts (FCFA)
Adamaoua	3,101,700	1,723,400,000	225,000	519,126,090	342,000	2,242,868,090
Centre	15,026	22,499,104	-	-	-	22,499,104
East	347	51,470,000	20	-	-	51,470,000
Northwest	104,006	51,802,475	1,861	1,595,012	1,155,500	54,552,987
South	1,068	1,598,416	40	-	-	1,598,416
Southwest	39,689	43,638,000	106	7,200	-	43,645,200
West	48,900	66,825,000	106	-	-	66,825,000
North & Ex. N	28,434	42,575,503	20	-	-	42,575,503
Total	3,339,170	2,003,808,497	454,200	520,728,302	1,497,500	2,526,034,300
Value US$		4,483,802		1,016	3,351	5,652,355

Source: Research results *Key*: - No data available

Shown in Table 8.5, a smaller volume and value of wax is traded annually, primarily exported. Wax production is influenced by hive type, as KTBs are easier to harvest, with on average 7.18 kg obtained from KTBs compared to 5.5 kg from traditional hives, although the differences are not statistically significant (Tsafack Matsop *et al.* 2011). Wax production varies widely between regions and villages, attributed to beekeepers' skills and knowledge in wax processing and if they have links to buyers. If there are no links, beekeepers generally do not process wax and often throw it away as a by-product of honey processing. From Adamaoua, an estimated 157 tons of black wax is sold annually to type IV markets in Nigeria and the Central African Republic. The international type IV wax export market has been growing in the last five years with demand out-

stripping supply, to around 66 to 120 tons annually. This market is further price and quality differentiated, as shown in Figure 8.7. The low relative profit margins have been increasing as prices and demand have consistently risen for Cameroonian wax, particularly certified organic, in the last five years. This has occurred as wax production worldwide has declined (Grünewald 2010) as a result of climatic changes, pests such as varroa, and increasing monoculture agriculture lowering yields (UNEP 2011).

Figure 8.7 Apiculture value chain and prices



Source: Research results *Key:* regions: A = Adamaoua NW = Northwest, C = Centre, L = Littoral

Conventional wax producers however find it difficult to meet pharmaceutical and cosmetic use requirements for yellow wax and the stringent EU quality standards for pesticide and chemical-free wax (see Box 8.1). Despite growing demand, production increases have been slow and upscaling difficult, reflecting other African experiences (CBI 2006). The volume of wax entering type II markets for craft and metal working is estimated at around 500 to 1,200 kg in Bamenda and 800 kg in Foumban. The odour makes no difference to craft workers but smoky, overheated wax works less effectively and thus lowers the price. High quality wax is sold up to 50% above the average selling price shown in Figure 8.7. Sales of hive by-products, occurring mainly from the Northwest, were also reported to have grown in the last decade to a value of at least 2,359 US$ annually in the study period. Around Ngaoundal, annual honey beer production is estimated at 9,360 litres, worth 2,808 million FCFA (5,732 US$) and in the Northwest, the estimated 6,864 litres of beer is valued at 2,059 million FCFA (4,203 million US$). Propolis is the most valuable hive product by weight. It is hardly traded in Adamaoua but in the Northwest is in high demand and usually only available in small quantities. Guiding Hope has been buying from both study areas and exporting 10 to 60 kg annually to South African, European and American pharmaceutical, cosmetic and health companies since 2008.

Governance of the apiculture chain

To answer the third research question, this section presents and analyses the governance arrangements and trends in the apiculture chains. Although the apiculture sector and small business context in which it is played out is notable for its regulatory and policy void, governance arrangements are present in the form of beekeeper and association-led market standards and recent voluntary initiatives. The last two decades and especially the last five years, have seen major changes in chain organisation and governance.

Absent statutory regulations

There is currently, and appear never to have been statutory regulation concerning beekeeping or apiculture products. National quality standards and definitions have been discussed since 2008, mainly by major processing associations as a way of differentiating their products and quality. No formal regulations have yet emerged and the pushing has not been too forceful, due to fears of government interference, excessive formalisation and higher costs that formalisation may bring, particularly fears of corruption. This uneven playing field however benefits organised groups more than individuals, allowing innovators to set their own ‘rules of the game’. The only regulation is recent and concerns the requirement by MINEPIA for production and collection centres for the collection and marketing of all animal products (including honey) to be accredited. Most processor organisations and local MINEPIA agents outside of Bamenda and Ngaoundal are unaware of the regulation and it is generally not enforced. Only Guiding Hope and Oku Honey Cooperative were accredited by 2011. For exports, although the EU HMRS (Box 8.1) has been implemented, no other measures have been introduced for exports to other countries. The HMRS was pushed into place by Guiding Hope to their competitive advantage. For exports to other countries, no rules exist and no regulation was reported as being exercised by any government department. Whilst forest and wildlife regulations (see Chapter 6) are important for the maintenance of forest-based bee forage, they do not specifically mention beekeeping or honey hunting.

Government actors have been only sporadically active in regulating the chain and their interplay has been confused, with at least four entities[10] promoting beekeeping over the last 20 years. Their objectives have varied widely from stimulating beekeeping as an agricultural or livestock practice, for forest conservation and for rural development. These have changed largely on a project-by-project basis or related to the personal skills and interests of staff. In 2008 MINEPIA claimed the apiculture sector and allocated resources to develop and regulate it through the PADFA. This was partly due to pressure from apiculture trading enterprises and interest by development organisations such as SNV and FAO. This void of formal governance echoes the lack of many of the design principles seen as important for governance (Ostrom *et al.* 1994; Vollan and Ostrom. 2010).

Sticky dash

Many of the large trader-intermediaries and enterprises such as Guiding Hope maintain relations with government agents to minimise bureaucracy, manage corruption and secure access to government training and support through projects such as PADFA. Some of these relations are nuanced when officials are also large-scale traders. Corruption levels are not however generally perceived as high in the chain and do not strongly influence either access to resources or markets. There are fears that this may change with formalisation, noted by many in the Northwest as a reason not to formalise or become 'visible'. Whilst exporters and larger traders indicated that they are often checked and pay bribes at border crossing and roadblocks, these were seen as everyday occurrences and not specifically related to the product. A warning signal was raised by Guiding Hope of the problems negotiating exports of honey and wax from the Port of Douala, despite having all the required permits indicates that large volumes of this at the time unfamiliar product attract unwanted calls for dash, negatively affecting honey quality and costs whilst negotiations ensued to speed its exit from the port.

Customary regulations

Although customary rules governing beekeeping have existed for at least fifty years, it is not strongly regulated in Adamaoua, where no customary rules relating to beekeeping were found. In the Northwest however, in common with other areas of the Bamenda highlands, traditional authorities around Kilum Ijim have decreed 'country Sundays' which determine when farm and forest work should cease. Traditional rules prohibiting killing bees exist in the three Fondoms covering the Kilum Ijim Forest. There are no rules granting rights or setting boundaries specifically for beekeeping or honey hunting, which works on a first come basis. Some beekeepers however try to secure their rights with annual gifts of honey to the palace. Many of the processing organisations also maintain relations with customary authorities.

The governance of forests as sources of bee forage and hive materials also differs between regions. In Adamaoua, customary regulation of forage sources currently does not appear to exist nor has it in the past. The forest is open access and only specific, valuable resources, such as fertile riverine gallery forests popular for farming are traditionally controlled. Beekeepers' access to relatively scarce bamboo (*Oxytenanthera abyssinica)* groves for hive construction is permitted by the village 'owning' the resource. Other

[10] MINADER, MINFOF, the Northwest Rural Development Agency (MIDENO) and MINEPIA.

apiculture activities impacting the use of hive materials and forage sources are not customarily controlled, monitored or enforced. For example, there is no control of access to multiple use species such as kofia (*Lophria lanceolata*), the main melliferous species and favoured fuelwood species (including for wax production), source of edible caterpillars, cattle forage and medicinal oil seeds (also used in soap making). Bush burning, practised by semi-nomadic herders, is not controlled and was reported as the main reason for installing hives high in trees. Beekeepers noted only very occasional conflicts with grazers and with other collectors of hive materials. These were mainly resolved through traditional authorities. In the Northwest, as explained in Chapter 6, the Highlands forests were strongly customarily regulated, creating a favourable environment for bee forage and beekeeping and strong cultural symbolism relating to honey and bees. But increasing pluralism and decreasing traditional authority's power and ability to control and enforce customary regulations, combined with increasing pressures in population and use, have led to significant deforestation and degradation (elaborated in Chapter 4).

Buzzing voluntary governance

The high level of voluntary collective action among beekeepers in the Northwest and its gradual emergence in Adamaoua has influenced how the chains are governed. The popularity and success of cooperatives and associations in the Northwest stems from the historical cultural, political and trade context in the region (Chapter 4), making collective action more common than in Adamaoua. Beekeepers' groups and the integrated chain activities of processing organisations have created voluntary rules about how, where and when collection, processing and marketing take place. This has supported economies of scale, increased the bargaining power of producers and their ability to compete in the market and sometimes enhancing communication but also creating mistrust and miscommunication as product values and roles change.

Alternative organisational forms, such as NGOs which act as enterprises, have been adopted to avoid some of the problems associated with cooperatives, upon that premise that avoid formalisation minimises corruption and costly government interference. However, collective action has not always been successful. Internal corruption, inexperienced management and marketing have led to the failure of several collective arrangements. Many organisations engaging in collective purchasing have struggled to balance cash flows and pay beekeepers a good price direct on delivery. Despite this, there have been repeated attempts to organise beekeepers to benefit from collective action, mainly stimulated by donor organisations, NGOs and the government. Collective action and formalisation has often been a prerequisite for accessing grants, capital and ethical and organic niche markets.

Another recent voluntary arrangement is the organic and fair trade certification (see Chapter 6) by Guiding Hope of its honey, wax and propolis operations in 53 villages in Adamaoua. It is extending collective action and certification across Adamaoua and gradually to other areas in Cameroon. In 2006, the GIC spotted a market opportunity in the large quantities of good quality, naturally organic products, high production potential and growing demand from international clients (Ingram *et al*. 2011b). As the first and only certified apiculture organisation in Cameroon and Central Africa, this involved a steep learning curve and significant investment funded by the founding members, costing approximately 4,000 US$ in start-up costs and 3,200 US$ annually. The annual costs of maintaining certification and traceability systems mean that selling honey, wax

and propolis as certified organic at a higher price than conventional products is essential to cover costs. Considerable human and physical capital was also required to achieve and adhere to the standards. Only Guiding Hope is certified, although BERUDEP and Oku Honey Cooperative are interested, but deterred by the costs. The high retail prices in the Northwest, strong demand and lack of regulation mean that the costs of certification are not perceived to outweigh benefits in terms of higher selling prices and access to new markets. Similar experiences have occurred in Ethiopia and Zambia (pers. comm. M. Husselman, CIFOR; (Mickels-Kokwe 2006; Husselman *et al*. 2009). The chain of custody for organic honey requires a system of documentation, traceability and quality control which was difficult to set up given the largely illiterate beekeeping population and undocumented and informal trade systems. The benefits were professionalization, increased scale, process and product innovations and the connection of actors along the value chain (see Ingram and Njikeu 2011 for details). Organic certification allowed Guiding Hope to apply for the ethical trade certification and qualify to export under the preferential terms of community trade status to the international cosmetic company The Body Shop. Guiding Hope exports to Tropical Forest Products which sells organic apiculture products in Europe. These trading relationships have been built slowly, based on trust, mutual learning, capacity building and long-term orders. The risk is however dependence upon international clients and sometimes lower prices than the prevailing market prices, as demand has been increasing significantly for both organic products and conventional wax. The Body Shop and Tropical Forest Products also have Zambian and Ethiopian honey producer associations as clients. This creates a competitive dimension between suppliers from the three countries but also opportunities for cross-country learning, including through trade associations such as ApiTrade Africa.

International agreements

Involuntary regulations such as the European Union's HMRS (see Box 8.1 and above) have had a moderate influence. Whilst the Cameroonian HRMS was voluntarily set up, it was in response to the EU requirements that effectively control access to the European market and set quality standards for products (albeit that this is irrelevant for the production methods used in Cameroon). Whilst rights are clearly stated in the regulations, Cameroonian actors have no control over rule-making, monitoring, sanctions. This has had significant consequences for the practices and production methods for organisations that sought to supply European-based buyers and has deterred some organisations from entering this market.

Project governance

In the Northwest, new governance mechanisms were first driven by the BHFP (see Chapter 6). The 17 community forests introduced under the BHFP in the early 2000s cover the main honey production areas and created new rights, responsibilities and institutions impacting the apiculture chain. Realising the then importance of customary regulation and lack of formal regulations about sustainable forest management and beekeeping specifically, the BHFP sought to officialise customary governance and project-developed guidelines in what was known as Fondom Agreed Wide Rules in 1999 (Asanga 2002). This resulted in rules that all community forests should have at least one area where all use was forbidden except beekeeping, allowing only smokers to be used for harvesting and prohibiting the felling of melliferous species such as *Podocarpus* spp., *Carapa grandiflora, Prunus africana* and *Scheffleria* spp. The BHFP encouraged

beekeeping, seeing it as conservation positive: “the Oku beekeepers are in no way harmful to local ecosystem” (Paterson 1989: 6). Recognising the long tradition of beekeeping in the Kilum Ijim forest, the project tried to enshrine this right in forest management plans, including it as a permitted activity in most community forests areas. Individual and collective action was promoted and supported through two associations, the Oku Honey Cooperative and NOWEBA (Paterson 1989).These conservation-focussed strategies attempted to increase the forest’s livelihood value by commoditising forest product, epitomised by Birdlife International (2000):

> “Technicians with skills in natural resource management and specific technologies such as beekeeping, will provide training and advice in areas that will help to enhance livelihood opportunities derived from the forest in a sustainable manner (…) provid[ing] training, advice and support for activities which enhance the value of forests to communities (e.g. beekeeping).”

Enforcing compliance with new rules through monitoring and on-the ground presence was successful while the project was well-funded, but with diminished funds after 2004, locally-initiated projects and NGOs filled this gap. Whilst building on the BHFP’s legacy, skills and networks, they did have not had the same level of assets, but were often more integrated into the local communities. They also aimed to halt and reverse forest degradation, but often more pragmatically with the focus first on livelihoods and secondly on conservation.

A Geographic Indication (GI) (see Chapter 6) Oku White Honey project funded by the Organisation for Intellectual Property in Africa (OAPI) was started in 2010. The idea originated with the French Development Agency (AFD) and Centre for Agricultural Research (CIRAD). They selected the product and recruited local actors to implement the GI: Guiding Hope and SNV Cameroon, which helped set up a legally registered multi-stakeholder Kilum-Ijim Oku White Honey Association (KIWHA). The association aims to improve the production and quality of Oku White Honey and other bee products, protect the natural environment of the GI through forest management institutions, to judiciously manage the Kilum Ijim forest to meet producer’s interests and to work with Government and OAPI partners on the GI product. This process is expected to culminate in the award of a GI in 2013, valorising the white honey and local culture, and promoting development. It is a new concept for the African apiculture sector and for agriculture and forest products in general. The project has been strongly process-orientated in obtaining the GI. Initially the GI was strongly externally influenced, however now that GI attribution is almost finalised hybrid forms of governance are appearing as local ownership and implementation occurs. In 2012 KIWHA started to focus more attention on maintaining and securing sufficient bee forage and marketing, but without external funding. It is too early to determine the effects of the GI on apiculture product values, livelihoods and sustainability.

The BHFP, the GI Oku White Honey project and the many geographically specific, small-scale conservation and beekeeping development projects in the Northwest have largely focussed at the start of the chain, on beekeeping. Most donor-led initiatives have also focused only on beekeepers. This is despite beekeepers and organisations repeatedly stating that their main problems are running enterprises, up-scaling and marketing. An outcome of projects has been the gradual evolution of sustainable and production-enhancing ‘good practice’. These include rules about leaving unripe combs in the hive and harvesting only two-thirds of ripe combs – to maintain brood, reduce fermentation

and moisture content, leave food for the colony and promote post-harvest re-colonisation; using smokers and daytime harvesting – to reduce the risk of bushfire[11]; light clearing of vegetation and no felling around hives and not using bark or hollow trees as hives – as conservation measures. Many of the grasses and plants used for hive thatching and in smokers are now cultivated around beekeepers' homes and farms, as are multi-purpose melliferous plants. These practices have been documented (API-CAM 1998; Bonu 2001; CTA 2007) and have gradually disseminated into other beekeeping areas in the Northwest, Southwest and nationally by the local NGOs and processing organisations providing training and running projects, such as HONCO, ANCO, BERUDEP, the Riba Agroforestry Resource Centre (RARC) and the Oku Honey Cooperative.

Other impacts created by the projects are the incongruences that new institutions, such as community forest management institutions, have caused. Producer organisations and beekeepers have been confronted with donor and support organisation's models for upscaling and collective action. 'Modern' beekeeping has been favoured by projects as providing immediate, tangible outputs. For example, the RIGC project gave KTB hives to beekeeping groups around Kilum Ijim but up to 20% were unused and a low rate (18%) colonised in the first year in 2010, ascribed to poor management (Ministry of Forestry and Wildlife 2009a, 2009b, 2009c). At least three other projects in the Northwest and one in Adamaoua (MOBEC), have promoted 'modern' beekeeping techniques, despite the ineffectiveness of this type of intervention being well documented in other developing countries (Howard 2005; Tchana 2010; Wright *et al.* 2010a). Responses have ranged from acceptance to rejection, to tailoring and creating hybrid practices and arrangements with different outcomes at individual, group and community level. The differing efficiency of management and harvesting techniques associated with different hive types and feelings of ownership and engagement resulting from 'gifts' of hives have left beekeepers divided about the efficacy of project interventions, particularly when the focus has been on production but not on commercialising apiculture products, and projects have resulted in changes in power relationships in their communities. Projects and NGOs have had sufficient presence and resources to change activities and norms, but not always enforcement. This has depended upon the local presence and follow up contact with beekeepers, particularly over more than one harvesting season, as well as the ability and resources to enforce compliance with new governance arrangements.

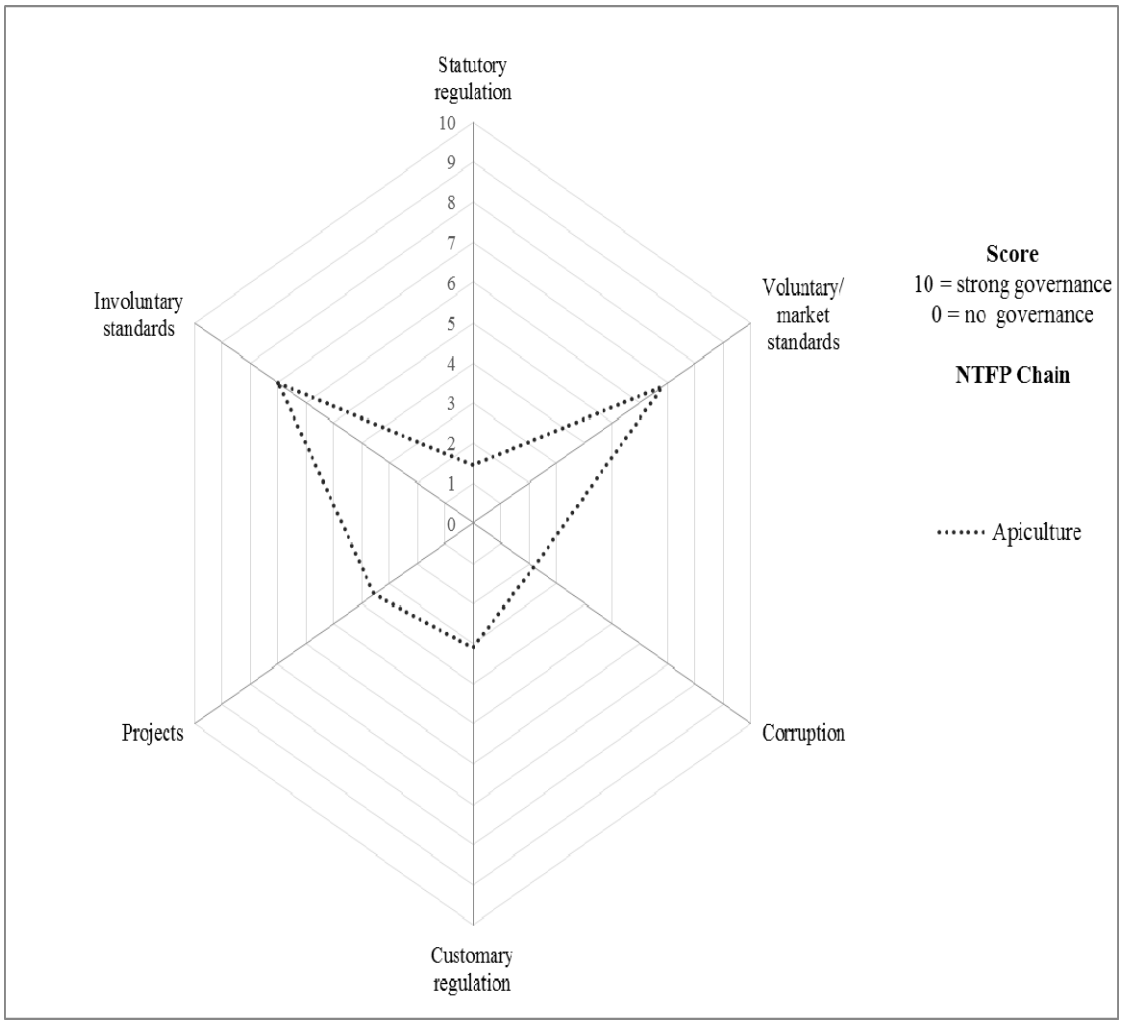
Sticky bricolage

The chain is characterised by a situation of multiple arrangements and institutional bricolage (Cleaver 2002). In the Northwest the lack of formal arrangements concerning beekeeping and ineffective forest management regulations, combined with once strong customary arrangements, project-based rules and new, hybrid forest management arrangements such as community forests have led beekeepers and their organisations to create their own institutions to enable and regulate chain activities. This dynamic situation has emerged to claim assets, in response to struggles, and to avoid conflicts between multiple forest users. Many actors, particularly processing organisations, have played all available options by joining or engaging in different degrees, with CF institutions, maintaining links with traditional authorities, collaborating with projects, donors

[11] Night-time use of grass smokers in Kilum Ijim forest caused bushfires covering 5,000 ha in 2003 and 2000 ha in 2008 and the deaths of two beekeepers in the period 2000 to 2010.

and development organisations and collaborating with government officials. In Adamaoua, where formal and traditional regulations have been little felt, the effect of projects has been more minimal and conflicts fewer due to its lower population density. Market-led institutions such as the certification schemes and chain platforms developed by Guiding Hope have blended local practices with the requirements of new markets. This has supported up-scaling, professionalising, adapting and improving local technologies and engendered ownership by beekeepers, countering past negative experiences of external, project-led arrangements. Seeing that the lack of formal rules and unauthorised exports to Europe could jeopardise exports, Guiding Hope and Les Meillieries have pushed regulatory systems – such as the Cameroonian HMRS – into place, institutionalising and formalising new rules on quality and processing. The major processing organisations, the Interprofession and regional Associations have also been toying with introducing regulatory honey quality standards, aiding competitive advantage and maintaining market control as lead organisations. Scored using the system introduced in the methodology in Chapter 3 and detailed in Appendix 18, the arrangements are illustrated in Figure 8.8.

Figure 8.8 Governance arrangements in the apiculture chain in Cameroon



Governance and livelihoods in the apiculture chain

This section addresses the fourth research question of how governance arrangements affect the livelihoods of actors along the chain, using the sustainable livelihoods approach. Table 8.5 shows that in both areas beekeeping contributes to nearly half of annual household income. In the Northwest a third of respondents (SD 40) indicated that beekeeping is their primary income-generating activity. They have up to six (SD 2) other activities and all practise farming. Just over 30% indicated they are primarily farmers, 12% were wood workers, 10% were civil servants, 12% collect other NTFPs including hunting, 12% in trading and 1% were traditional healers. The majority (45%) have at least one and up to four other income sources such as commerce, medical practices, crafts, livestock and labouring.

Table 8.5 Average income range of beekeepers from apiculture

Region	Northwest		Adamaoua	Average
Average annual income apiculture[3]	207,000 FCFA 587 US$		281,000 FCFA 433 US$	244,000 FCFA 510 US$
Difference from average incomes[1]	-30%		-1%	-38%
Annual average income range	% of beekeepers			
FCFA	*Mezam*	*Boyo & Bui*	*Djerem*	*Average*
10.000 - 100,000	44	18	87	50
100,000 - 500,000	50	25	11	29
500,000 - 1,000,000	3	19	2	8
1,000,000 -2,000,000	3	31	0	11
>2,000,000	0	7	0	2

Sources Research results and [1]National Institute of Statistics 2002.

Average annual incomes are shown in Table 8.5. These are lower than the Cameroonian average incomes detailed in Chapter 4. Variables influencing production and incomes are the number of hives per beekeeper, the average of which varies widely by and between regions. The national average is 11 hives, varying from 68 in Adamaoua (with 5% owning up to 400 hives), 16 in the Northwest to three in the Southwest and West. Investing in large numbers of hives counters low occupation rates, with between 30 to 85% of hives colonised in Ngaoundal and 18 to 56% in the Northwest depending on season, location, pests, management and experience. Skills also determine the activities conducted and extent of processing hive and by-products. For most intermediaries in Kumbo and Bamenda markets trading provides 80% of household incomes, farming 5% and other activities 15%. Their average annual income was 1,083,867 FCFA (250,000 FCFA, SD 510 US$) (2,007 US$, SD US$) in the period 2007 to 2009. Average incomes of traders in Adamaoua were lower, at 900,000 FCFA (SD 445,000 FCFA) (1,666 US$, SD 908 US$).

Taking into account average household sizes in each region, an estimated 130,678 people benefit from apiculture incomes. For an estimated 16,930 beekeepers in the Northwest and Adamaoua, beekeeping contributes on average to just under of their half of annual household cash income. However, many continue to struggle and few emerging above a 2 US$ a day poverty level. Beekeepers therefore generally use a range of income-generating and subsistence activities. Some of these paradoxically contribute to degrade or diminish the source of bee forage, such as livestock grazing, live fuelwood collection, and unsustainable *Prunus africana* harvesting collection (see Chapter 9), hunting and, in Adamaoua, shifting cultivation. Much higher incomes and profits are

possible when beekeepers professionalise, join together, increase scale and diversify production to include other hive and bee products. Although less people work further along the chain in processing organisations (96), as intermediaries and wholesalers (20), retailers and hawkers (737) and exporters (40) – specialisation in these value adding activities results in higher than average incomes for these actors, fewer income-generating activities and higher levels of dependence on apiculture.

The mix of collective action with voluntary market-based governance arrangements reflects attempts, particularly by processing organisations, to increase the value of apiculture and the economic and political power of beekeepers and their organisations. New arrangements have been productively bricolaged (Batterburry 2001; Ros-Tonen 2012) to diversify apiculture income sources by producing more hive and associated products, such as seedlings. Building economies of scale and extending to regional, national and international markets outside the saturated local type I markets has resulted in increases in volumes sold, prices and profits, illustrated by Guiding Hope[12]. These distant markets are also less vulnerable to price fluctuations linked to supply peaks, making incomes and livelihoods more stable. Collective action has enhanced the ability of organisations to gather and use market information and improved their bargaining power, particularly in type III urban and type IV export markets, mirroring other NTFP and smallholder experiences (Komarudin *et al.* 2006; Markelova *et al.* 2009; Awono *et al.* 2010a). It has enabled scale and specialisation, leading to innovative marketing and product profiling, helping diversify income sources.

Further livelihood improvements have faced challenges which institutional arrangements have tried to overcome, with mixed success. The multi-tiered associations enable several thousand members to be connected. However they have struggled to access sufficient economic, human and physical capital to upscale, maintain information flows and enter new markets with different standards and products. Although increasing scale and professionalization reduce transaction costs, compensating for market weaknesses (Markelova *et al.* 2009), increasing size amplifies transaction costs which has undermined performance. This delicate balance is highlighted by the collapse of the largest associations. Producer associations' fluctuating levels of service provision, ability to purchase bee and hive products in season and invest in equipment and infrastructure are dependent on the availability of capital from internal sources and external (donor, financial or support) institutions, as traditional credit sources (tontines and social networks) are generally insufficient and micro-finance institutions absent and wary of cooperatives, given their mixed track record in Cameroon. Although two of the groups have bank loans, they are difficult to obtain due to a lack of collateral and trust. Guiding Hope is an exception having leveraged significant capital: its business model as a formalised, ethical enterprise is attractive to investors. Many cooperatives have raised funds by initially rapidly increasing membership, but became overwhelmed providing services and support to the remote, dispersed members. Without sufficient capital, managing cash flow becomes difficult and seasonal price fluctuations continue as beekeepers cash in their products directly post-harvest to generate income, despite their long shelf life. As most beekeepers prefer profits to be paid immediately in the form of higher buying prices, the operating profit margins of processing organisations can support only a minimal level of services. This cash crunch has driven organisations to acquire

[12] For example, Guiding Hope won the Best New Small, Medium and Micro Enterprise in Africa Award in 2011. http://www.africagrowth.com/Press_Release_SMME_Award_Winners.pdf.

skills (e.g. project writing) and orientate themselves to external actors' requirements, such as certification which also requires major economic and social capital investments. The rises and falls of groups such as NOWEBA, HONCO, MOBEC and UGIPROM-NAD and the continuing low average apiculture incomes indicate that collective action has had only marginal impact on livelihoods for the majority of actors in the chain.

Corresponding to Bernard *et al.*'s (2008) findings, the performance and range of services provided by collective processing organisations are also constrained by low professional management capacity. Whilst new skill sets have been acquired and human capital increased, an increase in empowerment (i.e. social capital) to a level enabling beekeepers, their associations and intermediaries to shape niche markets and increase their bargaining power with large, international buyers has not yet occurred. Guiding Hope's difficulties in setting-up the Body Shop's community trade scheme, achieving ethical and organic certification and entering the EU market illustrate this (Ingram *et al.* 2011b). However, collective action attracted support, provided a voice and legitimacy to interact and develop formal governance arrangements with donors and the government, illustrated by the emerging Interprofession. The success and failures of regional federations shows however that whilst many actors recognise the benefits of collective action, several attempts and configurations are needed before appropriate institutions have developed and benefits can then be returned to beekeepers in the form of timely hive product purchase and higher buying prices.

New markets have driven new chain configurations, relationships and institutions and vice versa. These have increased profits, by adding value and by marketing hive products previously thrown away or little harvested, such as wax and propolis. Choices of whether to develop new markets with higher profit margins and risks, or invest in the burgeoning local and regional market, both have implications for the sustainability of livelihoods and require security of supply. A balance of power in the new relationships is apparent. Benefitting from the experience of partners and support organisations to enter speciality export markets with high entry and maintenance barriers carries a risk of dependence. This has been balanced against generating sufficient, immediate profits to convince beekeepers of the initial additional costs of new production methods and institutions.

The range of arrangements, strategies and channels used by different organisations reflect Thomas *et al.*'s (2003) suggestion that forest-based enterprises should focus on either quality or quantity and Macqueen and colleagues' (2006) recommendation that standards increases the likelihood of accessing niche markets with better prices. Addressing quality, quantity and regularity of supply has enhanced access to type III and IV markets and improved livelihoods. Formalisation and scale are constraining factors in the transition from local to international markets, explained in Chapter 5. This is a common complaint from small-scale rural entrepreneurs (Vermeulen *et al.* 2008). Networking and using support partners has partially helped to overcome this, enabling accumulations of political and human capital, echoing studies showing the importance of these capitals to livelihoods (van den Berg *et al.* 2007; Devaux *et al.* 2009).

The void of formal governance arrangements has created a space in which many people use apiculture to enhance and diversify livelihoods based largely on subsistence agriculture. Collective action, projects and voluntary market led schemes have been to increase the value, particularly economic worth of apiculture products and craft higher than average livelihoods, while allowing social values to be extended to more people in the chain. Those specialising in apiculture have introduced institutions to recognise and

guard environmental, social and economic origins and values of apiculture products to create and maintain market niches and further add value to their products. As a last resort, formal regulation has been selectively fashioned as a tool to support these new institutions and market positions.

Governance and sustainability in the apiculture chain

This section answers the fifth research question of how governance arrangements impact product sustainability.

The governance arrangements described result in activities in the apiculture chain being conducted fairly sustainably with a generally neutral to positive impact. The majority of apiculture products continue to originate from domesticated bees foraging and hives predominantly located in forests. Some of the most unsustainable practices in the Northwest notably honey hunting; bark hives and night harvesting are no longer practised. These have been discouraged by customary, project-based and voluntary regulations which have evolved into best practices. However, some unsustainable practices remain as beekeepers engage, often unknowingly, in activities that in the long term negatively affect forest bee forage. In the Northwest, traditional smokers are used and a minority of beekeepers engage in hunting, livestock grazing and collecting medicinal plants. In Adamaoua, practices occur such as honey hunting and collecting propolis from wild colonies, harvesting unripe combs, over-harvesting scarce hive materials, using torch-smokers and the wood of melliferous species as fuel for wax processing. Processing innovations introduced by Guiding Hope, planting and protection of bamboo and raffia are early signs of changes to increase sustainability.

Focus group discussions highlighted that anthropogenic and climatic fluctuations are negatively affecting forest resources and apiculture, echoing the changes described in Chapter 4. Just over a third of beekeepers indicated increasing variations in the length of the dry season, variability in the onset of seasons and increases in the number of bush fires and extreme rain events. These were perceived to negatively affect apiculture by changing the vegetation and causing new and increased pests and diseases. A concern voiced by beekeepers around Kilum Ijim was that forest fragmentation, deforestation and degradation is decreasing the availability of forage sources creating Oku white honey, noting a decrease in melliferous species such as *Prunus africana*. In the Northwest, the changing forest governance arrangements described in Chapter 6 have been unable to sufficiently maintain the forests as sources of bee forage, hive materials and fuelwood for product processing and specific agriculture chain arrangements have also been inadequate. In Adamaoua, nearly half of the beekeepers indicated increased climatic changes. Increases in cattle grazing, bush burning and encroachment for agriculture were also noted, but not reported as affecting apiculture. Increasing numbers of beekeepers require scarce bamboo and raffia for hive building – affecting the NTFP chains described in Chapter 10 – pest outbreaks are more frequent and the demand for fuelwood, including for wax production, has augmented. Beekeepers noted a decrease in the melliferous species *Lophira lanceolata* and *Terminalia macroptera*. Such increasing degradation and deforestation threatens the sustainability of the apiculture chain in the long term. However this hazard is perceived only by the larger processing organisations and char-

ismatic 'ambassadors'[13] – individuals with years of experience. On a beekeeper level, the generally small-scale production and growing numbers have enabled supply increases to keep pace with demand, despite the diminishing forest forage supply, meaning that only beekeepers with long-term experience noted changes, as those with less experience are confounded by the natural bi-annual production fluctuations. This leads most beekeepers to not see forage sources as the limiting factor, but access to type III and IV markets.

Some project-based and voluntary governance arrangements to enhance sustainability have been 'bricolaged' in response to deforestation and degradation, the decline in traditional authority and the absence and/or ineffectiveness of formal forest governance arrangement. Many bricolaged arrangements aim to tackle the problem by planting trees. The integration of nurseries and tree planting into apiculture projects and processing organisations has become institutionalised. This is most evident in the Northwest where forest loss is greatest. In Djerem, bamboo and raffia nurseries and planting out around three villages commenced in 2010. Exchange visits from Adamaoua to the Northwest led to ideas being mooted, but not yet put into action, to designate village 'beekeeping forest areas' and create community forests. However the process of obtaining a community forest and costs were seen as too high, with an uncertain outcome and long timescale. Donors and the ambassadors have driven this change by setting an example, providing training and raising awareness. A result is that an estimated 15% of beekeepers plant multi-purpose melliferous species on farm, confirmed by Nkamleu and Manyong (2009) and Asaah *et al*. (2011). Only where tenure is secure, such as in community forests, or forests with still strong customary tenure, such as sacred forests and in parts of Oku, Bihkov and Mbiame, has forest enrichment or regeneration taken place. Few beekeepers reported actively protecting or conserving forests to support beekeeping. Thus most beekeepers and their organisations are not conservationists per se, but pragmatic interventionists, managing forage sources, planting melliferous and hive material-producing species. Some organisations combine enterprise and conservation as a way to maintain sustainable livelihoods. For example BERUDEP and ANCO have used customary rules and created community forests, such as Mbiame.

However the opportunity costs of other forest uses (for agriculture, hunting, grazing, fuelwood and *Prunus africana* bark harvesting) are too high for apiculture chain actors to compete with. Beekeepers, alone or collectively, do not have sufficient economic or social power or tenure rights to maintain sufficient forest cover to maintain or increase production, despite the support of projects such as the BHFP and the SNV value chain capacity building project which aimed to add value to the forest and apiculture. The hailed 'successes' of collective action securing forest conservation (Asanga 2002) in hindsight did not wait to assess a sufficient time period to evaluate the impact of the introduction, embedding and then hybridisation of the new governance arrangements. This resonances with the contention of Carter *et al.* (2007) that sustainable forest management is linked to greater local people's involvement in decision-making through forest-based enterprises. The Cameroonian apiculture chain is not unusual in this respect, as the success of collective action in securing forest management depends on diverse

[13] Notably Paul Mzeka, ANCO director (see footnote 1) and George Kangong, Riba Agroforestry Resource Centre director and 2010 Equator Prize winner. http://www.equatorinitiative.org/index.php?option=com_content&view=article&id=597%3Aribaagroforestryresourcecentre&catid=175&Itemid=689. Retrieved 21 January 2012).

variables, all of which need to be mastered to ensure sustainable livelihoods and resources (Bradbear 2004; Donovan *et al.* 2006; Ostrom 2007).

With increasing demand for apiculture products, beekeepers and especially processing organisations have become more aware of the fragility of the resource base. This implies they are more aware of the positive indirect impact on ecosystem services (Holvoet *et al.* 2004), such as the pollination of a wide variety of subsistence and cash crops. Voluntary market-based arrangements such as organic certification and GI are founded upon forest-based apiculture and thus depend on a sustainable, continued supply of forest forage. The characteristics and organic nature of white honey are a unique selling point, evidenced by the forest images used on packaging and stress on this aspect in funding applications by processing organisations. Marketing strategies such as the Geographic Indication branding of 'Oku White Honey' and organic certification for 'Miel Royal de Savanne' help consumers differentiate between honey profiles and internalise ecosystem and biodiversity values. In Adamaoua, the majority of hives are forest based, on average 3 to 20 km from villages. The results of HMRS tests and annual organic certification audits confirm beekeepers' reports that the environment and beekeeping practices are organic. Guiding Hope however had to introduce rules to prove and check this, such as storing products in separate, registered collection centres to avoid a reoccurrence of contamination from chemicals and banning the traditional practice of smearing cow dung on hives, a transmission vector of chemicals used in livestock to apiculture products. In the Northwest, despite a belief that honey is organic, the practice of hive transhumance means that bees also forage on crops, particularly coffee (confirmed by beekeepers, observation and pollen analysis, see Appendix 15 for details). Observations, discussions with coffee cooperatives and literature (Nchare 2007) indicate that chemical use on coffee is widespread and not well controlled. This affects bee health, honey quality and poses problems for potential organic certification of Oku white honey, although governance arrangements to control this have not yet been enacted.

New practices and systems of governance have enabled new actors to enter the chain which may cause further changes in aspects of sustainability. For instance, as it is now easier and acceptable for women to keep bees, the home and farm become the main forage source, rather than the forest, although depending on distances, forests may still be foraged. With this development, product characteristics are likely to change, with the most highly valued characteristics such as the whiteness of Oku honey, being lost. The SNV and FAO support for chain-integrated activities contributed to an awareness of the benefits and failures of past production-focused and 'modern' technology orientated interventions (Macqueen 2006; Simukoko 2008; Vabi 2010). As development rhetoric has moved to a pro-poor, sustainable chain and consumer-orientated focus, consciousness of the link between the sustainability of forest resources and livelihoods has grown, building on project-led arrangements such as the BHFP where forest benefits were stressed, and market-led arrangements such as organic certification and geographic indication which also emphasise the importance of sustainable resource use.

The mix of arrangements constructed and employed by direct actors emphasise how natural capital has produced economic assets, aided by inputs of social capital. Although there are some trade-offs with natural capital, such as the hive materials and resources used in processing and practising activities which damage forest forage, these are now generally of limited scale. The apiculture chain has not been the major driver degrading forest resources. The chain is however threatened by anthropogenic forest use

and climatic changes. In the Northwest tree planting and the geographic indication scheme aim to secure access and tenure and reverse forest losses. However, community forests have failed to meet many institutional design principles and are largely ineffective. The quasi-tenure and changed institutional landscape created by community forests, protected areas and decreasing traditional authority have meant that neither community forests, government, traditional authorities nor beekeeping organisations have been able to counter the scale of anthropogenic forest degradation. In Adamaoua, only recently have governance arrangements been introduced to tackle problems of scarcer forest resources. Once aware of the threats to the sustainability of their livelihoods, beekeepers and organisations have become bricoleurs, responding by planting forage on secure land and creating voluntary, market-based systems to internalise the environmental costs and benefits of apiculture. However, the tendency to use multipurpose and non-native trees means that the ecosystems which create the prized white honey in Kilum Ijim are not being replaced. In Adamaoua, only selected species are being regenerated. The Highlands chain thus appears sustainable only as long as the rapidly diminishing forest resources continue to exist. In Adamaoua, recent actions may be sufficient to maintain production and continue to increase livelihood benefits. Although the forest resource is substantially larger, the lack of comprehensive, strong governance arrangements encompassing the majority of actors represents a mounting risk to the livelihoods of those engaged in the chain as well as product sustainability, which ultimately affects the viability of the entire chain.

Conclusions

The analysis of the apiculture chains originating from Adamaoua and the Northwest of Cameroon indicates that governance arrangements have significantly influenced how apiculture products are sourced, harvested and traded. This section summarises the conclusions, responding to research questions two to five, on how the value chain is configured in terms of products, actors, activities and values; the governance arrangements in place; how these impact the livelihoods of actors; and how these impact chain and product sustainability.

Apiculture products are highly valued. These products are an important source of cash income and providing food, medicines and culturally important symbols, as well as ensuring pollination, a valuable ecosystem service. Alongside honey, the economic value and quantity sold of products such as wax, propolis and by-products has been increasing. The significant economic and social values of apiculture products have become more visible as their chains have extended further than the traditional local and regional markets. However the apiculture product chains been largely invisible for policy makers, similar to many other NTFP chains in the Congo Basin (Ingram *et al.* 2012a). Only recently has recognition grown of their value by policymakers and state actors.

However, the dispersed and remote nature of the chains and trade has meant that governance arrangements in the chain have been characterised by voids in formal governance. This gap has allowed new voluntary, market-led and statutory arrangements to be relatively easily bricolaged by direct actors in the chain, often building upon traditional customs, and pushed largely by local enterprises, when perceived to contribute to livelihoods. Customary arrangements are more prominent and intense in the Highlands than the savannah forest ecoregion, in part due to factors such as high population densi-

ty and pressure on forests and their products. In the Highlands, customarily control has now given way to pluralistic hybrids of customary, project and voluntary arrangements, such as geographic indication and best practices. Although apiculture products are derived mainly from domesticated bees, the sources of forage and hive materials in Adamaoua, the main production area, are loosely customarily controlled or open access. This context has allowed actors to create and influence arrangements. Stringent voluntary and formal regulations in some importing countries have influenced the chain and stimulated a plural array of bricolaged, voluntary arrangements that allow actors to gain access to high value nice markets. This has affected a small but growing proportion of beekeepers and actors in the chain to date. The trade has not yet generated such revenues that informal regulation through corruption is significant or large scale. There are signs however that this is changing as formalisation increases visibility.

Trade in generally sustainably produced products apiculture products has a centuries-long history and in the last decade has generated positive livelihood impacts for a significant number of people. The product characteristics: seasonal but with a long shelf life and a high value-to-volume ratio, are advantageous to creating wealth. For the majority of small-scale actors, apiculture has not constituted a path out of poverty, despite contributing nearly half of average household income. Major changes in governance arrangements and markets in the last five years are however providing new opportunities for beekeepers, processers and exporters to professionalise and to scale up. As the value of products increases, the benefits they generate for actors in the chain has risen, increasing access to new markets for some actors, mainly members of groups.

The main impact of governance arrangements on apiculture products and chain sustainability has been to increase control over access to resources. Recent voluntary and market arrangements have focussed on access to markets as an explicit way of increasing and demonstrating the sustainability of the chain: coupling access to assets with access to markets. However if these tentative arrangements are sufficient to ensure product sustainability is highly debateable. Faced with weak forest governance generally, and strong anthropogenic and climatic pressures, the Highlands chain is threatened by swiftly increasing forest degradation and deforestation. In Adamaoua, the small scale of voluntary and market actions to date may be sufficient to maintain production levels if other threats to the ecoregion do not endanger either bees or forage sources. Significant scaling up of production may pose a mounting risk to resources, but also act as a trigger to introduce arrangements that safeguard the availability of bee forage and species used in apiculture, securing and possibly improving the livelihoods of the largest group of most marginalised and low income actors involved in the chain.

9

Prunus africana value chain[1]

This chapter presents the results of the in-depth analysis of the *Prunus africana* chain originating from the Northwest, Southwest and Adamaoua regions and extending to markets in Cameroon, Europe and the USA. The findings are based on interviews, literature, observation, resource assessments, value chain analysis, market surveys and trade data (see Chapter 3). The values provided have been verified and triangulated with literature and in workshops with stakeholders and are believed to be valid for the specific chain, its geographic locations and population sample for the time period of the data collection. The sections deal respectively with the second research question of how the value chain is arranged in terms of the species it is derived from, the products, location, actors, activities and values; the third question on how the chains are governed; the fourth on their importance to livelihoods and sustainability and the fifth on product and chain sustainability. The conclusion focuses on how governance arrangements influence sustainable livelihoods.

The *Prunus africana* value chain

This section addresses the second research question of how the *Prunus africana* chain is configured in terms of the products, their uses, sources, actors, activities and values. These components of the value chain are analysed in the following sections.

Prunus africana species, products and their uses

This section introduces the species and the main products created from its bark and timber: medicines and equipment. *Prunus africana (*Hook. f.) Kalkman is known in Cameroon as pygeum[2] or kanda stick. In local dialects it is called *kirah, elouo* and *mowom, eblaa, bi'beh'kemb'oh', dalehi* and *wotangu* or *wotango*[3]. Shown in Photo 9.1, the evergreen hardwood tree has dark-brown, longitudinal fissured bark and thick, leathery, oval leaves with pointed ends and reddish stalks. It grows up to 40 m tall and under

[1] Data derived from peer-reviewed published articles written or contributed to by the author (Ingram and Nsawir 2007; Pfund *et al.* 2009), a peer-reviewed national policy guidance document (Ingram *et al.* 2009) and two peer-reviewed, published reports (Foaham *et al.* 2009; Nkeng *et al.* 2009).

[2] The pidgin name and botanical nomenclature (*Pygeum africanum)* until reclassification in 1965.

[3] Respective languages of Lamnso, Kom, Oku, Fulfulde (Northwest) and Bakweri (Southwest).

good conditions can grow to 14 m high and 37 cm diameter at breast height (dbh) in 18 years, with annual growth rates of 1 to 1.9 cm (Hall *et al.* 2000). Size increments decrease after it reaches 30 cm dbh, such that very large trees of 80 to 200 cm dbh may be hundreds of years old. There is a high variation in the diameter and height of equal aged trees in the same locality (Ingram *et al.* 2009), corroborating Cunningham *et al.* (2002). A minimum harvestable age for bark has been proposed as 13 years old (Franzel *et al.* 2009) or when the tree is 40 cm dbh (Ingram *et al.* 2009).

Photo 9.1 Prunus africana, Fundong, September 2009

The tree is a light-demanding species, although the seeds require shade, with disturbance and fruit dispersal into canopy gaps or forest margins being important determinants of its population biology and accounting for its scattered distribution (Tonye *et al.* 2000). Its creamy white flowers have a short flowering time which can occur throughout the year, but is often from March to June, with many different pollinators visiting, including bees (Were *et al.* 2011). Beekeepers indicate it is a melliferous tree producing white honey (see Chapter 8). Fruit production commences at around 15 years old and increases with tree age, with alternating high and low production years (Stewart 2001). The black, fleshy almond-odour fruits are consumed and dispersed by many animals, including endemic and endangered bird, frugivore and primate species (Fossey 1983; Maisels *et al.* 1999; Stewart 2003). The seeds are semi-recalcitrant and germinate between 50 days and four months old, losing viability quickly if not stored in a moist atmosphere, such that few seeds older than six months old are viable (Mbuya 1994). The tree is generally single stemmed, developing multi-stems when saplings are browsed or cut, with large trees having weak re-sprouting capability. Trees may coppice if surface roots are damaged and occasionally after felling (Cunningham 2002, Ingram 2007). Wubet *et al.* (2003) noted arbuscular mycorrhizae among the roots, aiding the uptake of minerals and growth, which has implications for cultivation.

The versatile, multi-use tree is used to generate cash and for subsistence uses. Chemical analysis of its fungicidal and termicidal properties (Mburu *et al.* 2007) supports its reputation as a hard, insect-resistant timber preferred for carving, axe, tool and hoe handles, used as such by 10% of harvesters. The Nso clan uses its timber for ceremonial spear shafts. Poles are used in house construction, fencing and for bridges, confirming Stewart (2003). It is planted to protect and indicate water catchment areas and to demarcate boundaries. It was a favoured fuelwood for heating and cooking (Stewart 2003; Ingram and Nsawir 2007) but is now used by only 13% of harvesters in the Northwest for fuel for subsistence, and not trade. Fuelwood collection is generally from dead trees, due to the traditional ban on collecting live wood for fuel, enshrined in the 1998 Fon-wide rules for forest management. Observations in 2010 and 2011 indicated that increasing numbers of trees in the forest were felled for timber and fuelwood, but no fresh *Prunus africana* were seen felled. Market observations confirmed that all fuelwood sold in Bamenda and Kumbo was eucalyptus. Traditional carvers in Oku do not use *Prunus africana* for stools or carving, confirming Knopfli (1998).

The bark was reported as having been used since pre-colonial times as a medicine in the Northwest and Southwest, confirming reports by Mbai (1998). In both regions 35% of harvesters indicated its use for stomach problems, diarrhoea, fevers and madness. Traditional healers reported that it is one of their most important plant species (Ingram

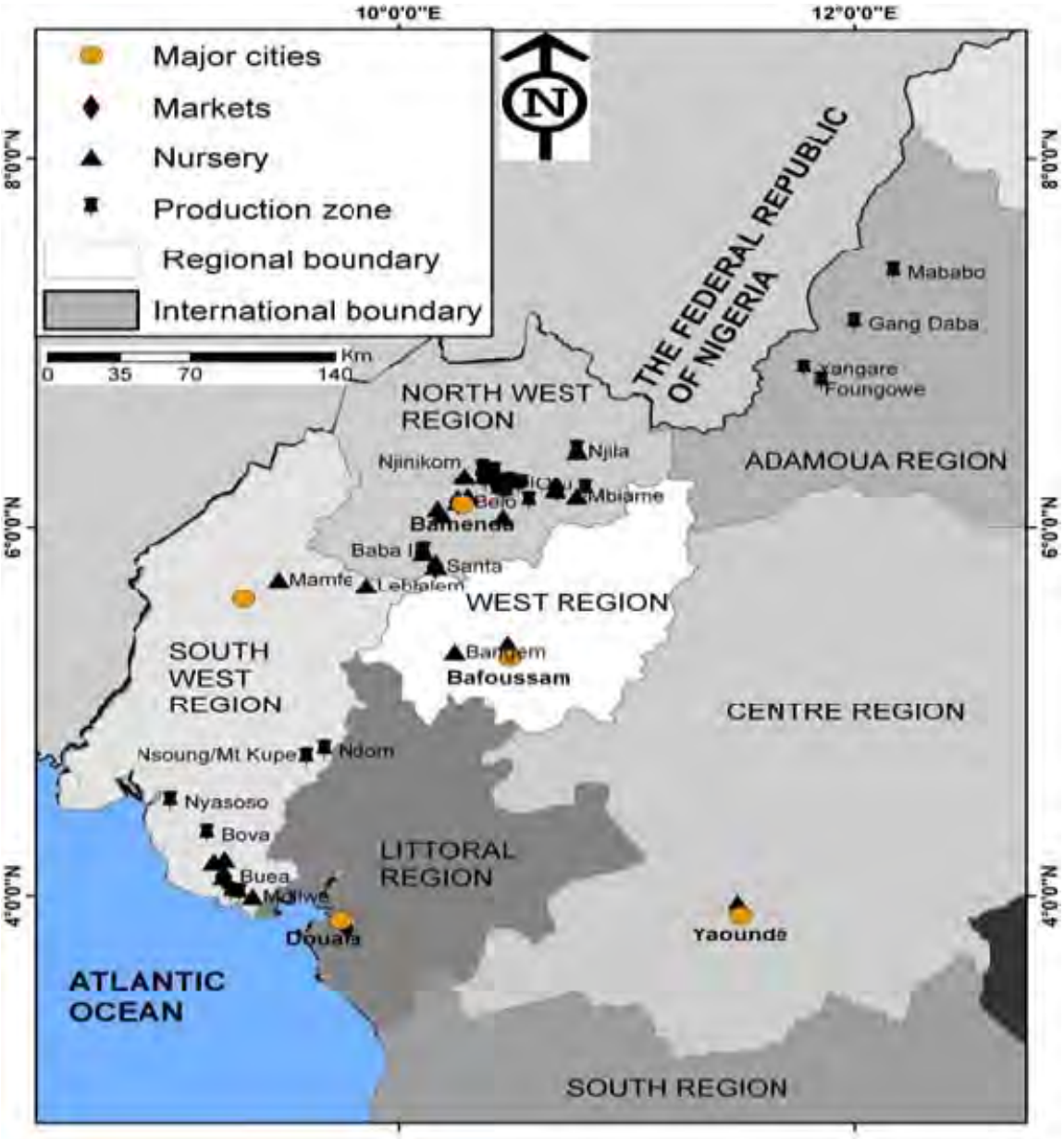
and Nsawir 2007). The bark is usually dried, chewed raw, boiled into a tea (often with other herbs), or ground into a paste and mixed with honey and herbs. These findings parallel the human medicinal uses, but not the veterinary uses, recorded for the bark, leaves, berries and roots (Cunningham *et al.* 1993; Nfi *et al.* 2001; Cunningham *et al.* 2002; Stewart 2003; Cunningham 2006b; Nfi *et al.* 2008).

Medicinal use internationally began in the 1700s (Simons *et al.* 1998) and was scientifically documented in 1962 (Watt *et al.* 1962; Altavahealth 2001). The bark, leaves, seeds and roots contain active chemical extracts (Cristoni *et al.* 2000; Anon. 2002). Studies have confirmed the bark's efficacy to reduce benign prostatic hyperplasia (BPH) symptoms, chronic prostatitis, sexual and reproductive dysfunctions and obstruction-induced contractile dysfunction (Cunningham *et al.* 1993; Hall *et al.* 2000; Anon. 2002). The bark extract has been approved for use in prescription pharmaceuticals since the mid-1960s in Germany, France and Italy. Although there are many other alternative plant-based drugs to treat prostate problems, no synthetic chemical alternative exists. The high social and medicinal value of *Prunus africana* is emphasised by it being the active ingredient of BPH treatments for over 30 years and continued demand expected with ageing populations from the estimated 85,000 prostate patients in 2000 (Pomatto 2001; CITES 2008). Data on prescription pharmaceuticals based on *Prunus africana* extract focus on the efficacy of the active ingredients and are aimed at doctors prescribing the drug – not the end consumer. The health product chain targets consumers using images of a natural, botanic remedy, some drawing on traditional use in South Africa (Simons *et al.* 1998), but none on medicinal or other uses in Cameroon. Certification has been advocated to develop a chain of custody and enhance producer benefits (Peka 2003; Chupezi *et al.* 2004; Medicinal Plants Specialist Group 2007), but is difficult given that the route to consumers is as a prescription drug.

Ecoregion sources and chain locations

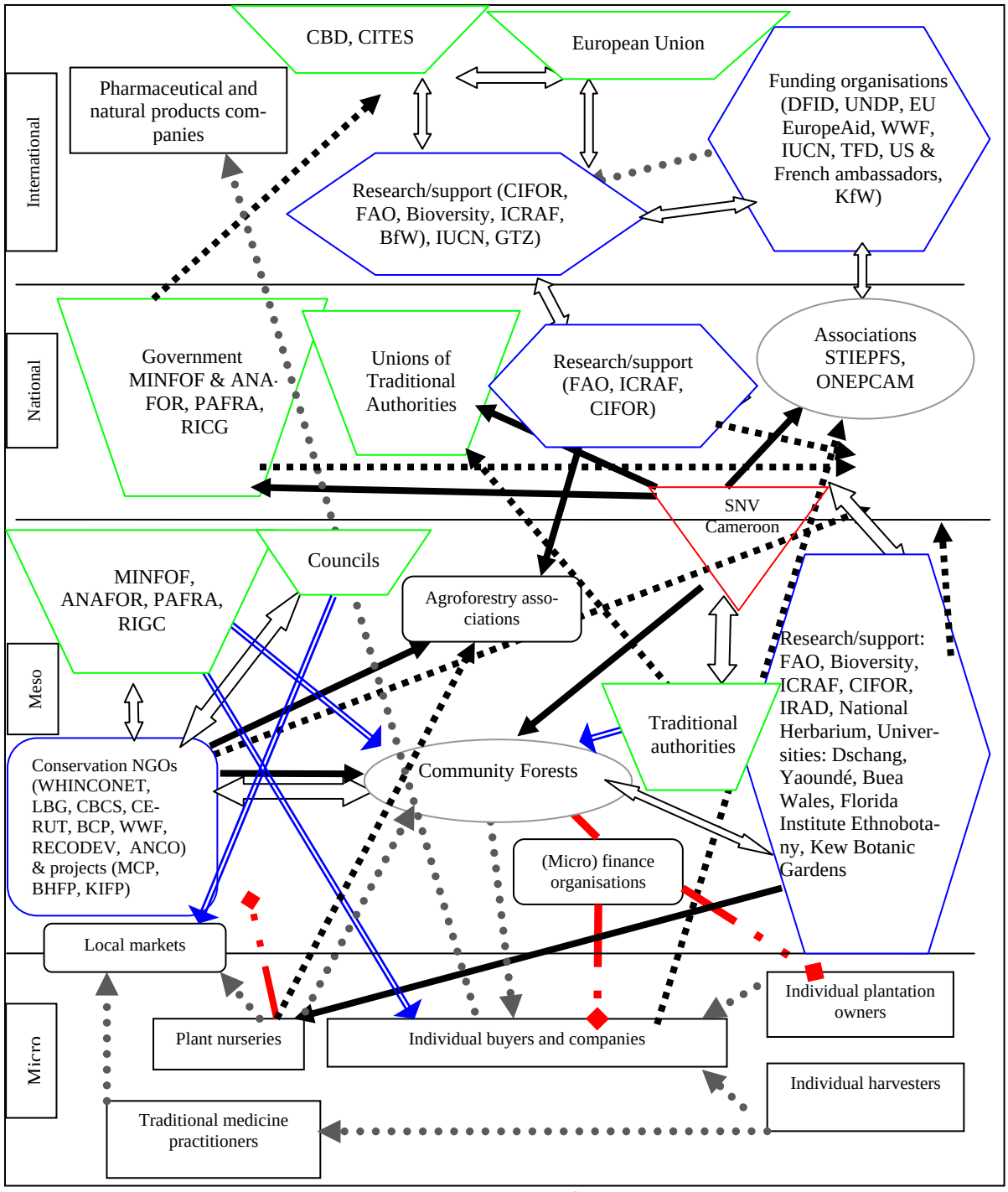
There is substantial indigenous knowledge of the locations and ecology in which *Prunus africana* is found. This is typically held by medicine practitioners, forest users such as hunters and beekeepers, community forest managers and patrollers, and commercial exploiters. Based on observations, literature and surveys, six major afromontane ecoregion landscapes were identified as the main *Prunus africana* production areas, shown in Figure 9.1. In Adamaoua, where it is not used locally and harvesting takes place by agents exogenous to the region, locations were hardly known. In the Southwest region, on Mt Cameroon the species is found in sub-montane and montane forest in the highest densities between 900 to 2,500 m, on farms and in plantations; in the Bakossi Mountains, Bamboutous Mountains around Lebialem, Mt Kupe, Mt Muanengouba and Takamanda, it was found planted around farms and wild in gallery forests between 1,600 to 2,400 m. In the Northwest region, it was found between 2,400 to 3,000 m in Kilum-Ijim forest in the highest densities, and in forest-savannah transition zones (but not scrub where bush fires are common, indicating its limited fire resistance), secondary forests, forest remnants, and on farms and small plantations across the region. In Adamaoua, it was found in the wild in the Mbabo Mountains on the Mayo-Baléo-Nigerian border and Tchabal Gang Daba mountain gallery forests between 1,300 m to 1,800 m. Similar to other African countries (Hall, O'Brien *et al.* 2000); it is most abundant in high altitude sub-alpine, upper and lower afromontane mixed forests. This distribution pattern matches ONADEF data (MINEF *et al.* 2000; Belinga 2001).

Figure 9.1 Map of *Prunus africana* value chain study area in Cameroon



From these production areas, the chain has two main channels, shown in Figure 9.2. One channel concerns local trade and has existed for at least forty years, pre-dating international exports from the 1970s (Cunningham *et al.* 2002) with four sub-channels. In the local medicinal channel, small, dried bark pieces are sold to the general public through medicinal plant traders in type I local markets and type II urban markets in Bamenda, Kumbo, Bafoussam and Dschang. On average five kg of dried bark was sold every six months by traditional herb and spice vendors in each market, with two to five vendors having permanent stalls in each market. If known, the main sources were named as Oku and Mt Cameroon.

Figure 9.2 *Prunus africana* chain from Northwest, Southwest and Adamaoua regions



In the second channel, bark is processed into medicines and sold direct to consumers by traditional medicine men from their homes in the Northwest, particularly in Oku, Belo, Fundong and Kumbo, and in the Southwest in centres of traditional medicine (Wonya Mavio, Fontem, Buea, Tombel and Bangem). They source locally, from their own trees, in villages or on the forest edge. This supports reports that for 80% of Southwest herbalists *Prunus africana* is one of the most important medicinal plants (Nfi *et al.* 2008). A third channel concerns timber for hoes and tools. A fourth channel is local, small-scale veterinary use (Nfi *et al.* 2001; Stewart 2003). The second and major chain is international: from the Northwest, Mt Cameroon and Adamaoua, bark is harvested and either dried locally or transported to drying sheds in Douala and Bafoussam. Here it is cut into pieces or powdered, prior to exporting to specialised chemical and pharmaceutical companies in Europe. Pygeum powder and extract is re-exported to other European countries, the USA, India and China.

Prunus africana chain actors

This section introduces the main actors in the chain. Table 9.1 shows that an estimated 3,233 people are active in the chain from the study areas. Although the total number of those involved is significant, this is a very small proportion (less than 0.1%) of the total population in the Northwest, Southwest and Adamaoua. The direct actors in the chain are categorised as harvesters, farmers and planters, traders, exporters, importers and consumers. There are also international and national regulatory authorities and support actors including development and conservation NGOs and research organisations.

Table 9.1 Population statistics of *Prunus africana* study area

Region/ Division	Capital	Surface area km^2	Popln[1]	Popln. density km²	N^o value chain actors					% total popln.
					Harvester	*Farmers*[2]	*Trader*	*Exporter*	*Nursery workers*	
Northwest	*Bamenda*	*17,812*	*1,728,953*	*100*	*245*	800	*6*	*11*	*79*	0.05
D.M.	Ndu	4,279	269,931	33	20	5	1		3	0.01
Bui	Kumbo	2,297	321,969	32	150	455	3	1	15	0.19
Boyo	Fundong	1,592	124,887	31	75	120			25	0.18
Mezam	Bamenda	1,745	524,127	35		220	2	10	36	0.05
Adamaoua	*Ngoundéré*	*63,691*	*884,289*	*14*		0				0.00
Djerem	Tibati	13,283	124,948	9						0.00
Southwest	*Buea*	*24,571*	*1,316,079*	*34*	*205*	*49*		*1*	*31*	0.02
Fako	Buea	2,093	466,412	222	200	23		1	25	0.05
K.M.	Bangem	3,404	105,579	31	10	26			6	0.05
West	*Bafoussam*	*13,892*	*1,760,276*	*38*			*3*	*5*	7	0.00
Littoral	*Douala*	*20,239*	*2,510,2631*	*124*				*15*		0.00
Centre	*Yaoundé*	*68,953*	*3,098,044*	*45*				*25*		0.00
Total					450	825	57	1451	450	

Sources: Research results and [1] 2005 population (National Institute of Statistics 2010). [2] Includes plantation owners.
Key: DM= Donga Mantung KM= Kupe Muanengouba

In the Southwest, all the harvesters were male, 73% were less than 31 years old, with an average household size of seven people with a high proportion (92%) having primary education. The largest group of 200 harvesters inhabit 14 Bakweri villages in Fako division circling Mt Cameroon with a total population of around 10,000 (Stanley 2009). The harvesters worked on rotation under the supervision of the Mount Cameroon Prunus Management Common Initiative Group (MOCAP-CIG). MOCAP-CIG was created in August 2000 to control the harvest and sale of *Prunus africana* in nine villages. It grew from the Mapanja and Bokwango Harvesters' Unions established in 1994 to supply

Plantecam Ltd. The German development agency GTZ supported MOCAP-CIG through the Sustainable Management of Natural Resources in the Southwest Province project (see Chapter 6), paying set-up costs of over 1 million FCFA (2,041 US$), helping overcome administrative hurdles and for them to eventually obtain a harvest permit in 2007. In the same year, a United Nations Development Programme (UNDP) grant supported the purchase of a small processing machine. But the trade suspension in 2007 (discussed in the section on national regulations) discouraged the group (Joseph Ekati, MOCAP-CIG, pers. comm. 2010). Around 10 harvesters from Nyasososo, a village of around 1,500 people, have harvested occasionally on Mt Kupe and an estimated 15 harvesters inhabit villages around Bangem, near Mt Muanengouba.

In the Northwest, all harvesters were married men, 50% from the Kom, Nso and Oku ethnic groups, associated with 21 community forests, 18 of which are located in the Kilum-Ijim Forest (see Chapter 4 and 6). They mainly inhabit 11 forest-adjacent villages in Bui division with a population of 29,000, 13 villages in Boyo division with around 30,000 people, and Njila village of 2,500 inhabitants in Donga Mantung[4]. A few harvesters (8%) were members of a *Prunus* harvesting association and 47% were members of forest management committees governing the community forests. The other 50% of harvesters were also from the Northwest, being individuals or employed ad-hoc by intermediaries. Northwest harvesters were on average 47 years old, educated to primary school level, heading a household of 9.8 people on average.

Large-scale harvesting has usually taken place in groups of 10 to 400 people from the community and community forests, with harvesters working individually or in pairs. The majority (72%) of the Northwest community forests were less than a decade old in 2009 and had commenced harvesting in the last four years or less. Individual harvesters had on average 16 years' experience, with a maximum of 40. Many (80%) collect other NTFPs, with on average 11 years' experience harvesting honey, bamboo, firewood and medicinal plants, and were knowledgeable about the forest. Some 2% of harvesters were also traditional medicine practitioners. Harvesting was rated by 50% as one of their five main income sources and nurseries by 25%. In the Northwest, other major income sources included subsistence farming and cash crops (coffee, market gardening, cola, potatoes, palm-wine, maize and beekeeping), livestock, petty trading and labouring. Less than 2% had salaried incomes. All had diversified incomes with up to seven different activities and an average of three.

In the Southwest, 75% of harvesters had at least two other supplementary activities, mainly subsistence agriculture and cash crops, the value of which was less than *Prunus africana* in 2008. The vast majority of bark harvested was sold, 5% was given as gifts and 5% degraded, usually from mould. A small proportion, on average 1.1 kg of bark was kept by 15% of harvesters for family medicinal use. Timber was occasionally harvested. At least 22 plant nurseries in the Northwest region, eight in the Southwest and two in the West sell *Prunus africana* seeds and seedlings, among a range of multipurpose plants, melliferous and native trees. Many started with support and/or training from conservation projects such as the Mt Kupe Forest, Kilum-Ijim Forest, Bamenda Highlands Forest, Mount Cameroon and government-supported projects such as the support programme for rural forestry and agroforestry (PAFRA) and the capacity building for community-managed forest and fauna resources initiatives (RIGC) (see Chapter 6). They employ on average three to four staff each, mainly male. Seeds tend to be col-

[4] Population data reported in community forest simple management plans.

lected from nearby forests and cultivated. Many of the nurseries are side-enterprises of NGOs, farming groups and community forests and around a quarter are solely occupied by the nursery business. Three councils have started nurseries, the largest of which is Kumbo Urban Council, supplying municipal re-planting and erosion control schemes in watersheds and as a commercial enterprise.

At least 4,821 individuals and 78 Common Initiative Groups (CIGs), farmers and 20 community forests have planted and 'own' *Prunus africana* trees. There are at least 18 large-scale plantations in the Northwest, 13 in the Southwest and three in the West. They are owned by individuals, schools, an agricultural enterprise, a water company, NGOs and the state Cameroon Development Corporation (CDC).

Seven medicinal plant vendors in markets in Oku, Bamenda, Bafoussam and Dschang sold small pieces of *Prunus africana* bark at 200 to 500 FCFA (0.40 to 1.02 US$) a piece. Their stock ranged from one to ten kilos with a low turnover. They were supplied by specialist harvesters or harvested themselves with permission from traditional rulers or from tree owners. Their clients either asked specifically for the bark for home medicinal use or were advised by the vendors once specific complaints were indicated. *Prunus africana* was not found in markets in Yaoundé or Douala. Two itinerant *Prunus africana* hoe handle vendors harvested in Kilum-Ijim Forest and had a stock of around 40 handles. They travel to Country Sunday markets in large villages such as Oku, Belo, and in Mezam and Bui divisions.

Around 28 agents, intermediaries and buyers have been active in the international bark trade. The majority employ men (80%), aged 38 years on average with a household of five people, working on average 5.8 years in the sector, with the longest 15 years. Their staff size ranges from three to hundreds, with the largest being Afrimed, a consortium that includes one of the largest Cameroonian financial institutions. They obtain special forest product (SFP) permits or buy weigh bills from permit holders. Some of the larger enterprises have informal teams of occasional harvesters and/or hire villagers on an ad-hoc basis paying per kilo of fresh bark. Most have warehousing capacity and re-sell to the exporting companies. Eight companies have regularly exported *Prunus africana* from Cameroon since 2003. Most also trade in other forest products: eucalyptus poles for the domestic market, yohimbe bark (*Pausinystalia johimbe*) and gum arabic (*Acacia* spp.) for export.

Since 1972 at least 11 exporting enterprises have conducted primary and secondary processing. Fresh bark is cut into 10-20 cm chips, sun or air-dried to a moisture content of less than 30% and packed for shipping. The only companies processing from 2007 to 2009 were the Compagnie Commerciale pour l'Exportation des Produits Forestiers (CEXPRO), Africaphyto and Agrodenree in Douala and Afrimed based in Bafoussam, Yaoundé and Douala. As some importers require verification of the species – due to substitutions made in the past – quality control along the chain now usually takes place in the easiest way by purchasing bark instead of powder. MOCAP-CIG has a small-scale shredding machine, but has never used this commercially. Only two companies process into a powder of less than 10% moisture content: CEXPRO and Afrimed. Although Africaphyto has the capacity, since 2007 it has only exported bark. Plantecam Medicam[5] operated a *Prunus africana* bark-processing factory in Mutengene near Buea from 1972 to 2000 when its license expired and factory operating costs became uneco-

[5] Plantecam Ltd. was a subsidiary of Laboratoires Debat, owned by the Fournier Pharma group, and now by the French company Solvay Chemicals.

nomic. Since 2000 no extract-processing facilities have operated in Cameroon. Since 2000, 50 companies had obtained licenses, with three dominating the market. Afrimed annually exported on average 1,382 tons, having on average 57% of market share annually, CEXPRO 208 tons, SGP 190 tons and others 40 tons. On average, from 2005 to 2009, five companies annually have been granted permits. In 2006 a Spanish importer was interested to set up operations but was dissuaded by the permitting system and insecurity of supply. Four exporters are members of associations. The Syndicat des Exploitants Transformateurs Industriels Exportateurs des Produits Spéciaux (STIEPFS) is a vocal lobby group for special forest product and forest-product traders and the National Organization of Non-Timber Forest Product Operators of Cameroon (ONPECAM) conducts capacity building and lobbying. Although exporters did not respond to the entire questionnaire, sufficient trust was built up such that many shared information piecemeal. This reflects their frustration with the sector, initial mistrust and research fatigue.

At least ten pharmaceutical companies have imported Cameroonian bark and extract the active chemical from the bark. Solvay Chemicals is an international chemical company which has produced the *Prunus* extract-based drug Tadenan for the last 30 years and has the longest history of importing from Cameroon. Their product is on average used by 1,300 persons daily. The drug has been a long-term 'cash cow' for the company: exceeding the anticipated 15 year lifetime, with an additional two to ten years predicted, depending on the availability of *Prunus africana*. Due to 2007 CITES trade suspension, Solvay indicated its plan to be more active in sustainable extraction to its value chain suppliers by providing financial and moral commitment for vertical integration using plantations or forestation to secure supply, as difficulties obtaining the raw material could make the product no longer commercially viable. Synkem is a Solvay subsidiary producing extracts (of which *Prunus* is the only botanic extract) and was active in Cameroon as Plantecam Ltd. It now operates from France and imported barks from Cameroon, DRC, Equatorial Guinea, Uganda and Tanzania. The EU trade suspensions in 2007 reduced its supplies by 80% (see section on Governance), posing a major supply threat as it keeps around six months' worth of stock. Starlight and Herbs International are French companies processing and selling in Europe and the USA. The Spanish pharmaceutical company Euromed produces both the extract and pharmaceuticals. The Italian company Indena produces the extract using a different process, which it exports to the USA health and diet supplements market. Madagascar-based Innovax makes an extract sold mainly to France. The European companies also supply American and Chinese manufacturers of health and diet supplements. Many of these also manufacture products from other barks and natural resources.

The chain structure and actors have changed significantly during the forty-year history of international trade, but little since 2000 (Pomatto 2001), indicating a stable market since then. The actors changed when Cameroon became a party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in 2005, with the Ministry of Forestry and Wildlife (MINFOF) designated as the CITES management authority and the National Forestry Development Agency (ONADEF)[6] as the national CITES scientific authority. Since the CITES trade suspension in 2007, the two authorities have been most active. Development organisations such as GTZ, SNV, Birdlife International, WWF and particularly the Mount Cameroon Project, Sustainable

[6] ONADEF became ANAFOR in 2006, see Chapter 6.

Management of Natural Resources in the Southwest Project and Kilum-Ijim Forest projects have been prominent actors over the last 15 years. Local development and conservation NGOs such the Western Highlands Nature Conservation Network (WHINCONET) have been increasingly active since the mid-2000s, often with donor aid (see Chapter 4). They have supported conservation-focussed inventories, monitoring and yield studies. Together with international and national research organisations, they have studied the sector and disseminated information in Cameroon, influencing CITES and the European Commission. Since 2000 their focus has increasingly been on institutional, organisational and technical capacity building of harvesters in the Southwest and Northwest and collective action. Actors from all regions and along the chain met together for the first time in 2006. A Prunus Platform was facilitated as part of the FAO-CIFOR-SNV NTFP Project to provide guidance on a national management plan and allow exchanges on techniques, problems and markets.

Prunus africana chain activities

Activities are generally conducted irrespective of seasons and climate, although slightly more harvesting was reported during the low agricultural season (June to August). The two channels use different harvest and processing methods.

For international trade, only the bark is harvested. Men dominate harvesting: walking 3 to 12 km to find trees, climbing them, using a machete and knife to incise and then peel the bark into approximately 30 by 50 cm to 100 cm strips, taking on average two hours for 10 kg, tie it and head-load the 30 to 75 kg (average 50 kg) bundles to their homes or village drop-off points. The vast majority of bark is sold in fresh strips. Bark from mature trees is generally twice the weight of dried bark i.e. 1,000 kg of wet bark produces 500 kg of dry bark at 50% humidity.

In some Northwest community forests, preliminary cleaning and drying was conducted, using ASSOFOMI and ASSOKOFOMI offices as stores. Only 9% of individual harvesters dry barks using their own houses or sheds and 2% clean barks. The bark is sold to processers in Cameroon or to international pharmaceutical companies, who pulverise it into a powder of up to 10% moisture content. This is then dissolved in a solvent base to produce an extract. A second processing produces a fine white crystalline extract of 5% to 0.05% weight of the initial dry powder, which is the active ingredient for pharmaceutical preparations. In 2001 in France, Switzerland, Austria, Spain and Italy at least 19 products and in the USA, eight contained *Prunus africana* extract (Pomatto 2001). By 2009 over 25 medications and 20 products contained *Prunus africana* extract, marketed by American, French and Chinese companies and in 2010, at least 40 brand-name products were sold on different internet sites.

Initially Plantecam Ltd. felled trees, changing to the two quarters technique where bark is peeled and stripped from opposing quarters of the tree trunk (see Box 9.1) in 1989 in response to the 1986 law. The company trained its workers on this technique between 1972 and 1987, and then harvesters in the Northwest in 1985 and harvesters from 12 villages around Mt Cameroon in 1994. The Mount Cameroon Project (Hall *et al.* 2000) further popularised this technique. In the Southwest, all MOCAP-CIG harvesters reported being trained and using the technique. In the Northwest 45% use the technique, 13% strip the whole tree of bark and 40% harvest a small patch or poles for own use or local sale. MOCAP-CIG limits harvesters to one 33 kg bundle a day, for health reasons and to control harvesting, rotating harvesters so that all can earn. Plantecam Ltd. restricted workers to five and half days harvesting per month. In the Northwest, harvesting was reported as an occasional, temporary activity, commonly un-

dertaken in response to a trader's order. On average, individual harvesters reported having harvested three times and community forests twice. Bark is also stripped from felled trees, particularly in the Southwest (Cunningham and Mbenkum 1993; Meuer 2007), but less in the Northwest (Stewart 2007).

Box 9.1 Two quarters bark harvesting technique

- Bark removed from the trunk in strips from 1.30 m above ground level to the first branch.
- Only trees with diameter at breast height (dbh) >30 cm can be debarked.
- Trees with dbh <50 cm should be debarked with two strips in opposite sides, each no wider than 1/4 of the tree circumference.
- Trees with a dbh >50 cm should be debarked in four strips, regularly distributed around the circumference, each no wider than one eighth of the circumference.
- Lateral roots with a minimum diameter of 20 cm on trees >dbh 50 cm can be debarked.
- Debarking is prior to clearing the root rhizosphere and should not exceed one quarter of the root's circumference.
- After debarking, the root should be covered with soil to avoid desiccation and enable rapid reconstitution.
- Trees with debarked roots and trunks should be marked.
- Each debarked tree should completely recover before subsequent debarking.

Sources: (Ministry of Agriculture 1986; Ndibi *et al.* 1997; Ondigui 2001).

When harvested for own use and local trade, different activities and tree parts are used. Traditional bark harvesting by medicine men in Kilum-Ijim Forest involves cutting a small piece of bark, around 10 wide by 10 or 20 cm long, with a machete or knife from the lower bole of a mature, healthy tree of 30 to 100 cm dbh. Harvesting occurs approximately once every six months to two years. Pieces of dry bark, sold in widely varying sizes weighing between 50g to 400g, remains useable for years. The practitioners indicated that it was common to repeatedly harvest the same tree, with no visible health impacts to tree health or mortality. The efficacy of barks from different trees is not checked and patients do not usually provide feedback. As *Prunus africana* is used alongside other components, practitioners could not indicate if there were differences in efficacy between trees. Harvesting was conducted mostly from trees located on the harvester's compound or farm and occasionally from neighbour's trees or the nearest community forest. Branches used for poles, hoe and tool handles are harvested from selected branches, not usually by felling the tree and are sold per unit rather than by weight.

Prunus africana values

Over the past 40 years the chain has grown from a subsistence and low-volume, low commercial value medicinal bark, timber and fuelwood trade, to a high-value bark trade driven by the international pharmaceutical and botanical health-product sector. Available data indicates that annual production (including illegal[7] harvests), from the major production zones has varied significantly, shown in Table 9.2 and Table 9.3.

[7] Harvesting is illegal if unauthorised by a community forest, if contrary to the forest management plan, if the plan was unapproved or if sold to a person not possessing a special forestry product permit.

Table 9.2 *Prunus africana* harvests in the Northwest and Adamaoua 2001 to 2007

Region	Division	Year	Average quantity (kg)	Average selling price in village (FCFA)	Total income (FCFA)
Northwest	Bui	2007	2,575	64	164,800
		2006	385	45	17,325
	Donga Mantung	2007	1,360	66.5	90,440
		2006	530	54	28,620
		2005	250	75	18,750
	Boyo	2005	3,860	32.5	125,450
Adamaoua	Mayo-Banyo	2001 to 2007	*494,600*	-	-
	Faro et Déo	2001 to 2007	*8,800*	-	-

Sources: Research results interviews traders, MINFOF Northwest, MINFOF Adamaoua.

Table 9.3 *Prunus africana* harvests in Northwest community forests 2003 to 2007

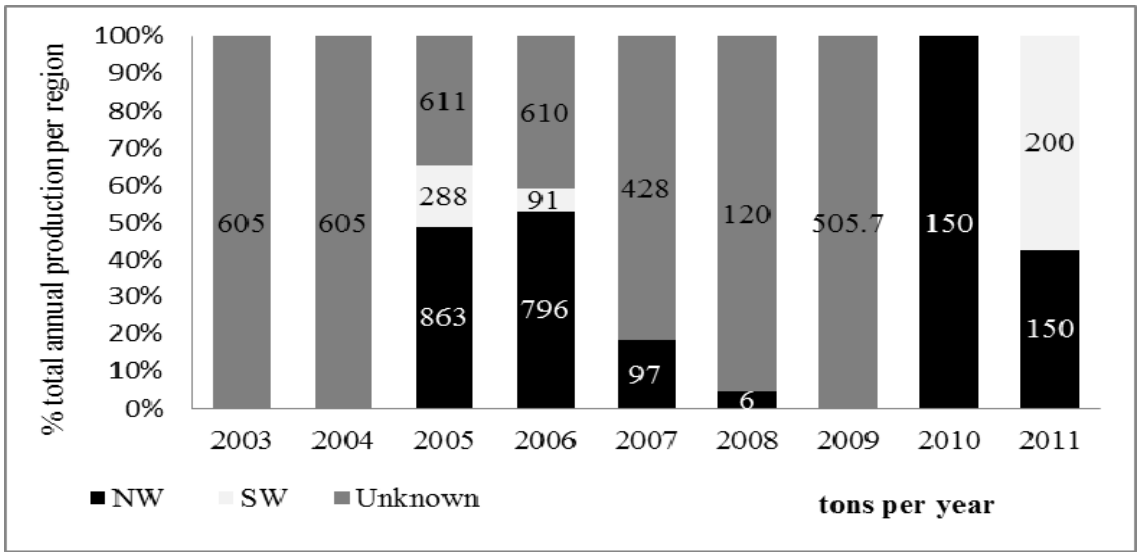
Community forest	Year	Quantity (kg)	Average selling price (FCFA per kg)	Total income (FCFA)	Illegally harvested quantity (kg)
Afua & Juambum	2006	12,000	65	780,000	
Adjicofomi	2007	20,000	90	1,800,000	
Abuh	2003	2,700	74	199,800	
Anyajua	2007	20	90	1,800	6,000
Ajyng	2000	8,000	50	400,000	50,000
Baba II	2004	5,000	50	250,000	50,000
Bihkov	2004	122,000	90	10,980,000	
	2005	95,000	30	2,850,000	
Anyafua	2005	1,000	60	60,000	
Bihkov	2003	150,000	80	12,000,000	
Njilah	2006	85,000	40	3,400,000	
Kilum	2006	900,000	85	76,500,000	
	2005	250,000	90	22,500,000	
Ijim	2003	42000	80	3,360,000	
	2006	80,000	90	7,200,000	
Kedjem Mawes	2006	106,000	100	10600,000	
	2003	6,000	75	450,000	
Laikom	2004	20,000	75	15,00,000	5,000
	2005	40,000	135	54,00,000	6,630
	2006	410	94	38,540	
Muteff	2004	29000	75	21,75,000	
Vehkovi	2004	20,000	80	16,00,000	
Yatimofco	2003	3,500	50	175,000	
Average		*86,853*	*76*	*6,842,506*	*23,526*
Total		*1,985,630*		*163,440,140*	*117,630*

Sources: Research results with harvesters and community forests, ASSOFOMI and ASSOKOFOMI.

To overcome illegal harvesting and prevent bushfires, community forests such as Ndu, Ijim and Kedjem Mawes set up patrols. Success depended upon their ability to pay patrollers (on average 500 to 1000 FCFA – 1.02 to 2.04 US$ – a person daily). This in turn rested upon the income gained from community forest harvesting, the scale of illegal harvests and implication of FMIs, local authorities and community members in enforcement and punitive actions. Increased demand led to a “free for all situation” (Peter Bah, Ijim CF, pers. comm. 2009). Many community forests gave up patrolling and harvested illegally, with high volumes harvested in 2006 and 2007. Mt Cameroon has also suffered from illegal harvesting (Meuer 2007). Figure 9.3 shows regional production,

highlighting that the origin of half (57%) of the bark from 2003 to 2011 was unknown: the source being only occasionally indicated on weigh bills. There is no distinction made in official figures between legal and illegal bark. These figures emphasise the importance of Mt Cameroon and the Northwest as major production zones and with no distinction made between wild and cultivated bark.

Figure 9.3 Annual *Prunus africana* production (tons and percentage) 2003 to 2011



Sources: MINFOF SFP permits, Research results from ASSOFOMI, ASSOKOFOMI and MOCAP-CIG.

Shown in Table 9.4, harvester selling prices varied substantially from 1980 to 2011, with a national average over this period of 180 FCFA (0.31 US$) per kg. Prices also varied widely by location: 30 to 50 FCFA (00.5 to 0.09 US$) outside of community forests; 76 FCFA (0.16 US$) from community forests and 160 FCFA (0.28 US$) to 260 FCFA (0.45 US$) from MOCAP-CIG. Although many harvesters indicated their unhappiness with prices, *Prunus* income was seen as more valuable than small-scale farming or plantation crops, confirming earlier studies (Yaron 2001). Higher selling prices in the Southwest are attributed to MOCAP-CIG eliminating intermediaries, negotiating directly with exporters and regularly selling larger quantities. The export market value is shown in Table 9.4, averaging 1,332,601 US$ annually. The retail market in consumer countries in 1999 was estimated at 200 million US$ (CARPE 2001). In 2009, the average internet selling price of branded pygeum capsules (76 capsules weighing 91 g, containing 50 to 100 mg of bark extract) was 16 US$. This is equivalent to 991 US$ per kg of active ingredient (GAIA/GRAIN 2000). The values of bark sold along the international channel are summarised in the chain map in Figure 9.5 below.

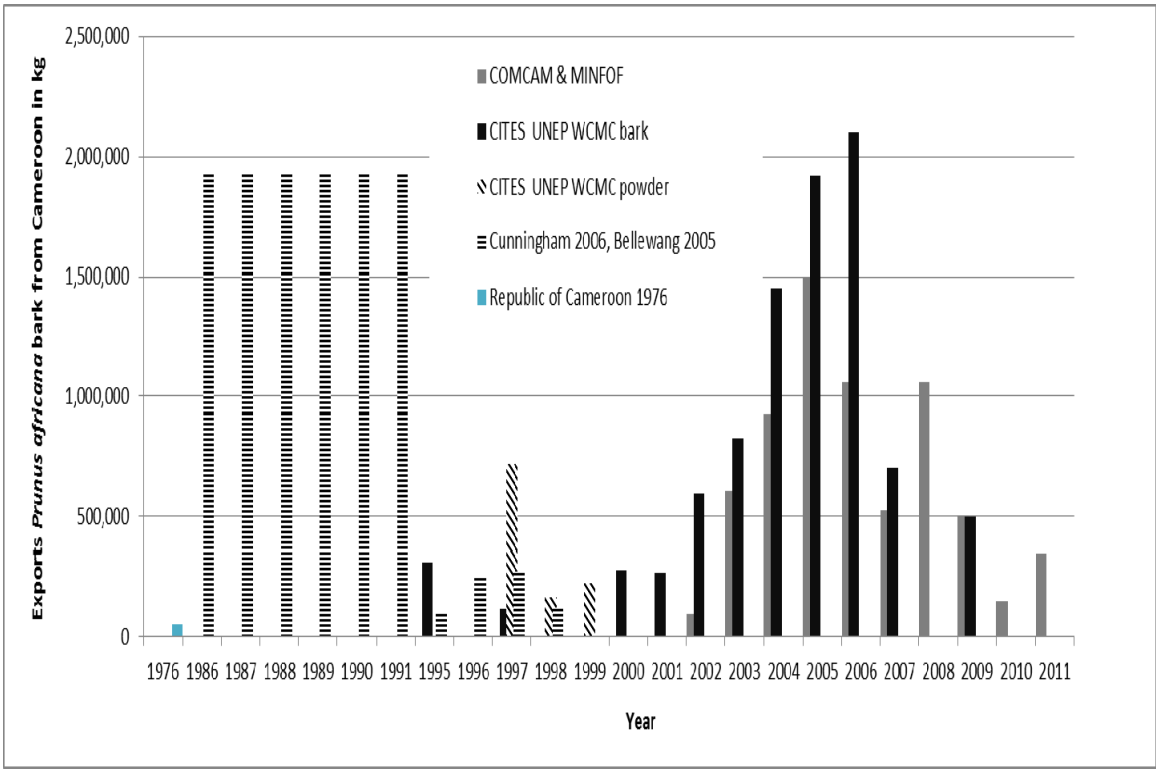
Cameroon has consistently been the world's largest *Prunus africana* exporter, averaging 38% of global market share from 1995 to 2004. Since 2000 Cameroonian *Prunus africana* has been imported predominantly by France (53% of imports), Spain (31%) and Madagascar (11%), with India, USA, Belgium and China all importing around 1% each. Cameroon's share increased to 48% of global production after 2004 as other exporting countries, such as Madagascar and Kenya, decreased production. Worldwide trade trebled from 2003 to 2005, the majority from Cameroon. CITES export restrictions led to world production decreasing to 641 tons in 2008, sourced from the DRC, Cameroon, Kenya. Only 54 tons was exported worldwide in 2009, all from

Table 9.4 Harvester and export value of *Prunus africana* 1995 to 2010

Year	Exports tons[1]	Average harvester price kg[3]	Market value Cameroon (FCFA)	Average exporter price kg	Export value (FCFA)	Export value (US$)
1980	-	40				
1995	310.00	70	21,700,000	750	232,500,000	465,420
1996	-	60	-	750	-	
1997	115.00	185	21,275,000	750	86,250,000	147,887
1998	-	180	-	750	-	
1999[2]	-	215	-	750	-	700,000
2001	115.00	215	-	750	86,250	117,572
2002	199.99	200	23,000,000	750	149,989	213,907
2003	386.00	200	39,997,000	750	289,500,000	500,992
2004	547.20	180	69,480,000	750	410,401,500	776,939
2005	1,452.00	160	87,552,320	1,050	1,524,602,100	2,890,315
2006	1,863.73	160	232,320,320	1,000	1,863,726,000	3,565,532
2007	1,540.50	260	484,568,760	1,000	1,540,500,000	3,213,342
2008	700.50	260	400,530,000	1,050	735,525,000	1,641,097
2009	505.69	180	126,090,000	1,050	735,525,000	1,125,603
2010[5]	150.00	-	-	-	-	
2011[5]	350.00	-	-	-	-	
Average	*703.17*	*180*	*145,219,400*	*835*	*636,480,959*	1,332,601

Sources: [1] CITES 2011, [2] CARPE 2001, [3] Research results, Chupzei and Ndoye 2004, Ewusi 1998, Ndam and Tonye 2004, [5] Henri Ackagou, MINFOF pers. comm. 2011. - signifies no data

Figure 9.4 *Prunus africana* exports from Cameroon 1976 to 2011



Sources: COMCAM 2003-2009, H. Ackagou, MINFOF pers. comm. 2011, CITES 2011, Cunningham 2006, Bellewang 2005 (averaged for 6 years).

Uganda. Annual exports from Cameroon are shown in Figure 9.4. Despite data inconsistencies[8] a growing volume is apparent until the trade suspension in 2007 and subsequent gradual resumption. COMCAM recorded exports in 2008 are difficult to explain, given that in 2009 only suspended stock harvested in 2007 was permitted by CITES.

Benefits from *Prunus africana* revenues have extended to local communities in the Southwest, stimulated by the Mt Cameroon project and access and benefit-sharing principles of the CBD. The benefit-sharing system of Mapanja Prunus Harvesters Union contributed 1,580,000 FCFA (2,260 US$) to the village development fund in 1998, supporting water and electrification projects (Ndam *et al.* 2004). Revenues to local communities over a nine month period in 2004 amounted to 35,700 US$, of which 2,260 US$ (7%) went to a village development fund and 1,530 (4%) to pay for group functioning costs. The multiplier effects of average incomes reported in the livelihood section included increased house construction, a surge in formal marriages and a greater proportion of children attending school (Ndam *et al.* 2004). MOCAP-CIG continued a benefit-sharing scheme, allocating 5% of the per kilo selling price to nine Village Development Funds, 65% to individual harvesters, 8% to MOCAP-CIG management and monitoring activities and 4% for government taxes. Out of the 15% allocated to the community, 90% is shared equally among member villages, 7.5% among the natural resource custodians (chiefs) and the remaining 2.5% is paid to the host village (Tieguhong *et al.* 2008). In 2005, 3,700,000 FCFA (7,104 US$) was paid into village development funds, for water and electrification, building markets and community halls (Tieguhong *et al.* 2008a).

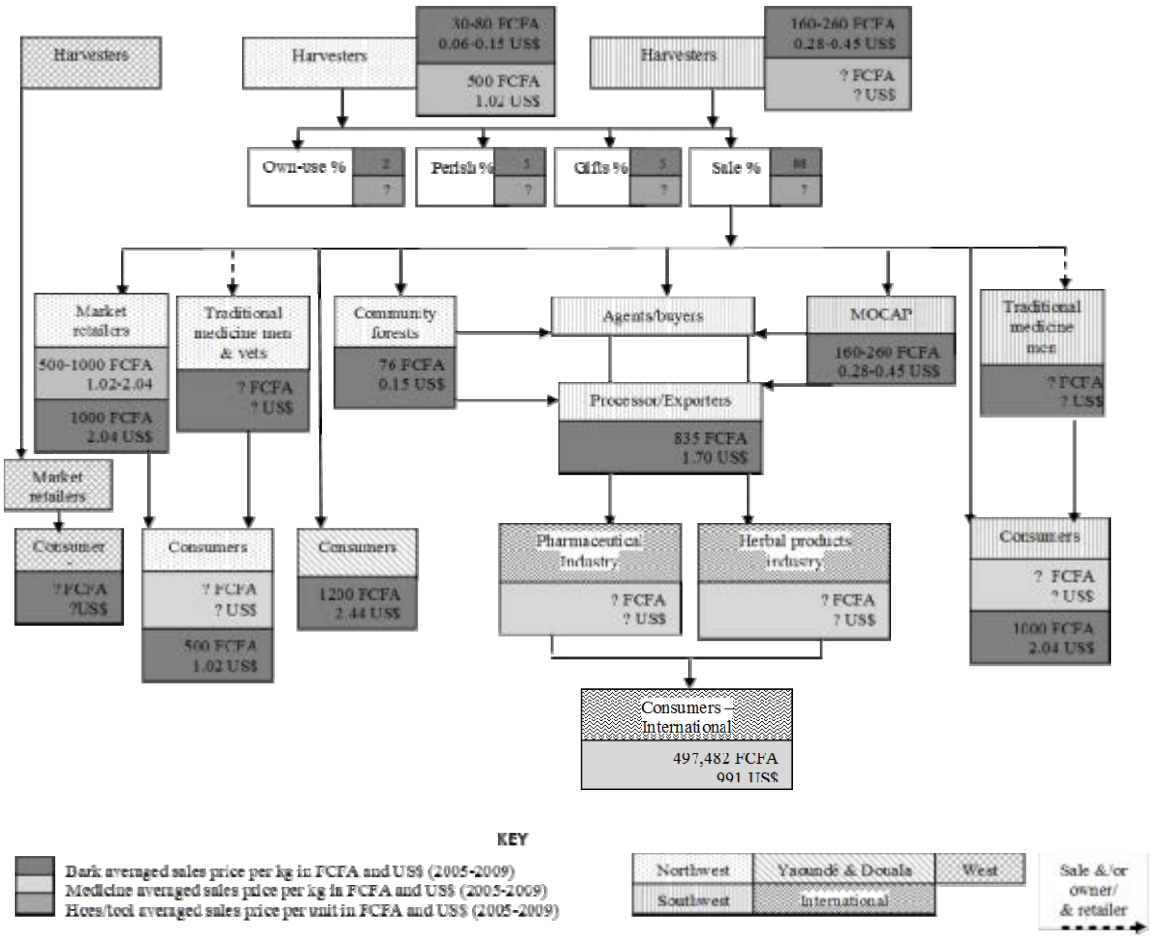
In the Northwest, the Kilum-Ijim Forest Project also encouraged community forests to develop and implement benefit-sharing mechanisms. Generally 50% of community forest revenues were allocated to village development projects, 35% to forest regeneration and 15% for the community forest management institution (WHINCONET 2005). Harvesters received on average 67% of the total forest edge price. Of the total price received for the bark, individual harvesters are paid on average 30 FCFA (0.61 US$) per kg brought to collection point and 40 FCFA (0.81 US$) per kg was kept by the community forest. The money is usually kept in a credit union account, subject to distribution according to agreed rules, with 35% set aside for the running of the community forest management bodies, 50% for community development and 15% for regeneration and training on forest conservation (Samuel Mbuh, Emfveh-Mii CF FMI, pers. comm. 2004). For example, ten villages benefitted from the 3.3 million FCFA (6,736 US$) *Prunus africana* revenues by Emfveh-Mii community forest in 2003, with between 40,000 and 225,000 FCFA (81 to 459 US$) per village allocated for development purposes such as a water supply, primary school roofing, a bridge and repairs to Oku Rural Radio, and 250,000 FCFA (510 US$) to traditional authorities. Although the community forest associations (Bihkov, ASSOFOMI and ASSOKOFOMI) have benefit-sharing mechanisms, none of the community forests harvesting *Prunus africana* in the period 2004 to 2008 paid dues to the Associations. Only Bihkov produced a report and accounts with details of benefit sharing. Three community forests had major internal conflicts in the period 2004 to 2008 due to mismanagement of funds, and five failed to produce annual reports in this period. A small proportion of harvesters (10%) indicated

[8] Cameroon CITES authorities provide data for the CITES database. Differences may be due to how dried bark, powder and extract were recorded and time lags between authorisations, exports and published data.

conflicts due to boundary disputes and Plantecam Ltd. agents not paying. Community members indicated concerns that benefit-sharing mechanisms had not fully been implemented and communities had not sufficiently benefited. Due to the lack of permits and harvesting outside of their management plans, income was illegal for many of the community forests (WHINCONET 2005; Nsom *et al.* 2007; Stewart 2007b).

Values and volumes of *Prunus*-based medicinal products sold by traditional medicinal practitioners were not investigated. The average values of hoe handles and bark pieces sold for medicinal use in local and national markets are shown in Figure 9.5.

Figure 9.5 *Prunus africana* value chains and prices



Source: Research results

Governance of the *Prunus africana* value chain

To answer the third research question, this section presents and analyses the governance arrangements and trends in the *Prunus africana* chain. The trade in this tree's bark is one of most highly regulated among forest products in Cameroon and Africa, both formally by national laws and international conventions, customarily and by project- based arrangements.

A plethora of national regulations

Regulation of commercial harvesting of *Prunus africana* started in 1974[9], when permits were granted for a private company (formerly SODEXMEDI) to harvest. Plantecam Ltd. received a permit in 1976, following three failed requests, subsequently obtaining permits annually for at least 500 tons a year from 1976 to 1983, and five-year permits for 1,300 tons annually from 1986 to 1996. Two or three permits were issued to other Cameroonian companies in this period. After over-extraction in 1985, rules for harvesting medicinal plants, including *Prunus africana*, were prescribed in 1986 and 1992 (Ministry of Agriculture 1986; Ndibi *et al.* 1997; Ondigui 2001). In 1986 a requirement to plant three hectares of *Prunus africana* annually from 1986 and five hectares annually from 1992 was enacted. In 1981 the Minister of Agriculture enacted a law[10] following concerns about harvests in the Southwest. The 1994 Forest Law refined this procedure, requiring regional forestry chiefs to specify harvesting methods and quantities exploited. Interviews indicated this requirement has never been provided as part of the permit of special forest product process since 2004 (Joesph Ntsengue Levodo, MINFOF, pers. comm. 2010). A quarter of harvesters interviewed did not know about any rules. The two quarters technique was promoted by projects and apparently in the 1981 law, although long practiced, is of unproven efficacy. Monitoring and inventories highlight that if and when the two quarters technique was applied, high levels of subsequent debarking of the remaining quarters or total debarking occurred. The bark regeneration study (see Nkeng *et al.* 2009 in Appendix 1) and participatory meetings in 2009 to develop the national management plan provided new insights upon which to base a harvesting standard. Actors in the chain were convinced that a combination of a new governance regime including sole exploitation rights, certified harvesters, a well-publicised harvest standard and a conservative quota would ensure that a revised harvest technique based would work. A harvest standard with a minimum 40 cm and maximum 80 cm exploitable dbh, eight year rotation period taking into account tree health, tracing and tagging system, harvester training and certification and specification of harvesting seasons was incorporated into the guidance for a national management plan (Ingram *et al.* 2009). Supported by GTZ, the Ministry of Forestry and Wildlife then finalised a national harvest norm in 2010 (Ministry of Forestry and Wildlife 2010). This awaits implementation in the 2013 forestry law revisions.

Prunus africana has been regulated as a special forestry product since 1994, through the system of annual, tonnage-based quotas and permits for bark harvested nationwide and/or from specific regions. Felling without special permission is illegal. Permits are granted by an Inter-Ministerial Committee, based on technical reports from regional forestry chiefs that should provide a 'reasoned recommendation' of quantities, exploitation areas and harvesting modalities. In practice species and quantities have been indicated on the annual special forest product list and exploitation areas have only occasionally been specified. The lack of coordination at regional Ministry of Forestry and Wildlife level has made it difficult to trace bark to its source and there are no controls of harvesters or harvesting techniques. Although a 2007 Circular[11] introduced a new *Cahier de Charge* (technical specification), this was not implemented due to the 2007 trade suspension.

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[9] Decree No. 74/357 of 17 April 1974.

[10] Law No. 81/13 of 27 November 1981.

[11] MINFOF Circular letter n° 0958 of 15 November 2007.

The Special Forest Product permit costs approximately 1,000,000 CFA (2,041 US$) plus a payment of 2% of the quota value, and a 10 FCFA (0.02 US$) per kg regeneration tax payable by permit holders in three or two instalments, one of which is in advance. None of the government regeneration projects appear to have been funded from this tax, having other funding sources, and no specific government regeneration projects have been set up for *Prunus africana*. The regeneration tax is paid on all NTFPs, generating 556,000 US$ for the Treasury in 2003 (Chupezi *et al.* 2004). *Prunus africana* government revenues are estimated at 12,101 US$ annually and 29,970 US$ in the peak year of 2005. Permit holders should notify the regional Ministry of Forestry and Wildlife delegation and leave a copy of the permit when seeking to exploit. This often does not often happen or only in retrospect. Harvesting in community forests requires a permit, although again in practice this did not occur. *Prunus africana* seized after illegal harvesting is auctioned at a public sale, with the buying price usually below the current market price. The buyer does not need a permit but pays an additional 12% of the buying price to the Ministry of Forestry and Wildlife delegation making the seizure. This practice was criticised by traders and community forests as a white-washing: selling illegally harvested *Prunus africana* cheaply and collusively to the benefit of the local Ministry of Forestry and Wildlife delegation. A Certificate of Origin should be issued by the ministry prior to exportation; however those seen in the Port of Douala office only state Cameroon as the origin and its planted or wild origin.

Granting permits to many organisations for the same area creates unsustainable exploitation by creating a 'prisoner's dilemma' situation, which encourages over-harvesting. The Ministry of Forestry and Wildlife has had difficulty monitoring multiple exploiters, attributing destructive harvests and exceeded permit quotas. The short-term time scale of permits and unspecified locality means there is no ownership of specific sites, thus no incentive to use the two quarters technique or long-term resource management. The procedure is not transparent, with exploiters in the field often not corresponding with weigh bill holders. The expensive, complex bureaucratic permit procedure is difficult for small-scale organisations and community forests to access, taking over two years for some, with the quota received less than requested, making business planning very difficult. International pharmaceutical companies also reported that the short-term permits discourage long-term investment in processing in Cameroon. There have been no sanctions for exceeding permits or destructive harvesting.

Bans have been regularly enacted due to perceived unsustainable extraction. A national prohibition on harvesting was enacted from 1991 to 1992; a 1983 Prefectural Order was applied to Kilum Forest and in 1997 in Ijim Forest, prohibiting farming and grazing in the forest, but permitting NTFP collection. Enforcement was minimal and deforestation rates remained (Abbot *et al.* 2001). In 1998 harvesting was suspended on Mt Cameroon. In November 1999 an *Arrête* specified the control systems and the governor of the Southwest region imposed a harvest ban. In May 2005 the Divisional Delegate of Bui suspended harvesting from Oku Forest[12] and in December 2005, the divisional delegate of Fundong, collaborating with the ASSOKOFOMI delegate, seized 5 tons of illegally collected *Prunus africana* and banned further harvesting. In May 2006 the Sub-Divisional Delegate suspended harvesting in Oku Sub-Division[13]. In October 2007, harvesting and exports were suspended in relation to the CITES convention.

[12] E26/PS/126 Prefectural Order N^{o} 17/2005.
[13] E26.03/GSB/19/S.1/288 Sub-Prefectural Decision N^{o} 3.

A national management plan for *Prunus africana* (Ingram *et al.* 2009; Akoa *et al.* 2010) is currently being implemented. Lessons learnt from the trade suspension appear to have generated a more cautious resource management and consultation and consensus-making approach, with the Ministry being more aware of its image nationally and internationally and of contentious governance issues. There is now an "impression that things are going better now in terms of good governance" (H. Ackagou, MINFOF, pers., comm. Nov. 2011). The new arrangements have created Prunus allocation units in the six major production zones. A Prunus Allocation Unit is a wide geographical area in which *Prunus africana* can be exploited with a long-term permit based on an inventory and management plan agreed by the government and granted on competitive tender basis. Local organisations were to have priority, but in practice, have had to team up with companies. Pharmafric and Afrimed have been granted the Northwest Prunus Allocation Unit (Phillipe Evoe, MINFOF, pers. comm. 2011) as well as Afrimed Mt Cameroon (Mambo Okenye, GTZ and Pierre Kebou MINFOF, pers. comm. 2011). Local community members, via MOCAP-CIG may harvest *Prunus africana* according the National Park management plan. Harvesting in a National Park is a legal anomaly, as normally no commercial exploitation is possible in protected areas. This was supported by GTZ as part of the Sustainable Management of Natural Resources in the Southwest Province project (see Chapter 6) and approved by the Ministry of Forestry and Wildlife and the Cameroon CITES authority. MOCAP-CIG will continue to represent and coordinate community harvesting, having made a memorandum of understanding with Afrimed, which addresses benefit-sharing mechanisms for revenues (Mambo Okenye, GTZ, pers. comm. 2011; Jean Pierre Kebou, MINFOF Southwest, pers. comm. 2012). These new institutions allowed exports from Cameroon to recommence in 2011.

Until 2010 the regulatory framework was not founded upon a national-scale assessment of resource or threats to ecosystems and tree populations. However many inventories and surveys had been conducted in the Adamaoua plateau, the Bamenda Highlands community forests and Mt Cameroon (see Ingram *et al.* 2009 in Appendix 1). These varied in methodology, with only one (Foaham *et al.* 2009) using the same methodology for multiple locations. The 2006 CITES Significant Trade Review (STR) required a national management plan based upon an inventory, reflecting the view that inventories are key to sustainable wild harvesting (ETFRN 2000; Wong 2003a; FairWild Foundation 2010). The adaptive cluster sampling method has been proposed as appropriate for unevenly distributed wild tree species such as *Prunus africana* (Roesch 1993; Thompson *et al.* 1996 ; Acharya *et al.* 2000). There was however no consensus nationally, in academic circles or from CITES on an appropriate inventory method. Inventories on Mt Cameroon (Acworth *et al.* 1998; Underwood *et al.* 2000) and Bioko Island, Equatorial Guinea (Sunderland *et al.* 1999a; Navarro-Cerrillo *et al.* 2008b), used adaptive cluster sampling and led to recommendations for an inventory standard (Hall *et al.* 2000; Belinga 2001; Betti 2008; Ndam *et al.* 2008). Inventories in 2007 and 2009 (Nsom *et al.* 2007; Foaham *et al.* 2009) further confirmed the transect-based adaptive cluster sampling approach and need to incorporate tree health and prior harvesting in the method. A review of all methodologies by the Prunus Platform in 2008 further emphasised balancing scientific rigour with costs, time and local capacity to conduct inventories. Based on this review, an inventory norm was drafted (Ministere des Forets et de la Faune 2009) and legalised in 2011 after testing in the community forests in the Northwest (Akoa *et al.* 2010) and on Mt Cameroon. It has been accepted by CITES and the EU as the basis for the national management plan.

Most inventories have been financed by conservation, development and research projects. Responsibilities for financing inventories are currently unclear, with costs running into tens of thousands of euros, dependent upon the area surveyed. Community forests and small exporters and agents complained of the high financial and political capital needed to conduct an inventory and Prunus Allocation Unit permit. Although more expertise now exists in Cameroon to conduct inventories, it is mostly among civil servants, creating potential for corruption. The Bihkov community forest inventory (Tah 2009) highlights how a participatory inventory can use local knowledge, increase awareness and ownership by local people, with the pros and cons thereof (Gregersen *et al.* 2010; Lawrence 2010). Inventorying cultivated *Prunus africana* requires a different method than for trees in natural forests. The guidance management plan proposed registration of cultivated stocks by owners, including details on tree age and harvest status. Cultivated *Prunus africana* started to be registered by the Ministry of Forestry and Wildlife in 2010; however difficulties have been experienced confirming ownership and the low level of awareness by tree owners, farmers and plantation owners. Some traders, such as Kumbo-based Cameroon Medical Plants (CAMEP) enterprise, have inventoried planted stocks to secure resources and raise owner awareness. There remains a widespread lack of knowledge about registration, creating a false impression of stocks. An elaborate regulatory framework concerning *Prunus africana* has been developed in the last thirty years. However it has been only partially implemented and not been able to control and monitor illegal practices. Despite its strengths in offering a statement of intent and an open competitive nature, it has major weaknesses.

Dash

Corruption feeds off and thwarts the statutory permitting procedures controlling access to the resource, monitoring and sanctioning. The high level of regulation of this high value trade and the small number of harvest areas, channels and actors through which the trade flows – provides a lucrative opportunity for corrupt officials. This then further exacerbates regulatory and customary failures. Corruption aggravates the challenges actors have to operate legally, promoting rather informality and illegality as a (slightly) easier and apparently profitable way of doing business. Corruption thus became an insidious, predictable but incalculable governance arrangement and may continue to do so under the revised Management Plan, as unprecedented power is channelled via government officials controlling inventories rather than participative inventories.

Customary regulations

Of the harvesters interviewed in the Northwest, 66% indicated access restrictions to certain forest areas: protected areas and traditional sacred areas (66%) and private or family areas of forests and plantations (33%). Access to the open forest was free. Less than 1% indicated changes, due to a part of Kilum-Ijim Forest becoming the Oku Plantlife Sanctuary protected area in 2005. In the Northwest 82% of harvesting was conducted in community forests and the remainder from family farms and other forested areas.

The Kilum-Ijim Forest Project formalised a number of customary rules into the ‘Fon-wide agreed rules’ in 1998. This process was legitimised by the presence of the Ministry of Forestry and Wildlife. The Fon-wide rules created a hybrid institution incorporating new rules, such as tree planting, patrols and fire-tracing. *Prunus africana* was specifically mentioned as a collective activity, from which the whole community should benefit and was one of four ‘protected’ species from which only mature trees could be harvested for bark and only branches or dry (dead) trees for hoe handles. Traditional rulers

in Kom, Bihkov, Nso and Oku subsequently upheld some of these rules. For example, when *Prunus africana* was harvested in the Laikom sacred forest in 2006, the Fon of Kom commanded the culprit to be found and exploited barks confiscated as punishment. In 2010 these were still held in the palace as a warning to others. In Bakingili, Chief Ephraim Inoni (Prime Minister from 2004 to 2009) also strove to enforce customary rules.

However, in mid-2005 harvesting took place in the Oku Plantlife Sanctuary and the Oku sacred forest, with the implication of Fon Ngum III of Oku (WHINCONET 2005). This was a major about-turn as initially the Fon had been one of the major proponents supporting the Fon-wide rules and community forests during the Bamenda Highlands Forest Project. He was known as a conservationist, winning a prize and grants for his work. Interviews indicated that the Fon's action was economically motivated, with proceeds spent on a new car. The sudden death of Fon Ngum III in October 2007 was seen by some as witchcraft and retribution for breaking the rules: the car was never used and reportedly has never since worked. The act signalled the end of both customary and hybrid regulations and encouraged others to flout customary and statutory rules, such that by 2007 the largest scale and most destructive harvesting had taken place, encouraged by the government and exporters, signalling the commodification of previously common property resources. This is exemplified by the Fon of Nso who "claimed that people stopped thinking of the forest as a community asset and started to think about it as a resource to be exploited for personal gain" (Cunningham *et al.* 2000:321) illustrating the gradual degradation and ignorance of customary rights described in Chapter 6 and by Enchaw (2010) and Chi (2004). Many of the community forests reported that they were strongly rebuked for their actions by the traditional councils. The traditional authorities were unable to mitigate conflicts between communities and permit holders in the community forests, or mediate with the Ministry of Forestry and Wildlife. The current Fon of Oku, Fon Sentieh II, aims to reverse this situation, having taken measures to control access revenues (such as the tourist fee to enter the forest, in collaboration with the local council), working with the community forests and with the small remaining Bamenda Highlands Forest Project and project interventions such as those by SNV and the African Intellectual Property Organisation (OAPI). Thus in the Northwest, community-managed and customary controls over *Prunus africana* have generally not been more sustainable than open access areas where the private sector has had a free reign. Traditional authorities have either not been able to stop destructive harvesting practices or have actively participated in illegal and unsustainable harvesting.

In the Southwest around Mt Cameroon, harvester interviews indicated there were no restrictions on access to the forest or to *Prunus africana*. Although farms are normally seen as private property, planted *Prunus africana* was reported as vulnerable to theft, perceived as either wild or simply as valuable and easy to steal. However, most harvesting is conducted in open-access forest, seen as common property of the village, with chiefs and village councils as guardians and the clan as the legitimate landowners of Mt Cameroon. There was thus common affront when Plantecam Ltd. contracted non-Bakweri to harvest *Prunus africana* bark. This added the perception of a gradual erosion of forest resource rights, starting with colonial appropriation (Schröder, 2000) and the 1981 and 1994 forest laws. Together with further tensions concerning land and forest management and a disregard by some Bakweris for traditional leadership this led to over-harvesting (Ndam *et al.* 2004).

In Adamaoua near the main harvesting region population density is very low and with few communities within approximately 25 km of the resource, only some semi-

nomadic Fulbe/Fulani pastoralists. They did not claim rights to access or control the montane forest and did not know the species or its uses. Reports from traders and their agents reiterated similar experiences and indicated that due to the lack of local knowledge and use, they preferred to use their own teams of non-resident harvesters who could identify the tree and had no fears of working in the remote, steep forests for periods of days to weeks.

Customary regulation has played a major role in both creating and resolving conflicts. Traditional institutions were instrumental in the adoption of harvesting techniques, but when confronted with the large economic gains to be made and weakened by new institutions such as community forests, were unable to enforce sustainable harvesting techniques, control volumes harvested or restrict access. Customary access rules have yet to adapt to the transition from a wild to a privately owned, cultivated species, but a number of rules have been incorporated into new collective governance arrangements (see next section).

Assisted voluntary, collective action

The collective action assisted by projects (community forests in the Northwest and harvesting unions and MOCAP-CIG in the Southwest) has had a clear impact on governance arrangements, although their monitoring, sanctioning and conflict resolution power, location of decision making authority and legitimacy has been highly variable.

The 1980s and 2000s scramble for *Prunus africana* led to frequent conflicts within and between villages and the forestry service in the Southwest. By November 1996 the conflicts caused the Mount Cameroon Project and Plantecam Ltd. to mediate and set up partnerships between local communities, traditional authorities, government and business to sustainably harvest bark and increase the benefits to local communities (Ewusi 1998). Many illegal harvesters formed harvesters unions, collaborating with village elders and traditional councils to represent villages in negotiations with outside stakeholders. The Mount Cameroon Project brokered an agreement between the Mapanja and Bokwango Harvester's Unions and Plantecam Ltd., allowing villagers to harvest legally under Plantecam's license (Acworth and Ewusi 1999). The chiefs realised that the scramble for bark and frequent conflicts within and between villages, the forestry service, the Mount Cameroon Project, Plantecam Ltd. and its harvesters and villagers, posed a problem requiring intervention. The harvesters elected an executive and created union rules and regulations. Representatives from the harvesters' unions and community elders, including women, helped reduce conflicts and introduced local governance rules (Tieguhong *et al.* 2008a). By 2004 the union was seen as a force of social cohesion and of employment (Bellewang 2005). Thus traditional institutions were incorporated into new collective governance arrangements and new institutions formed.

The Mount Cameroon Project continued to encourage planting and agroforestry, monitoring and evaluating benefit-sharing mechanisms and conflict resolution. When Plantecam Ltd. closed, the change created new governance possibilities. In response to this opportunity, MOCAP-CIG was formed, grouping the 13 villages involved in *Prunus africana* harvests to integrate activities in the value chain by becoming harvester, buyer and trader and maintaining a strong community basis. Although MOCAP-CIG has claimed Mt Cameroon as its domain, permits with national coverage and specifically for the Southwest have allowed up to nine other enterprises to operate in the last five years. MOCAP-CIG has not been able to counter unsustainable or illegal harvest for other non-permit holders on the mountain. Despite the inventories and management plan established for Mt Cameroon, by 2006, three of the five blocks were almost totally

depleted of exploitable *Prunus*. Meuer (2007) points out that in MOCAP-CIG-controlled zones there were also infringements. Most areas affected now fall within Mt Cameroon National Park. Even though traditional rulers have had some clout in restricting access to *Prunus africana,* unsustainable harvesting practices have not been countered by collective action. Local communities and traditional leaders disagreed with some of the Sustainable Management of Natural Resources in the Southwest Province project activities, particularly the upgrading of Mt Cameroon to national park status, partly due to belief in their customary right to harvest and trade *Prunus africana*. These conflicts prolonged the creation of the park for over four years (see the section on the Southwest project governance arrangements in Chapter 6), and further complicating governance arrangements by adding a layer of formal rules.

In response to the possibility created by the 1994 Forest Law which permits devolved management authority in the form of community forests, twenty one community forests and their associations (ASSOKOFOMI, ASSOFOMI and Bihkov) were set up in the Northwest under the umbrella of the Bamenda Highlands Forest Project, which continued long-term support for them (see Chapter 6 for details). This form of state legitimated collective action developed new rules governing *Prunus africana* harvest. These all focus on *Prunus africana* as their main source of cash revenue (ASSOFOMI and ASSOKOFOMI delegates, pers. comm. 2007). Harvest zones and periods were defined in simple management plans (SMPs) and protection patrols and regeneration plans included planting *Prunus africana*. None included inventories or annual quotas. Although the attribution process was long and difficult, most of the local population and community forest committee members considered the community forests as 'theirs'. All the community forests had started protection and conservation and also developed new income-generation activities (such as 'modern' beekeeping and bamboo paper making), however many were not fully established and for some the attribution process was not finished as demand for the bark grew. In response, harvesting occurred in half of the community forests. Four community forests exploited *Prunus* illegally (see Table 9.3) (i.e. not according to their SMP).This was purportedly following a signal from the regional Ministry of Forestry and Wildlife delegation that *Prunus* was 'needed' in collaboration with buyers. Six community forests failed to renew their simple management plans upon expiration in 2006 and 2007 but also continued harvesting. Despite these infringements of their own rules and the SMPs agreed with the governments, these community forests were not subjected to sanctions for harvesting bark, but for some the finalisation of their attribution files was delayed and in two cases, lost and had to be resubmitted. Whether this is connected is not known, as an awkward and difficult attribution process is common in Cameroon (Beauchamp *et al.* 2011). The community forests paid dues to Fons to secure their commitment to these new institutions, which in effect decreased the powers of traditional authorities over the forests (Enchaw 2010). The community forest associations ASSOKOFOMI and ASSOFOMI aimed to provide a common voice for the community forests and created an additional hybrid institution, channelling information and power. The community forests and their associations created new local institutions with forest access and management rights, relocating rights away from traditional control, but without granting corresponding monitoring or sanctioning powers and responsibilities, or economic capital to enable this. Thus when the traditional authorities failed to receive the promised economic and political capital under the community forest benefit-sharing mechanism, their motivation to collaborate was low. The scale and destructive harvest technique used raised alarm among local conservation organisations and in

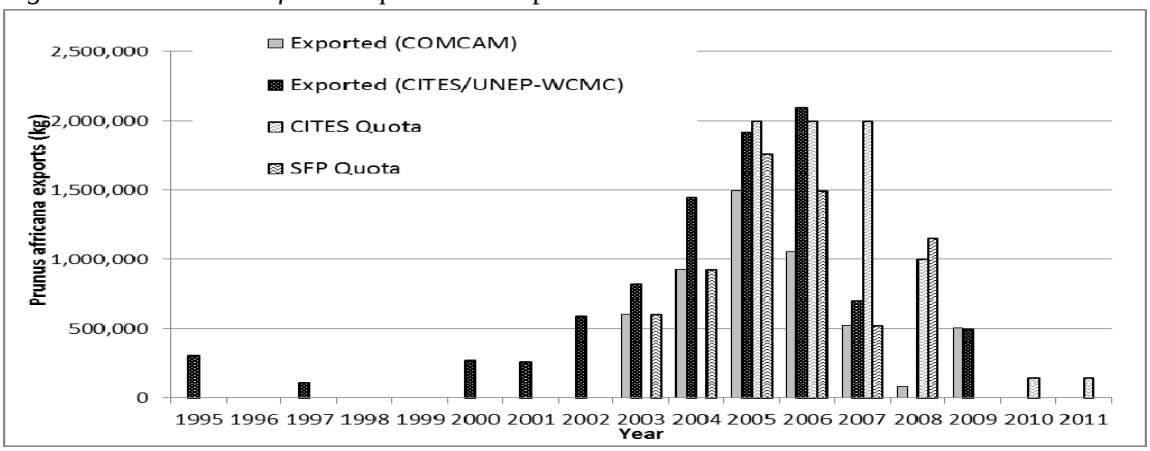
the community forests, many of which had not yet harvested by the end of 2005 (WHINCONET 2005).

Community forests are currently being established in the Southwest around Mt Cameroon National Park with support of the Sustainable Management of Natural Resources in the Southwest Province project.

International conventions

Cameroon became a party to CITES in 2005, acquiring its history of regulating the species. *Prunus africana* was listed as a CITES Appendix II species in 1995, meaning it is not threatened by extinction, but may be so if trade is not regulated. Producer parties, such as Cameroon, have to declare exports, to set a 'scientific non-detriment findings' for the growing annual quotas (see trends in) and report these to CITES.

Figure 9.6 *Prunus africana* quotas and exports from Cameroon 1995 to 2011



Sources:CITEs 2011, SFP lists 2005-2010, COMCAM reports 2003-2009

Concerns about the sustainability of international trade and wild harvest were voiced in the mid-1990s (Cunningham *et al.* 1993), culminating in a CITES Significant Trade Review in 2006 (CITES 2006; Cunningham 2006a). The Significant Trade Review process identifies problems and solutions in implementing the Convention and acts as a safety net to prevent species decline due to international trade. An alternative is to transfer the species to Appendix I where no trade is permitted. The Significant Trade Review recommendations included maintaining Appendix II status and supporting and monitoring cultivation with wild harvest as a short-term measure in the transition to cultivation. A Working Group established to guide the implementation of recommendations offered a survey and management plan of Bioko as a model (Clemente Muñoz *et al.* 2006), classifying Cameroonian *Prunus africana* as of 'urgent concern'. Cameroon was also required to review the current export quota and establish a conservative, reduced quota for export within three months; carry out an inventory of standing stock, establish estimates of sustainable harvest; develop a scientifically based system to monitor harvested and un-harvested populations by July 2007; collaborate with Nigeria on trade monitoring; and establish a long-term management plan for sustainable use within two years. Using the EU's legally binding CITES Regulation[14] on its member states, in July 2004

[14] Council Regulation (EC) No 338/97 9 December 1996 on the protection of species of wild fauna and flora by regulating trade therein.

the EU Scientific Review Group requested information from Cameroon and other countries on their management of the species. Failure to provide this would lead to trade suspension with the EU. In March 2005 imports from Cameroon were provisionally allowed, but in June 2005 further data was requested on how the annual export quota was calculated.

Despite support from the Working Group, the government found the 'reasoned recommendation' and 'scientific non-detriment finding' difficult to establish and was unable to meet the requirements. News of the destructive and large harvests in 2005 and 2006 reached conservation organisations, CITES and the EU, stoking fears, at the time unsubstantiated by evidence, of unsustainable trade. In October 2007 the EU Scientific Review Group subsequently suspended *Prunus africana* imports to EU member states[15], the main importing countries. The Ministry of Forestry and Wildlife responded with two Ministerial Circulars[16] in November 2007 outlining management measures, procedures for gathering statistics and administrative requirements. A CITES Working Group workshop in Naivasha in September 2008 aimed to support CITES Management and Scientific Authorities of seven priority countries, including Cameroon. In January 2009 trade was also suspended from Tanzania, Equatorial Guinea and the DRC[17], dramatically decreasing the global availability of *Prunus africana*. As the Lima 2006 recommendations were not met, Cameroonian exports to the EU remained suspended for most of 2008. Eventually the origins of bark 646.5 tons held in stock from the 2007 harvest were traced, leading to CITES granting a quota for 1,000 tons of powdered bark in April 2008, exported in 2009 to France and Spain. This was critical as stocks held by European importing companies were reportedly almost depleted. It also maintained the faith of Cameroonian actors in the chain. Cameroon declared a zero quota for 2009, buying time to respond to the recommendations.

Actors joining the Prunus Platform indicated a wish to continue exporting bark, and so, with support from the Ministry of Forestry and ,Wildlife the National Forestry Development Agency, the FAO-CIFOR-SNV NTFP project and GTZ, an action plan was developed in September 2008 to meet CITES recommendations, followed by a guidance document in 2009 (Ingram *et al.* 2009). The Cameroon CITES authorities used this to develop a National Management Plan – defining Prunus Allocation Units, an inventory norm and a harvest standard. At the end of 2010 this plan (Akoa *et al.* 2010) was submitted to CITES, belatedly supporting the Northwest inventory and a 150 ton quota request granted in December 2010 and March 2011(Andre Nna, MINFOF, pers. comm. 2011). Further inventories in the Southwest led to a resumption of trade in 2012 with a quota of 658 tons. This reinstated Cameroon as the world's leading exporter, with small amounts permitted from the DRC (72 tons) and Uganda (176 tons)[18] in 2012.

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15 Lettre ENV.E.2/HE/DO/sb D(2007)14094 23 Oct. 2007 Mise en œuvre de la convention CITES dans l'Union européenne consultation concernant l'importation de *Prunus africana* dans l'Union européenne.

16 Lettré N°2050/L/MINFOF/SG/DF/SDAFF/SN 22 Novembre. 2007 Gestion de *Prunus africana* and Lettre Circulaire N°0958/LC/MINFOF/SG/DF/SDAFF/SN 15 Novembre 2007 relative à la délivrance des documents pour le suivi de la gestion de *Prunus africana* au Cameroun.

17 CITES No 2009/003 3 February 2009 "Implementation of Resolution Conf. 12.8 (Rev. CoP13) on Review of Significant Trade in specimens of Appendix-II species".

18 CITES national export quotas for 2012 http://www.cites.org/common/quotas/2012/ExportQuotas2012.pdf retrieved 12 February 2012.

The impact of CITES has been wide-reaching. Actions to meet the Lima 2006 commitments were insufficient, despite the threat of penalties. Only with the trade suspension were the repercussions clear. Until then the government saw *Prunus africana* (along with NTFPs in general) as of minor importance, providing a meagre contribution to state revenues (Joesph Ntsengue Levodo, MINFOF, pers. comm. 2008). The suspension, subsequent meetings, lobbying and support from CITES Scientific Review Group and stakeholders flagged up the environmental, social and economic importance of the bark exports and placed it on the forest, development and conservation agendas.

Prunus africana is a favoured subject of the access and benefit sharing (ABS) component of the Convention on Biological Diversity (CBD) (United Nations Environment Programme 1998; Chupezi *et al.* 2004; Ekpere 2007; Laird *et al.* 2008; Secretariat of the Convention on Biological Diversity and Central African Forests Commission 2009; Samndong 2010; Union for Ethical Biotrade 2010). A common theme of these studies has been its high value, declining stocks, high contribution to harvester's livelihoods – and presence of the scheme on Mt Cameroon to share benefits. However benefits to others in the chain and in other areas are not discussed. Samndong (2010a) highlights a gap between definitions of genetic and biological resources in the CBD and implications for negotiations on national and international levels. Also that *Prunus africana* exports are not a direct use of genetic resources as defined in the CBD, but an indirect use, since only components of the bark extract are prospected, not the gene directly. Unduly emphasising and restricting its trade may affect communities dependent upon the tree for their livelihoods. The studies all reiterate problems of ineffective institutional structures and need for capacity building to address access and benefit sharing.

Exporters and importers revealed a lack of awareness of access and benefit sharing discourses and their low level of impact on livelihoods except in Mt Cameroon. Access and benefit sharing schemes neither prevented large-scale uncontrolled harvesting leading to the trade suspension or subsequent negative effects on livelihoods, nor increased harvester's rights nationwide. A lobbying report (GAIA/GRAIN 2000) argued for the negative impacts of commodification on local livelihoods and the intrinsic value of biodiversity. This however does not reflect feelings in the Northwest and Southwest expressed from 2007 to 2009 whilst developing the national management plan. The main priority of harvesters, traders and exporters were their livelihoods (financial capital). Local trade, ecological and cultural value were stressed only by support actors: local and international NGOs, development organisations, researchers and occasionally the government. Equitable benefits were a concern for harvesters and their associations, due to their realisation of the large profits gained by the pharmaceutical industry and that they were unable to add more value to the product in Cameroon. The unique situation of Cameroon being the main exporter globally was seen to give harvesters a better bargaining position. In contrast to the GAIA lobby not to privatise, many actors indicated a wish for community organisations and individuals to obtain ownership and tenure rights, privatising the resource and ensuring better management.

Other international agreements have also affected the chain. In 1998 *Prunus africana* was classified as a vulnerable species (IUCN 2006). Renowned botanists have argued that the species was not remotely in danger of extinction, being very common in its range, as long as montane forest survives, proposing a rating of 'least concern' or 'near threatened' in Kilum-Ijim Forest (Cheek *et al.* 2000) and 'lower risk, near threatened' on Mt Cameroon (1998d). The classification has been contested as inappropriate as the species is locally common, although threatened by low densities, in shrinking and increasingly degraded montane ecosystems and high levels of harvesting. This led to a

comment that "further consultation with all parties concerned is required" (IUCN 2009). The classification remains unchanged to date. Developments since 1998 across all the range countries indicate that the Red Data listing drastically requires updating, as it is an important influence on decisions made by CITES, conservation and development programmes. The majority (94%) of harvesters interviewed had no knowledge that *Prunus africana* is a protected species, classed as vulnerable, or that it is endemic.

Project governance

The Mount Cameroon, Kilum-Ijim Forest and Bamenda Highlands Forest projects (see Chapter 6 for details) all used community participation in the management and protection of forests, based on a philosophy that this allows dual objectives of income generation and biodiversity conservation to be met. To date however, community management has not been evidenced by an improved track record concerning *Prunus africana* compared to non-project or protected areas. In the Southwest and Northwest examples abound of unsustainable impacts (Nurse *et al.* 1995; Ewane 2001, Tieguhong, 2008; Ewusi *et al.* 2001; Gabriel 2003; Gardner *et al.* 2001; Sumelong undated). The GTZ monitoring study (Meuer 2007) indicated that MOCAP-CIG was unable to control unsustainable harvest by others (or its own members).

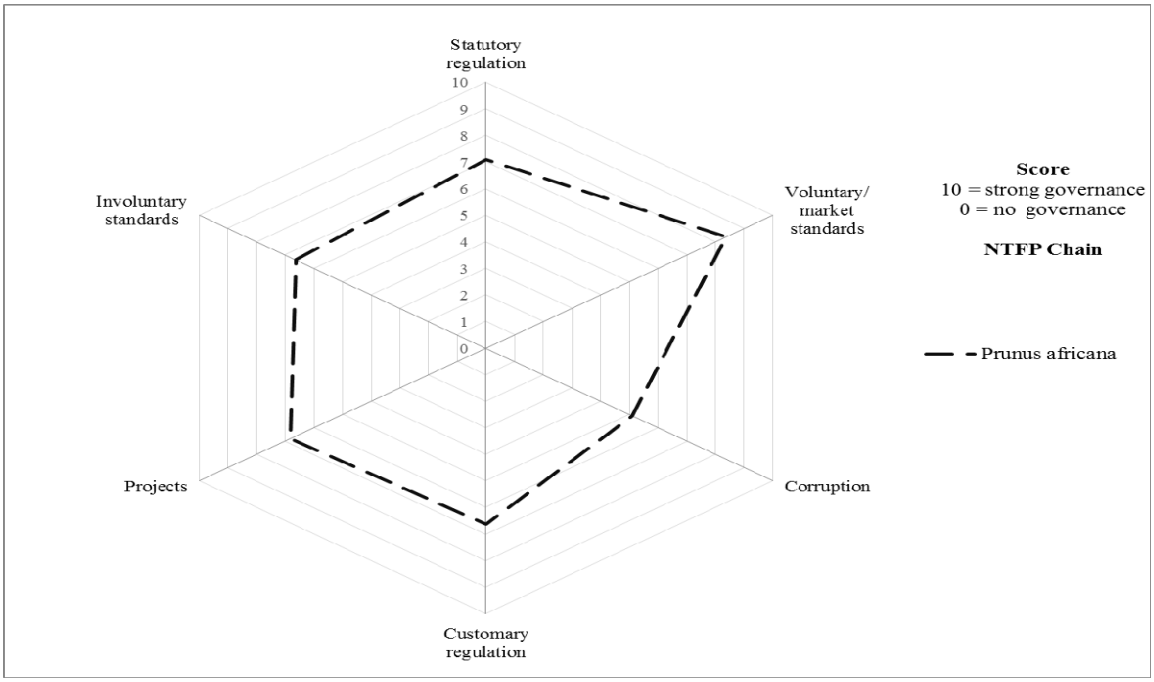
Community forestry was one of the main approaches used by projects (see Chapter 6 and above section on Assisted, voluntary collective action). The Mount Cameroon, Sustainable Management of Natural Resources in the Southwest Province and FAO-CIFOR-SNV NTFP projects were highly instrumental in creating an inventory and harvesting standard, conducting training and building awareness of the two quarters harvest standard (Hall *et al.* 2000) around Mt Cameroon in the late 1990s and the Northwest in 2007. Actors with little incentive to harvest sustainably (buyers and non-indigenes on Mt Cameroon (MOCAP-CIG 2007) and in other areas) were not targeted by projects, creating gaps in skills and understanding nationally. The Mount Cameroon and Bamenda Highlands Forest projects were also enforcers, financers and initiated and implemented management, monitoring and evaluation (Acworth and Ewusi, 1999; Ewusi, 1998). For example, if harvesters exceeded their allotted bark quota, penalty compensatory payments to a Village Development Fund were required. Continued over-extraction led to fines or a cessation of harvesting for some days. The Mount Cameroon project held capacity-building workshops with harvester unions to increase participation, motivation and trust among members (Ewusi 1998). GTZ has continued assisting MOCAP-CIG to date, including securing the right to harvest in Mt Cameroon National Park. Projects by the IUCN and WWF Wildlife Trade Monitoring Programme (TRAFFIC), GTZ, FAO and CIFOR were also influential in clarifying and developing a harvesting norm and pushing this to become a legal instrument. CITES and ITTO projects (ITTO-CITES 2010) built staff and institutional capacity of the Cameroonian management and scientific authorities, aiding them to build the national standards and to meet CITES requirements.

Strong, plural bricolage

The differences between Cameroon and other *Prunus africana*-producing countries (CITES 2008; Navarro-Cerrillo *et al.* 2008a) indicate that the governance arrangements are a major factor impacting livelihoods and sustainability. The *Prunus africana* chain is characterised by strong, multiple arrangements and institutional bricolage. The arrangements governing the international bark chain have been gradually crafted over the last forty years to make this one of most regulated forest product chains and products in

the country and in Central Africa. Formal regulation has grown since the 1980s, influenced strongly by international conventions and standards. Enforcement however has been arbitrary and ineffective, regularly resulting in illegal harvesting and dubious transactions. Customary regulations (non-existent in Adamaoua, but present in the Southwest and Northwest) have been added, and sometimes overrun by projects. Community-based companies and community forests created hybrids with difficult existences: sometimes adding on to, collaborating with or dependent upon, occasionally subjugated to and often challenging traditional and regulatory authority. This has led to further alienation and disabling of the power of customary institutions to control increased commodification. The local chain for bark and wood is entirely governed by strong customary and weak market-based systems. Scored using the system introduced in the methodology in Chapter 3 and detailed in Appendix 18, the arrangements are illustrated in Figure 9.7.

Figure 9.7 Governance arrangements in the *Prunus africana* chain in Cameroon



Governance and livelihoods in *Prunus africana* chain

This section addresses the fourth research question of how governance arrangements affect the livelihoods of actors along the chain, using the sustainable livelihoods approach.

The governance arrangements of the international chain for medicinal use of the tree's bark have gradually increased and multiplied with international fears of overexploitation and increases in the level of threat to the species and its increasing value since 2000. In contrast, although *Prunus* bark and timber are valued for subsistence use, with a fifth of harvesters interviewed engaging in local trade and exchange, traditional use of the bark and wood is largely unregulated. Despite the low level of processing and value adding of the bark destined for international trade in Cameroon since 2000, the simplicity of activities taking place in the chain in Cameroon, year round harvesting,

long shelf life with low losses and high demand mean that a significant number of people have profited from the international chain. Approximately 1,464 people benefitted directly from exported *Prunus africana* incomes in the study period.

Given the average household size, approximately 13,375 people benefit in total in the Northwest and Southwest regions. There are also indirect, non-cash benefits from revenue benefit-sharing schemes for an estimated 71,500 people in communities around the Mt Cameroon and Kilum-Ijim Forests. Thus around 86,339 people benefit from the international chain in Cameroon, including 21 community forests and a community-based enterprise, over 829 smallholder tree owners, around 455 harvesters, up to 11 traders, five exporting enterprises and an estimated eleven importing and processing companies internationally.

In the peak years of harvest *Prunus africana* contributed up to 80% of household incomes for harvesters in the Southwest and was one of the main income sources for half of harvesters in the Northwest. It has been a source of income for on average 16 years and for 68% of harvesters for more than 20 years. For retailers, traders and exporters, it has been one of their main income sources alongside other medicinal plants for on average a decade. Regular *Prunus africana* revenues have been used to meet basic household needs in the Southwest and in the Northwest, the occasional harvests have contributed to major investments such as housing and marriages. For harvesters, *Prunus africana* is generally very profitable, equivalent to 3,100 FCFA (7.03 US$) per day, well over a 2 US$ a day poverty line. In the Northwest, the average income generated per harvest and harvester was 160,197 CFA (SD 90,257) (363 US$ SD 204), with 46% earning over 150,000 FCFA (339 US$) from harvests over the last decade. Higher incomes in the Southwest are due to *Prunus africana* harvesting being a regular activity since the 1970s, whereas in the Northwest it is largely undertaken only occasionally. Revenues paid for food (30%), school fees (17%), household needs (16%), healthcare (15%), clothing (8%) and weddings (2%). Profits vary depending upon transport costs from forest to pick up points and upon bargaining power, with members of unions and community forests obtaining higher prices. Its increasing value in the long term has meant that nurseries selling *Prunus africana* seeds and seedlings have provided regular incomes in the last decade. For importers and pharmaceutical companies, the bark extract has been the source of a lucrative trade for over forty years. For many consumers, it is an effective and relatively low cost treatment for common medical conditions.

Average net daily income from *Prunus* harvesting in the Southwest is shown in Table 9.5. Most harvesters think in terms of gross revenues, rather than net profit. In 2004, the 60 Mapanja Prunus Harvesters Union members earned around 532 US$ each (Ndam and Tonye, 2004). Union members had 74% higher revenues than non-members in the area (Ndam and Tonye, 2004): affiliated harvesters earn on average 50 FCFA (0.9US$) per kg more than non-organised harvesters. Hence collective action makes a difference.

The formal regulation of the trade from 1985 to 1994 allowed many permit holders to operate, creating completion for *Prunus africana,* enabling owners, farmers and harvesters to negotiate higher prices. The open access to the resource created a classical tragedy of the commons scenario, where it was in the interests of each permit holder to fell or harvest trees because if they didn't, someone else would. The monopoly of Plantecam Ltd. till 2000 provided regular and stable incomes, and institutional arrangements with harvesters, particularly in the Southwest, led to regular, high incomes. The combination of granting permits to more companies from 1994, laxly and unenforced formal controls with increasing global demand and reduced supply from other African

Table 9.5 Average daily *Prunus africana* harvest revenues, Southwest

Activities	Duration (hours)	Costs (FCFA)	Income (FCFA)
Income (260 FCFA per kg * 30 kg)	8		7,800
Travel on foot to forest	1.5	225	
Finding suitable trees	0.5	75	
Measuring tree girth and cleaning	0.5	75	
Meals	0.5	675	
Climbing tree	0.5	75	
Debarking and bundling	2.5	375	
Transport bark to village	2	300	
Equipment		500	
Gross total	*8*	*2,300*	*7,800*
Contribution MOCAP benefit sharing scheme (80 FCFA*30 kg)		2,400	
Net total		*4,600*	
Profit			3,200

Source: Research results

countries, presented increasingly lucrative opportunities for uncontrolled harvesting across the country, allowing more actors to easily and profitably join the chain. Projects supporting community forestry quickly added both rules and new actors interested to benefit from the 'green gold' (Page 2003). A tragedy for livelihoods occurred in 2007 with the EU CITES trade suspension abruptly ending exports and leading to a two-year period of uncertainty with little to no income for any actors in the chain. This forced actors to work together to bricolage new governance arrangements, dictated by international conventions and based on revised formal regulations, customary best practices and projects. The resulting arrangements appear a framework for more sustainable livelihoods in the long term.

Governance and sustainability in the *Prunus africana* chain

This section answers the fifth research question of how the governance arrangements impact on product sustainability. The sustainability of harvesting *Prunus africana* depends on interrelated variables: the quantity and health of wild and cultivated trees, sustainable bark yields i.e. the quantity of bark which can be harvested and the rate at which a tree can be repeatedly harvested and remain healthy and productive, and maintain tree populations.

Quantifying the resource and its health: inventories

Despite the studies summarised in Ingram *et al.* 2009, a national overview of the quantity of *Prunus africana* in the major production zones did not exist when this research commenced. Thus two surveys[19] were conducted within the framework of this study, experimenting with and testing methodologies.

Stewart (2009) and the surveys quantified and confirmed the legacy of repeated harvesting in the Northwest: between a third to 60% of trees of harvestable size had been exploited, mostly unsustainably (from 62% in Ijim community forest to 98% in Emfveh Mii community forest). Tree health varied from nearly all (98%) being in good condition in Ijim to less than half (47%) in Emfveh Mii and 13% mortality. Very little regen-

[19] Supported by the FAO-CIFOR-SNV NTFP Project and reported in Chapter 3 on the methodology and in Nsom *et al.* 2007 and Foaham *et al.* 2009 in Appendix 1.

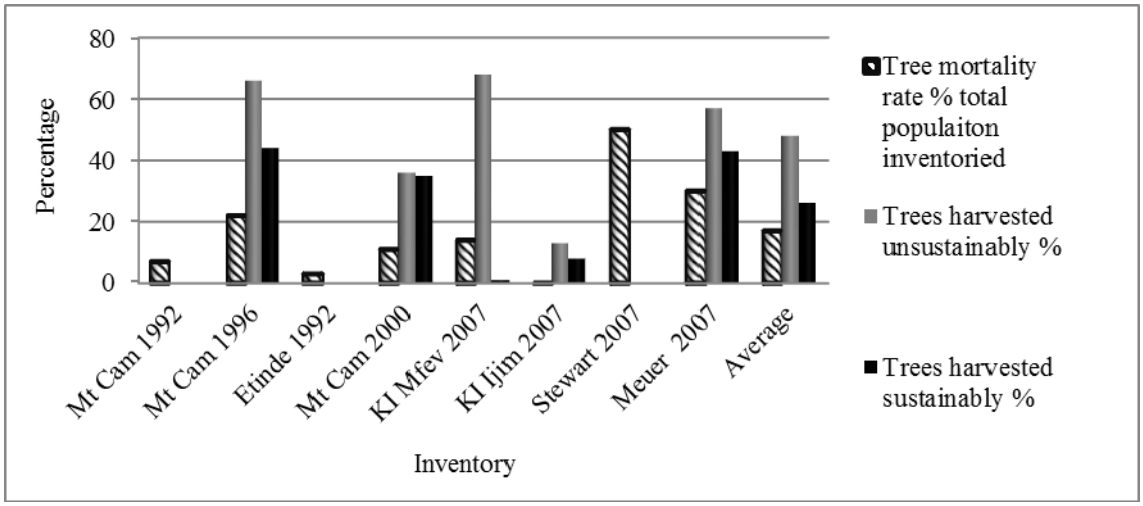
eration and fruiting were found in either community forest. The 2008 Kilum-Ijim inventory (Foaham *et al.* 2009) indicated a much lower availability (11 tons annually over the next ten years if sustainably harvested) than previously harvested. In the Southwest, surveys (Tasse 2006; Meuer 2007) also indicated the detrimental impact of harvesting on tree health. The 2007-2008 inventory (Foaham *et al.* 2009) indicated a higher density than previous studies, attributed to the larger sample and location of transects, with an estimated 272 tons of bark from wild sources annually over 10 years if sustainably harvested and 5 tons annually from plantations. Mts Kupe and Muanengouba had lower density and healthier stocks, with 22 tons annually estimated as available over the next decade.

The negative impact of unsustainable harvest techniques upon tree health and mortality health was confirmed, with significant reductions in crown size after harvest (see Nkeng *et al.* 2009 and Foaham *et al.* 2009 for details in Appendix 1). Despite training and the best practice standards and decree, the majority (61%) of trees in all the main harvest zones surveyed were debarked unsustainably. This was predominantly in forests, especially those with easy access. Only 9% were harvested according to the Two Quarters technique, mainly in privately-owned plantations and some areas of Mt. Cameroon controlled by MOCAP-CIG. Less than a third (29%) of trees were under-exploited, mostly in difficult access areas in Adamaoua and the Northwest. In the community forests in the Northwest, higher levels of unsustainable debarking were found: 98% of trees in Emfveh Mii community forest, 62% in Ijim community forest. In Bihkov community forest, 30% of trees over 60 cm dbh died when poorly or over-exploited compared with 17% when the sustainable technique was used. An increase in unsustainable harvesting is also apparent over time: in Adamaoua in 1999 11% of trees had been unsustainably exploited (MINEF *et al.* 2000) and on Mt Cameroon in 1999 36% of trees were unsustainably debarked (Underwood *et al.* 2000), increasing to 43% in 2007 (Meuer 2007).

This data suggests that younger, smaller trees can withstand over-extraction and larger trees are most vulnerable, resulting in poor health or death. Mortality occurred between two and seven years after harvest, confirming Navarro Cerrilo (2008b) and Stewart (2001). The mortality rates found in this and other surveys are all higher than in natural populations (Stewart 2001), indicating a positive correlation with unsustainable harvesting, shown in Figure 9.8. As Stewart (2009) notes, the death of large trees has implications for population regeneration, as they produce most seeds. However, older trees do exist. This finding sheds new light on the data presented in the 2006 Significant Trade Review. The majority of normally exploited trees were in perfect condition and had not died. This supports Cunningham and Mbenkum's (1993) observations and the Mount Cameroon Project that *Prunus africana* can withstand repeated limited bark removal after a period of years.

The surveys and comparisons with previous studies demonstrate the wide variations in density, tree size, stocking levels, phrenology, post-harvest regeneration and mortality rates for the main production areas. Density and distribution appear to be correlated with previous extraction. The inventories confirm the typical clumped and patchy distribution of *Prunus africana*, which may be exacerbated by harvesting. They also confirm the wide variations in density found across Africa (Hall *et al.* 2000). However, the lack of a national baseline and different study locations do not provide accurate, longitudinal evidence of a declining resource nationally. The surveys do however strongly suggest locally declining natural populations on Mt Cameroon and Kilum-Ijim, with

Figure 9.8 Relation between tree mortality and harvest technique



Source: Research results

abnormally low tree density, poor health and high mortality rates and evidence that this is due to repeated harvesting. The differences between populations and harvesting activities per production area make it impossible to nationally assess the national status of *Prunus africana* populations or to extrapolate from one site to another. However, this is exactly what happened: alarms raised concerning Mt Cameroon were inferred to the total population of *Prunus africana* in Cameroon. The surveys also highlight how anthropogenic activities upon the ecoregion impact on the quantity of *Prunus africana*. Bushfires, livestock grazing and forest degradation by agriculture inhibit natural regeneration by decreasing numbers of seeds and of seed dispersers, such as primates – many of which have recently become extinct (Ingram *et al.* 2008), birds (Fotso *et al.* 1991), frugivores (Gautier-Hion *et al.* 1985; Maisels *et al.* 2001; Wang *et al.* 2007; Farwig *et al.* 2006) and possibly bees – important *Prunus africana* pollinators (Tangkeu 2011).

In natural forests the inability of customary authorities to control access in the Northwest and their open access nature on Mt Cameroon and Adamaoua, combined with a regulatory system that allowed multiple permit holders open access to an quantified resource, stimulated competition. With no responsibility to maintain resources, no or low levels of enforcement and with opportunistic corrupt officials, this created an operating environment emphasising short-term economic wins through unsustainable extraction. The new regulatory framework aims to counter these problems.

Quantifying the resource: cultivation

Tree domestication is the process where species are adapted for cultivation from their natural state. As shown in Appendix 1, inventories up to 2009 had focused on wild *Prunus africana*. The 2006 CITES Significant Trade Review reported that in Cameroon "all bark entering the international market is from wild harvest" (CITES 2006: 5). This was despite many commentators noting domestication and cultivation activities in the last four decades (Cunningham *et al.* 1993; Cheek *et al.* 2000; Hall *et al.* 2000). Interviews indicated that *Prunus africana* has been cultivated in the main zones since the early 1970s. Nearly one-third (29%) of harvesters in the Northwest indicated they had planted trees. Of those who had not, 61% said that this was because they did not know how; 15% because it is time consuming and difficult; 20% because it is still available in the forest "so there is no need" and 4% due to a lack of land. On average farmers in Bui

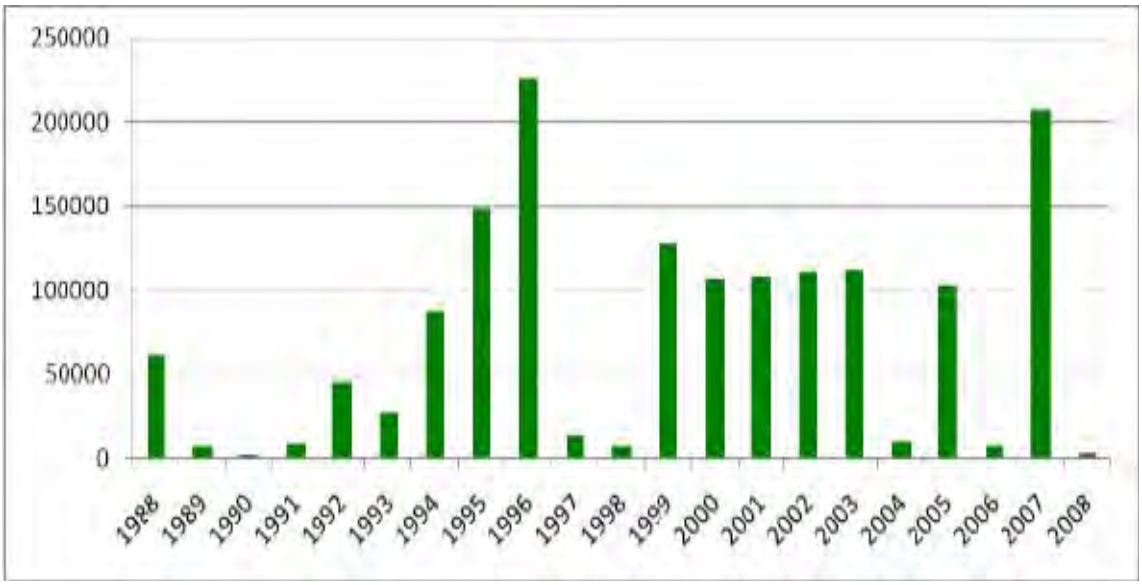
and Donga Mantung Divisions had 250 trees each, ranging from one to 600 with 75% owning up to 25 trees. In the Southwest, the majority of harvesters (95%) had not planted, quoting the same reasons. The 2009 survey indicated that 34 plantations contained trees on average 14 years old, 41% (115,490 trees) of which were over this median age. Approximately 70% had never been harvested. Some 25% were located in pure strands, the rest were mixed with other agroforestry species. Given an average survival rate of 32%, it is estimated that around 515,200 trees currently exist in plantations, equivalent to approximately 86 tons annually on a 10 year rotation. Interviews also indicated that a further 4,821 individuals, 78 CIGs and 20 community forests had planted at least 1,698,481 *Prunus africana* trees (Ministry of Forestry and Wildlife 2008, Foaham *et al.* 2009). Most have been planted by individuals on farms and family compounds supported by government projects (Forestry Funds, the former Office National de Développement des Forêts (ONADEF), the Capacity building for community-managed forest and fauna resources initiatives (KIFP) and the Support Programme for Rural Forestry and Agroforestry (PAFRA). At least 15 projects (such as the Mount Cameroon, Kilum-Ijim and Bamenda Highlands Forest projects, and shorter term projects by ICRAF, HELVETAS and local NGOs which facilitated planting by individuals, in community forests and communal spaces such as schools and watersheds. Initially required by law, government projects enabled planting in natural forests and on government-owned plantations.

Based on this data and reports (Nkembi *et al.* 2008; Franzel *et al.* 2009), five types of cultivation can be characterised: plantations by small companies and the Cameroon Development Corporation, around 3% of cultivators; pioneer owner-farmers from the early 1970s onwards, with varying motives (firewood, traditional medicinal and/or commercial use); high-income, progressive owner-farmers, including traditional 'notables' (6% of cultivators) who purchase seed, often from nurseries or individual collectors in Buea, Fundong, Kumbo or Oku, 19% of whom had over 100 trees, on average 993 up to 8,000; small-scale 'opportunistic' owner-farmers – the majority of owners – with 81% having less than 100 trees, on average 15 trees each; and community groups, councils such as Kumbo Council with 52,000 trees, and organisations such as the Banso Baptist Hospital and water catchments such as Kiko Roh Vitangtaa.

An overview of cultivation over time, by location and type of planter is given in Ingram *et al.* 2009 (see Appendix 14). An estimated total of at least 1,616,815 cultivated trees exist, representing around 63% of total stocks known in Cameroon and an important genetic source. This has enhanced access for farmers and planters to diverse tree germplasm and provides a critical stock for regeneration and long-term maintenance of the population in Cameroon. These facts demonstrate the previously unrecognised large-scale of domestication, reinforced by the number of plant nurseries, especially in the Northwest. Figure 9.9 summarises the trends in planting of *Prunus africana* trees annually and Figure 9.10 the number of new plantations. The peaks correlate with high bark harvests from 1995 to 1996 and 2000 to 2007. The private sector has become more interested as the impact of the 2007 trade suspension has been felt, with international pharmaceutical companies discussing options to support cultivation with their Cameroonian buyers, such as Afrimed. The Ministry of Forestry and Wildlife commenced inventories in 2010 to implement the national management plan; however farmer and owner awareness of the need to register *Prunus africana* remains low, in part due to uncertain land tenure. Cultivation has been stimulated by the species' economic and cultural value and by governance arrangements. Early laws and a series of conservation, research and development projects promoted institutions supporting cultivation. This

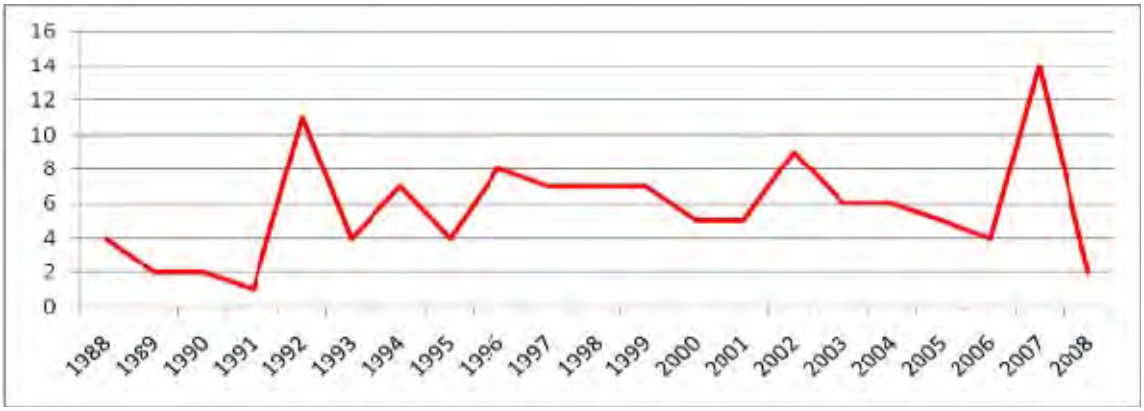
long history and wide scale of domestication and cultivation activities is strongly in contrast with CITES' impression that "cultivation is taking place on a small scale in Cameroon" (CITES 2006: 5).

Figure 9.9 *Prunus africana* seedlings and trees planted 1988 to 2008



Source: Research results

Figure 9.10 Number of new *Prunus africana* plantations 1988 to 2008



Source: Research results

This finding questions two of the assumptions upon which international trade governance arrangements are based: CITES and the species Red data listing. It suggests that the threats to the national species population are less than supposed, corroborating Cable & Cheek (1998) and Cheek *et al.* (2000). Domestication and subsequent cultivation have provided an alternative supply source from wild *Prunus africana*, challenging the supposition that the trade is of a 'wild' and endangered species as the basis upon which international trade is governed. This finding indicates that trade may have been more sustainable than supposed by the numerous trade bans, and that there is potential for cultivated sources to enable continued, sustainable trade.

Sustainable bark yields

Regulatory control since the 1980s has concentrated on repeated harvesting of live trees. However evidence to support the sustainability of this practice, based upon the premise of bark regeneration, is lacking (Ndam *et al.* 2004) and depended upon anecdotal evidence from Plantecam harvesters (Ndam *et al.* 2008). Bark regeneration depends upon tree health pre and post-harvest, the rate of bark growth post-harvest and the time period between harvests (i.e. the rotation). The regulatory framework has ignored these factors and outlawed felling to harvest bark. Thus the use of multiple tree parts, as occurred in Kenya and Madagascar and promoted as economically attractive particularly for cultivated trees (Franzel *et al.* 2009), is barred.

The bark regeneration study[20] evaluated bark recovery and potential yields post-extraction in the three main harvesting regions. The results indicate that over 60% of harvested trees were over-exploited (i.e. more than two quarters had been harvested) and 9% sustainably harvested. Bark recovery rates differed significantly by ecoregion location, with a thickness of 0.12 m (SD.05) in Adamaoua, 0.1 m (SD 0.03) in the Northwest and 0.06 m (SD 0.02) in the Southwest annually. Recovery reached 15% of original bark thickness in the first and second years after harvest and progressively dropped to an inflection point (7%) between the seventh and eighth year. This indicates that at least a seven year rotation period is the most sustainable period for repeat harvesting, adjusted to take into account the aforementioned ecoregion differences. Harvests from trees of 30 cm dbh appear most sustainable because of higher recovery rates (8% annually) and higher average bark thickness (1.3 cm) up to the first branch. Tree growth rate was faster (14 SD 0.5 m compared to 9 SD 0.2 m tall) in altitudes less than 800 m, however insect attacks (in 94% of trees surveyed) are severer below 1,000 m, indicating that trees at lower altitudes may require a longer harvest period to reduce mortality risks. Generally there was an abundance of seedlings and small trees in open forest, canopy gaps and forest edges, however few seedlings over 5 cm tall were found near living trees and seldom found in closed forest canopies. This confirms Ewusi *et al.* (1992), Ndam (1998) and Hall *et al.'s* (2000) observations of the light-loving nature of seedlings.

The national regulatory framework until 2010 was demand based, not upon availability, even when inventory data was available and sustainable yield for a given area could have been calculated. As part of the guidance for a national management plan (Ingram *et al.* 2009), an annual sustainable yield equation was developed, building upon past work (Acworth 1997; Underwood *et al.* 2000), the 2009 and 2010 inventories and the bark regeneration study. This was calculated based on the population density of exploitable trees, area of forest containing *Prunus africana*, average sustainable bark yield per tree and the time taken for bark regeneration. Regular re-measurement of sample trees over time is recommended to determine the long-term impacts of harvesting on tree recovery and bark regeneration.

Long-term rates of mortality, recruitment and growth must be known or estimated to determine the sustainability of the harvesting cycle. Tree growth rates were calculated by size class distribution (the diameter size over a range of tree ages) in a Prunus Allocation Unit and taking into account previous harvesting. If a larger amount of the smallest two size classes and a large number of the oldest classes are present, this can assure

[20] Supported by the FAO-CIFOR-SNV NTFP Project. See Chapter 3 on the methodology and Nkeng *et al.* 2009 in Appendix 1 for details.

regeneration. Given mortality rates averaging 17% in Cameroon (Ingram *et al.* 2009), a verification of tree health and recovery rates of harvested trees is necessary to determine mortality after first and second harvest (i.e. when the entire circumference of the tree has been stripped). These can be verified using a mortality, recruitment and growth equation (see Appendix 8) that incorporates the number of trees standing at the beginning and end of an harvesting cycle, the number of tree mortalities and tree recruitments during the harvesting cycle and the average yield of bark per tree (kg fresh weight/ trees/harvest) by size class. These calculations led to the sustainable yield formula being incorporated into a national inventory norm (Ministere des Forets et de la Faune 2009).

Harvest techniques used for local chains for medicinal bark and wood for hoes appear sustainable, given the preference from cultivated sources, small-scale of harvesting and no reports or observations of poor tree health or of mortality. Whilst governance arrangements such as the 1986 law on harvesting techniques and the subsequent company and project-led two quarter standard specified how to harvest, they did not define the sustainable yield of bark from individual trees. Projects such as the Mount Cameroon project researched yields but this did not emerge as a governance tool and aided the introduction of rules limiting the frequency and quantity harvesters associated with unions could carry in the Southwest. These rules were known only by some harvesters in some regions and largely unenforced, with offenses resulting largely in blanket, short-term bans on harvesting, a few penalties for individuals and none for companies or community-based organisations. Thus none of the governance arrangements have sought to regulate sustainable harvesting either on an individual tree or on a population, ecoregion or landscape level. Hence no regulations exist regarding the quantity of bark that can be harvested and the rate at which a tree can be repeatedly harvested and remain healthy and productive nor the quantity that can be harvested from wild and cultivated populations whilst maintaining that population. However, the EU trade suspension sent shockwaves and forced reflection of and ultimately adherence to the institutions set out in international conventions. This research was a key factor in helping to address how to define sustainable yields on a production zone level and reconfigure the formal and informal mix of actors and institutions to enable this.

Conclusions

The analysis of the *Prunus africana* chain originating from Adamaoua, the Northwest and Southwest regions of Cameroon indicates that governance arrangements have strongly influenced how the chains are configured in terms of values. Also how the products are sourced, harvested and traded. This section draws conclusions, responding to research questions two to five on the governance arrangements in place; how these impact the livelihoods of actors; and how these impact chain and product sustainability.

Prunus africana products are characterised by high values**,** providing an important economic contribution to actors' livelihoods. In the last forty years the multi-purpose uses of this tree have changed from local uses by the montane ecoregion communities to create substantial wealth for these and other actors in Cameroon, and companies internationally. It scores highly on socio-economic value, used by thousands of prostate sufferers internationally, consumers with medical problems and for everyday tools. The species has a high environmental value as a key afromontane endemic species.

The multiple governance arrangements covering the international chain make this one of most regulated forest product chains and products in Cameroon and Central Africa. Formal regulation has grown, strongly influenced by international conventions and

standards. Enforcement has been arbitrary and ineffective. Working collectively harvesters have had some impact on the distribution of power in the chain, creating opportunities to add limited value and legally control supply in the last decade. The international chain has crept into multiple policy agendas (development, forestry and agriculture). The 2007 European trade suspension precipitated a crisis and participative review of governance arrangements in the form of a national management plan that blends statutory, customary and project-based institutions. Customary regulations are non-existent in Adamaoua but strong in the Anglophone montane areas and preceded the regulatory framework, but have been frequently overrun by projects. Community-based companies and community forests have alternatively used, adapted, collaborated with, occasionally subjugated and often challenged traditional and regulatory authority. This has further alienated and disabled customary institutions as commodification has increased. Governance of the local use chains, in contrast, has remained largely unchanged: with lightly customarily regulated, informal and highly fragmented with no individual actors or enterprises dominating.

The impact of these governance arrangements on livelihoods has been considerable. A handful of processing, exporting and importing companies have benefited enormously for decades, gaining global competitive strategic advantage. Liberalisation to a market-based network had dramatic impacts: increasing prices and competition, retaining low flows of information between buyers and sellers. The state treasury has benefitted from *Prunus africana* exports. Some state officials have gained from corruption. Conservation-minded projects and NGOs promoting alternative and decentralised governance arrangements seeking to improve harvesters and/or the species' environmental status prompted large-scale resource 'mining'. However the government's under-estimation and/or ignorance of the impact of the international conventions and agreements contributed to the EU CITES suspension. This had an immediate and direct negative economic impact. This was a 'lose' for the livelihoods of all actors involved. The new rules may have negative implications for equity of access to resources and markets, as the smaller, weaker and, until recently, unorganised actors struggle to make their voice heard against the larger, dominant traders and exporters. Collective action allowed community-based, collective action, often project supported, to gain or maintain a share of the economic value, increasing selling prices by 50 to 600%. However, attempts at value adding have been hindered by the low level of vertical integration. Now that Anglophone harvesters are in contact and govern access to the Prunus Allocation Units, they expect their power to increase. A sobering note is that collective arrangements also contributed to over-extraction and ultimately the trade suspension.

The impact of the multiple governance arrangements on the sustainability of *Prunus africana*-based products, and ultimately the chain, has been mixed but generally negative. Whilst sustainable harvests are possible, regulatory frameworks that take account of the species' ecological characteristics still await implementation. The government repeatedly ignored is own rules requiring inventories and harvest standards, and even when conducted, did not use them for permitting. This promoted short-term economic wins above a sustainable, long-term product and chain. Statutory arrangements have been ineffective in countering pressures to harvest unsustainably, culminating in a trade suspension. Natural capital 'won' – receiving a respite from harvesting for nearly three years and prompting a profound rethink of governance arrangements. In contrast, project-stimulated collective action has supported planting, leading to a hitherto unrecognised amount of *Prunus africana* being cultivated. However, because they are unquantified, cultivated trees have remained invisible to national and international policymakers,

with no distinction made between the product's wild and farmed origins. Regulations, conventions and project-based arrangements however have been based upon a presumption of wild sourcing and the species' threatened status. Thus perceptions of sustainability by the CITES and IUCN red data listings have played a dominant, but mistaken, role in its governance and consequent sustainability. The bark's high value encouraged actors to negate customary rules, illustrated by unsustainable harvests by traditional authorities. Community collective action, promoted by statutory and project-based arrangements, has been directly responsible for illegal and unsustainable harvests and has largely failed to control access or over-extraction. Community-based institutions defied institutional design principles. They were insufficiently powerful to exclude others. Powerlessness was exacerbated by statutory systems allowing multiple resource users in one geographical space, with no sanctions, monitoring or conflict resolution arenas,. However actors' collaborations with vocal support organisations (research, development and conservation NGOs) have led to policies and institutions that have shifted the focus on product and livelihood sustainability.

The current global market for *Prunus africana* is hovering on the brink between bust and continuation, with Cameroon one of the few suppliers in large volumes. Facing competition from natural and synthetic substitutes makes the chain sensitive to supply disruptions and positive livelihood impacts precarious. Whilst feeble attempts were made by Plantecam Ltd to control supply through plantations, only since the 2007 trade suspension have actors seriously considered vertical integration with traders stimulating cultivation. This tardiness illustrates a classic tragedy of the commons. It is surprising as several importers trade in barks and natural products sourced largely from cultivated sources. In contrast to the international chain, the local chain using customary bark and branch harvesting methods appears largely sustainable. These traditions have been ignored by national and international regulations and actors. Reconciling livelihoods with longer term sustainability has proved difficult. Short-term economic benefits have been gained at the cost of the sustainability of the natural capital they are based on.

10

Cola, *Irvingia*, *Raphia*, bamboo and *Acacia* value chains[1]

Introduction

This chapter summarises the analysis of five additional NTFP chains in Cameroon: Cola nuts (*Cola* spp.), bush mango (*Irvingia* spp.), raffia products (*Raphia* spp.), bamboo (*Yushania alpina* and *Oxytenanthera abyssinica)* and gum arabic (*Acacia* spp.). The findings are based on interviews, literature, observation, resource assessments, value chain analysis, market surveys and trade data (see Chapter 3). The values provided have been verified and triangulated with literature and in workshops with stakeholders and are believed to be valid for the specific chain, its geographic locations and population sample for the time period of the data collection. These products and chains originate from the same three ecoregion study areas. They provide both complementary and contrasting views to the three previous chapters of how NTFP chains are configured (the products, location, actors, activities and values), their governance arrangements and sustainable livelihood outcomes. Compared to the extremes of governance arrangements, plurality and voids illustrated in the eru (*Gnetum* spp.*)*, apiculture and pygeum (*Prunus africana)* chains, these five chains provide a broader view of products and chains in Cameroon. They reflect the wide range of non-timber forest products shown in Chapter 4.

Cola chain

C(k)ola (*Cola acuminata, C. nitida* and *C. anomala*) trees produce red, pink and white coloured nuts in mast years, which are high in caffeine, chewed as a stimulant and hunger suppressant. The bark is occasionally used as a remedy for ring worm. The nuts are a symbol of hospitality across Western and Central Africa and used in traditional ceremonies particularly in the montane ecoregions of the West, Northwest and Southwest. The rituals surrounding cola are elaborate and deeply ingrained in most aspects and lev-

[1] Included data published in peer-reviewed articles written or contributed to by the author (Awono *et al.* 2013; Wiersum *et al.* 2013), Ingram *et al.* 2010 (Colfer), Ingram and Tieguhong 2012, and peer reviewed reports in Annex 1.

els of society, and include planting trees at a first son's birth. All species are found in the wild, but most trees harvested are cultivated, located near homesteads and in managed forests, with tree size and interviews indicating some planted specimens of around 200 years old, confirmed by studies (Kaberry 1952; Goormans *et al.* 1955; Chilver 1961). Cameroonian cola was traded through Hausa trade caravans to the Nigerian caliphates and entered into the intra-African trade, which dates back to at least the 7th Century. *Cola nitida* was introduced from the Gold Coast and exported since around 1910 from colonial plantations in Cameroon to the main centres in Western Africa, and to the UK and US in the mid-19th century (Morgan 1959; Lovejoy 1980). In 1886 the American druggist John S. Pemberton invented Coca-Cola, combining coca and cola extracts as a headache and hangover cure (Kiple *et al.* 2001), sourced from West and Central African cola. Although shrouded in secrecy, it is highly likely that only synthetic extracts are now used (D'Amato *et al.* 2011). *Cola nitida* is preferred in Northern Cameroon, the subject of long distance and export trade. *Cola acuminata* is the preferred species in the West and Northwest. *Cola anomala* (known as *Bamenda cola, ehbe* in Oku and *ebii* in Kom) is the least traded, and found wild in Kilum-Ijim Forest. An estimated 90% of harvest in the Northwest and West originated from cultivated trees, found near households, on customarily owned farms and fallows, in managed forest and coffee and raffia agroforests. Around 10% originates from secondary forested areas, gallery forests and community forests.

The trade is reportedly not as lucrative or large as 30 years ago. A result is that old cola trees are not being replaced, continuing a trend identified in the West region in the early 1980s (Nguifo 1982), despite the then higher demand than supply. However, the product is still valuable: the Northwest and West chains are estimated to be worth 1.8 million US$ annually, with around 1,000 people, mainly men and children participating in harvesting during the season. Trade in the 1000 nut, 20 kg baskets extends to North Africa and the diaspora in Europe, with cola found in African shops in the Netherlands, Belgium and UK. This is confirmed by other studies (Duru 2005; Kendo *et al.* 2007).

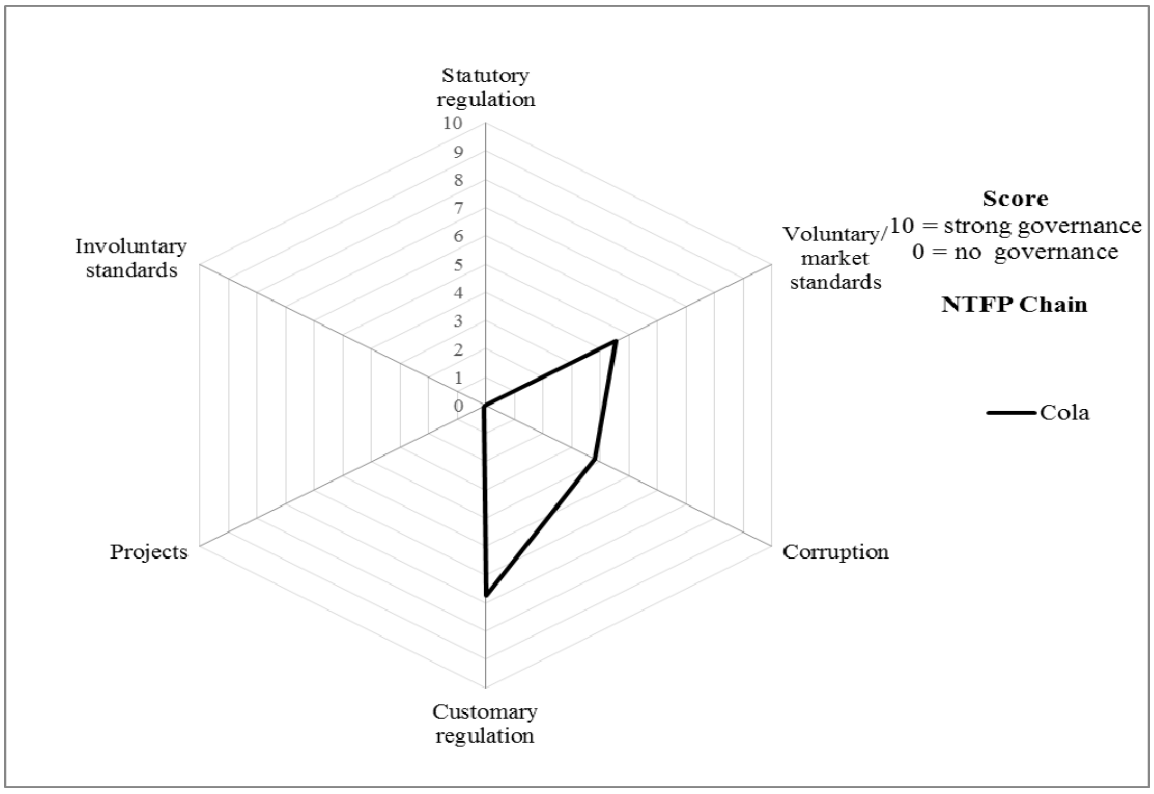
Photo 10.1 Cola acuminata tree and owner, Bamenda, March 2010

Harvesting techniques are largely sustainable, as ripe nuts are gathered once fallen or by children climbing and shaking the tree, or hooked using a bamboo pole. The nuts are then extracted from the pods using a sharp knife, and transported to the harvester's home, where the white mesocarp is removed, often by family members of the harvester. Nuts are then graded by size and quality and stored in plantation leaves, sand or using pesticide, allowing storage for around three months. Perishability is a problem, with up to 5% loss reported by harvesters and higher for wholesalers. Cola harvests are seasonal and so often form only a supplementary source of income for harvesters, with 85% of harvest sold, providing on average 81,000 FCFA, (SD 62,000) (171 US$, SD 131), around 25% of household income. Alongside cola harvesting, on average five other income sources were noted. Cola harvesting for trade is generally long established, the average harvester has been active for nine years. Traders tend to specialise in cola and earn more, on average 153,000 FCFA (SD 42,000) (324 US$, SD 88 US$) annually, frequently specialising in it and complementary crops (such as coffee and potatoes) and condiments with similar

trade routes. These follow the ancient trade routes in cotton, cloth, palm oil and salt. Nuts are commonly retailed by women (85%) in markets and by male youths roving along roadsides and toll gates. Sold individually, the nuts cost from 5 to 50 FCFA (0.01 to 0.10 US$). The majority of consumers were men and women of all ages, and around 10% in the Northwest were semi-nomadic herdsmen.

Illustrated in Figure 10.1, customary arrangements govern the chain, arising from the product's long history of high economic and cultural value. In the Highlands, traditionally male clan lineage heads owned all tree crops and controlled the trade (Goheen 1996, Chilver 1961). This system of access to resources continues in largely in the same way today, supporting a system of male wealth and power, which ultimately, in combination with surpluses from women's farm labour and material capital, is transferred to 'symbolic power'. Trees on private land are male owned and passed down patrilineally and may only be harvested with express permission of the owner. Traditional chiefs in the Northwest control access to wild or actively managed trees, normally receiving nuts and gifts in exchange for permission for large-scale harvesting. Rules to guard against unsustainable practices include prohibitions on climbing trees and plucking unripe fruit but allowing open access for community members to fallen fruits. Well-known management techniques may also be instigated if cola nut trees are not producing enough. Reported practices include marking the tree with ropes to avoid damage, fertilsing with wood ash and slightly incising the bark to induce fruiting. Whilst there are no statutory regulations, at roadbloacks and border crossings along the common regional trade routes trade is subject to corruption. No instances of collective action were found, however strong ethnic ties link traders from the Northwest and Extreme North. Informal,

Figure 10.1 Intensity of governance arrangements in the *Cola* spp. chain



trust-based market-based arrangements dominate between traders, and sometime harvesters, enabling long distance, trans-national economic exchanges, dispute settlement, financial support and information sharing.

Bush mango chain

Bush mango is the term for two tree species producing oil-rich seed kernels. Originating in the humid forest ecoregion, *Irvingia gabonensis* is a tree bearing fruits with fragrant, juicy flesh, sweet juice. *Irvingia wombulu* ('dry season mango') has smaller, bitter fruit. Both are found wild (Leakey *et al.*, 2004). *Irvingia gabonensis* is semi-cultivated in some areas, left and or nurtured in farm fallows, small plantations in Akwaya, and regenerates spontaneously among well-used forest to farm routes (Ingram *et al.* 2011). In the Southwest, *Irvingia wombulu* is also widely found in farm fallows. The ground kernels, extracted from the hard fruit using a machete, are used as a condiment and sauce thickener. Cooking oil is extracted from the seed, the juice is used in cooking and wine, the pulp as a dye, the bark and kernels have multiple medicinal uses and the timber is used for construction. The kernels are increasingly processed in the USA and Europe as the main ingredient in weight-loss aids, health supplements and cosmetics.

Photo10.2 Irvingia gabonensis flowers, fruits and dried kernels, Yaoundé, March 2009

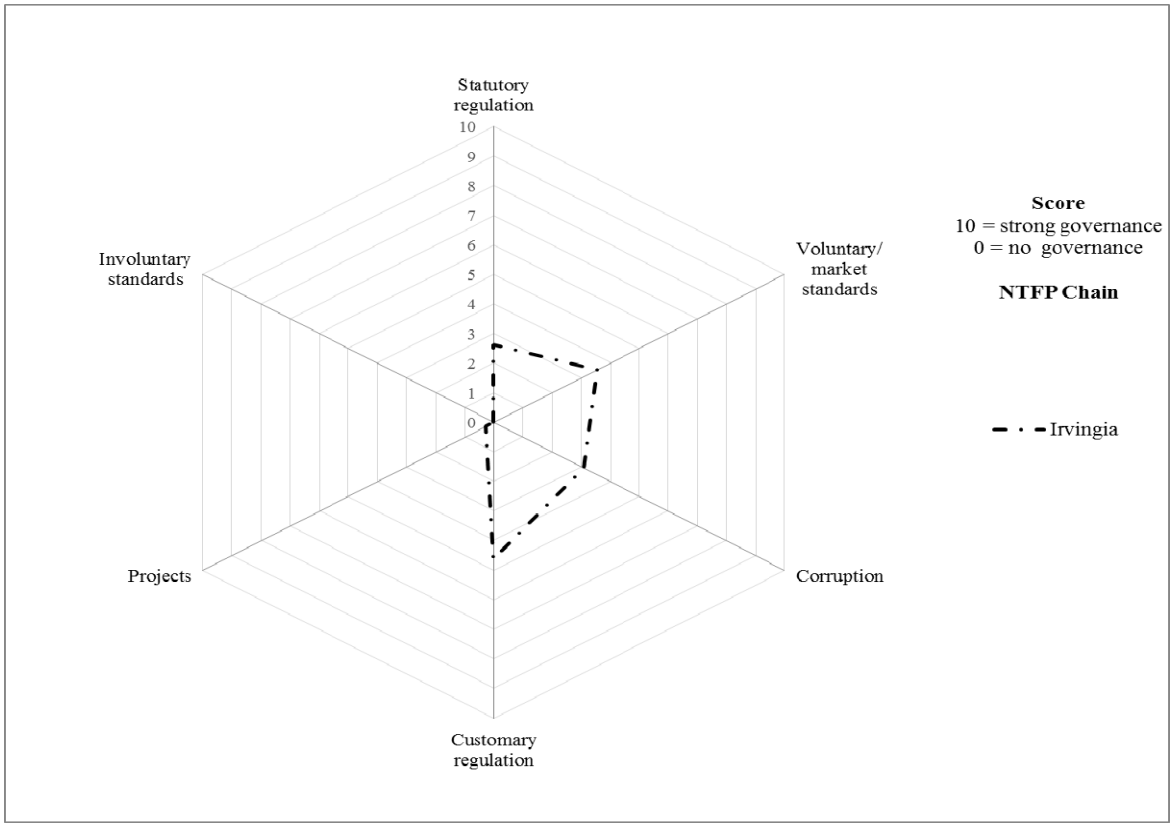
Over 6,387 tons valued at 8 million US$ were harvested on average annually from five major harvest areas in the Centre, South, Southwest, Littoral and Eastern regions in the study period, with around 3,800 people active. An estimated 4,220 tons were exported annually to Nigeria, Equatorial Guinea and Gabon. Between to 31% to 58% of harvest is consumed by the harvester's household, between 11% to 27% of harvest is exchanged and 31% to 58% is sold. Bush mango contributes on average 28% to 44% of household incomes. Average annual household income from bush mango in Cameroon was 145,960 CFA (SD 59,756) (324 US$) (132 SD), varying form 98,950 (219 US$) in the Southwest to 213,206 CFA (473 US$) in the Centre, South and Littoral and 125,723 CFA (279 US$) in the East. The price varies from 0.9 to 1.8 US$ per kg (producer) to 2.5 to 4.6 US$ (consumer). Near borders the price is strongly influenced by demand and supply. Ebolowa and Mblamayo markets respectively control 71% and 19% of the Cameroonian trade. In the Southwest, five main markets are the focus of a flourishing trade to Nigeria, where Nigerian agents work seasonally to store, distribute and set buying prices. Harvesters receive between 30 to 50% of the consumer buying price, with value increasing with transformation into cake and powder. Price-setting buyers cartels were opened up with the 'Market Information System' in 2008 which enabled new en-

trants and higher selling prices, especially at remote locations. Consistently slightly higher margins were earned by individual dealers, although average production per person is higher in groups. Over 90% of actors belong to marketing and processing associations. NGOs and research organisations are been supporting domestication trials of *Irvingia wombulu*.

Exploitation is generally regarded by harvesters as sustainable, as only fallen fruits are harvested and as bush mango is usually left or actively managed in fallows. However increasing forest clearance may pose a risk to ecoregion level populations. Fruiting is highly variable from year to year and demand is generally higher than supply. Losses of 5 to 8% have led to 11 different storage methods being used (including pesticides) with different levels of effectiveness. On average 41% is harvested from farm-fallows in all the regions, varying from 37% in the East where it is not domesticated but left in fallows, to 65% in the Southwest where harvesters have planted or maintain it in agroforestry, fallow systems.

Shown in Figure 10.2, customary tenure and ownership rules dominate governance arrangements. *Irvingia* trees within forests are not owned by individuals or families and access is generally on a first-come, first-served basis. About 99 % of harvesters indicated they did not require prior authorisation from any authority before harvesting. However, families tend to harvest in the same area each year, constructing 'bush houses' for the harvest season, indicating tacit acknowledgements of 'ownership' within most communities. Trees planted or maintained on farmland are owned by the landowner, with access restricted without permission. As *Irvingia* spp. has increased in value, some people have begun to clear land around these trees in the forest. This extension of tenure through clearance usually relates to farmland, but resources from retained trees are also

Figure 10.2 Intensity of governance arrangements in *Irvingia* spp. chain



considered to be owned by the family that cleared the land. 'Outsiders' and large scale buyers are required to register before purchasing from community members, with fee payable to traditional authorities. Rates differ from US $7 for indigenes to US $4.7 plus an unspecified amount of palm wine in Mbilishi to US $11 for the whole season in Kajifu. These fees have increased since 2001 (Sunderland *et al*., 2002) by up to 50%. Encroachment of customary forest areas by Nigerian communities is a considerable cause of conflict, for example in Obonyi I, Basho, Matene and Mobilise villages. Because of such conflicts, Mbilishe people began planting both Irvingia species. Other traditional controls include prohibitions on felling individual *Irvingia* spp. trees under any circumstances, climbing trees and harvesting unripe fruit. The fruit may be harvested only after it is ripe and has fallen to the ground.

Bush mango is not classed as a Special Forestry Product but has been the subject of mutual agreements (*gré à gré)* with a quota for 100 tons from the Centre granted to one permit holder in 2009. The majority of traders interviewed did not have permits but operated illegally or purchased way bills. Despite having a way bill, corruption at checkpoints and border crossings by police officers, forestry officials, customs, council, trade and quarantine officers is prevalent, amounting to 24% of costs. Market-based arrangements are most common, with conditions for its exchange and trade negotiated on the basis of market prices, and little exchange of information, learning from others during transactions and no consideration of resource sustainability. The Technical Operations Units set up for Takamanda landscape (see Chapter 6) to decentralise decision-making established partnerships with local populations through rural forestry or village committees. However financial and administrative power and authority have not been transferred in practice. Projects, such as PSMNR-SWP set up development committees in the Technical Operations Unit to provide an interface between the population and other natural resource users and guardians. The village management committees and community forests (adjoining the park) introduced new co-management arrangements, aiming to strengthen governance arrangements and devolve power and authority, but also increasing complexity, causing coordination problems and creating new opportunities for (mis)appropriation of power, authority and resources, both financial and forest assets. In the study period emerging rules aroused harvesters' fears that they would be prohibited from harvesting bush mango in the newly-gazetted Takamanda National Park, which would negatively impact their livelihoods.

Raffia chain

Raffia palms (*Raphia farinifera*, *vinifera* and *hookeri*) have long been domesticated in the Northwest region in the montane forest ecoregion. Most palms are located in riverine, gallery forest patches and some in swampier semi-flooded plans. Six parts of the palm are used to create over 30 products of *Raphia* spp. palms Stems are sold individually as poles, at the roadside in or domestic timber markets, used by beekeepers to make beehives and transformed by artisanal craftspersons into over 20 items such as mats, baskets, furniture and artefacts. These items are sold in stalls, markets and crafts shops, by the roadside and from the craftsperson's home. The sap is fermented into *mimbo* (wine) and *aforfo*r (liquor) by local tappers and sold in specialised palm wine markets, in food markets, by the roadside, directly to bars by individual tappers and from tapper's homes. The cooked bitter yellow fruits are sold in markets and by children at cultural events. Seeds are sold to craftsmen for transformation into rattles and curtains and sold in craft markets. Leaves are woven into decorations, mats and baskets. The stem is

used to create archways during funerals, traditional ceremonies and religious events, harvested directly by users. The fronds are used as roofing material. Items such as baskets and mats are traditionally not sold, but exchanged between families and craftspersons. *Raphia* spp. items such as wine and spears are traditional gifts, used to pay chiefs and customary authorities.

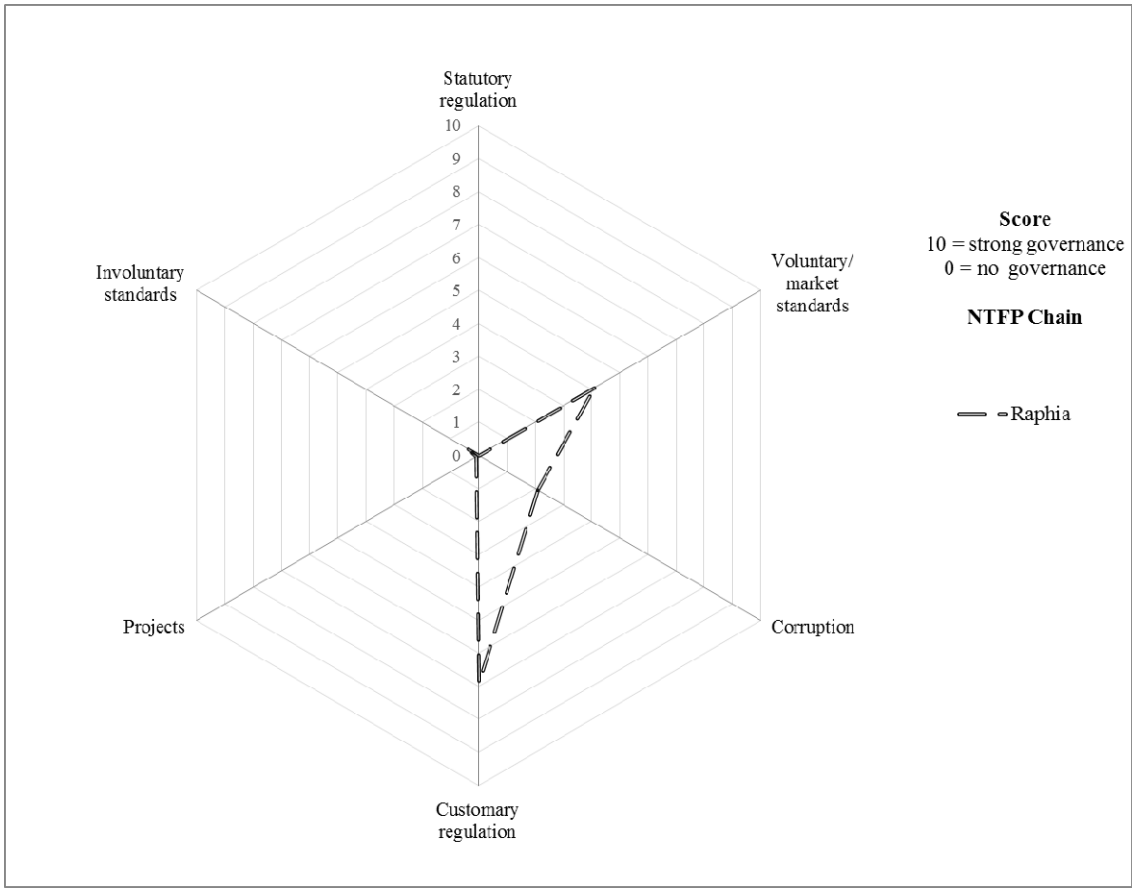
Many of these products have strong cultural significance, being used to decorate palaces, signify cultural events and in traditional musical instruments. The rituals associated with serving palm wine are core social and communal acts associated with hospitality, traditions captured by storytellers such as Chinua Achebe. Whilst most are also traded on a small scale (Box 4.1), palm wine, the fermenting sap tapped from the stems, also known as *mimbo* or *raffia* (from *R. farinifera*) or *mbu* (from *R. hookeri* and *R. vinifera*), is the most commercially valuable product from the species. The estimated market value of palm wine from the study area is 6,762,475 US$ annually. On average, 72% of production is sold, 12% consumed, and 8% exchanged or given as gifts. This low-cost popular drink, averaging 65 FCFA (0.13 US$) for mimbo and 75 FCFA (0.15 US$) per litre at the farm gate, is used in traditional ceremonies, often with cola nuts. It was the main alcoholic beverage prior to beer (400 to 500 FCFA (0.81 to 1.02 US$) becoming increasingly widely and cheaply available over the last fifty years. Palm wine is produced year round, although production is higher in the rainy season, and holidays and festivities increase demand for the 20 litre recycled oil containers of wine which are the common unit of sale. After around two days the openly fermented wine turns to vinegar. This short shelf life restricts the distances it is marketed. An increase of 20% a litre upon farm-gate prices was found in village markets, rising to 67% in village bars, 100% in town markets and 167% in town bars. Palm wine contributes on average 36% of average annual household income (190,444 FCFA, 388 US$) of ‘tappers’ (harvesters), supporting on average their household of seven. Tappers have up to seven other sources of income including five other NTFPs. Palm wine was rated by 52% of harvesters as their primary source of income. Men dominate harvesting (99%) due to cultural norms, the heavy work and distances involved. They walk or cycle once or twice daily (travelling on average 10 km), tending the palms, tapping the stem to obtain the sap and bringing the wine to the market mostly individually. Men dominate bulk sales in markets (95%) and women (95%) running bars. Average wholesaler and retailer income is 143,208 FCFA (292 US$) annually. Palm wine is consumed by all ages and both sexes. It has cultural significance, offered as a gift to chiefs and used in traditional ceremonies. In the main production areas around Bamenda, Tuba, Ndop, Babessi, Mbengwi and Batibo in the Northwest, an estimated 1,347 people are involved in the trade.

Photo 10.3 Wine tapping (*Raphia farinifera)*, Bafut, July 2010

An estimated 95% of raffia-based products originate from once wild, riverine gallery forests that have been cultivated for many years, often at least a century. Most raffia (70%) was harvested from customarily owned family land and 10% from land granted to men following traditions of tenure and use dictated by traditional authorities, with 20% on privately owned land. These palm groves are actively managed, with customary best practice norms relating to grove management and

vegetation clearance, water management and harvesting periods and techniques for the different products that aim to ensure the long-term, sustainable flow of different products on a year round basis. Whilst access to raffia is governed by customary arrangements, access to markets is not officially regulated and subject to market rules.

Figure 10.3 Intensity of governance arrangements in the *Raphia* spp. chain



Bamboo chain

An estimated 1,200 to 5,400 actors are active in the bamboo chain originating from the montane and humid forests ecoregions of Cameroon, catering for local rural and urban markets. This is largely based on colonially introduced 'Chinese bamboo' (*Bambusa vulgaris*) now semi-cultivated. African indigenous bamboo species in the Northwest include the alpine *Yushania alpina* (known locally as *intomtom* (Oku), *ebtotom* (Kom), *tomtom* (Lamnso) and *kehweh* (Fulfulde) and Indian bamboo) and *Oxytenanthera abyssinica* (*mentomtom* in Oku and *mbasetutuy* in Kom), and in the savannah *Oxytenanthera abyssinica*, known as Kok-ko (Gbaya). The stems are short lived, but rhizome clumps can survive for at least forty years (Indada and Hall 2008). Both species are mainly gathered from the wild with low levels of cultivation found near homesteads, and are extensively used in their localities. The chain consists of individual, micro and small enterprises of owners, collectors and harvesters; craftspersons, traders and retailers. Only 13% belonged to a bamboo-related association. Regulatory, support and control actors, such as local and central government ministries and development or support organisations are absent, although some traditional councils and chiefs regulate use locally.

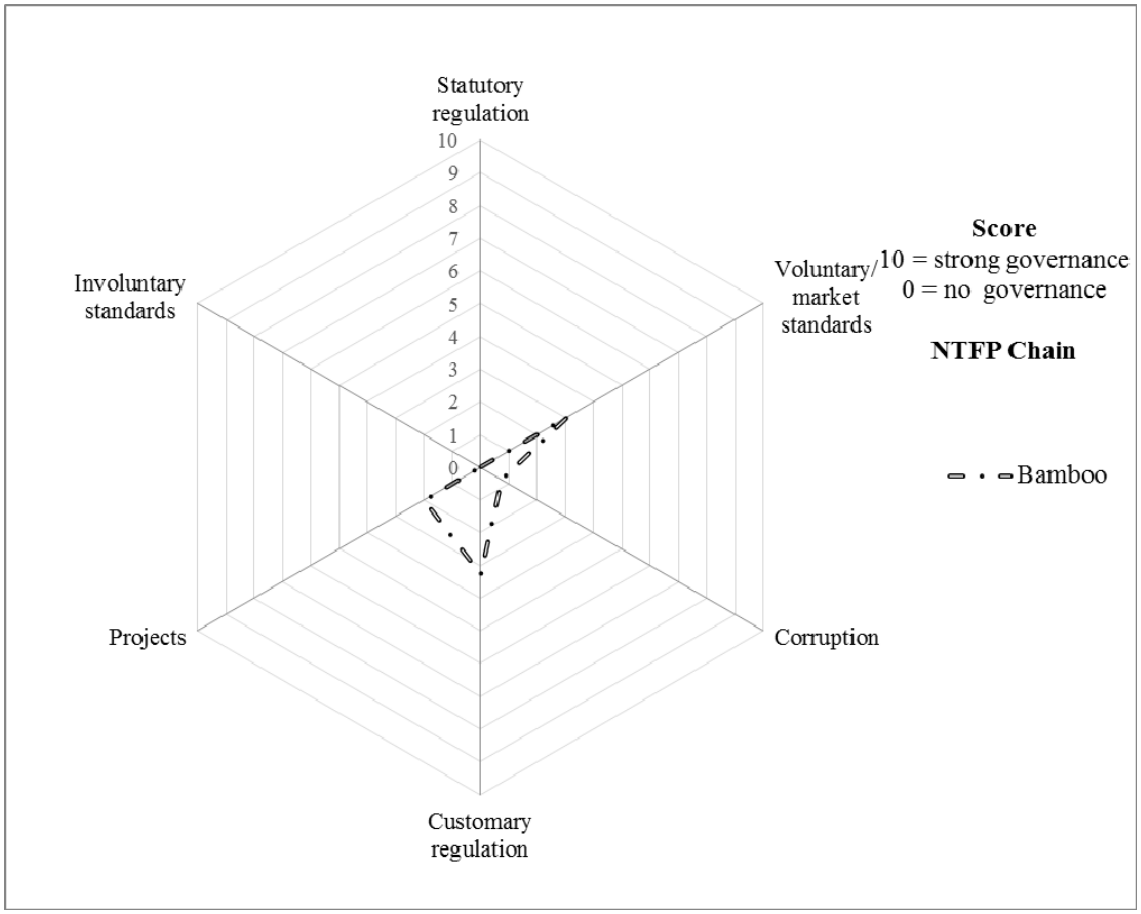
Photo 10.4 Yushania alpina bamboo beaker, Oku, November 2009

Bamboo is harvested for own use by 77% of harvesters, typically middle-aged, married family men from the collection area. A few high volume, professional harvesters collect up to 6,000 stems a year (earning around 4,000 US$) but most are small scale, collecting around 500 stems annually, earning on average 364 US$. The market is estimated annually at 2,367,673 US$. Access and control differs across regions, with the Northwest and West regions more traditionally regulated. Most bamboo, however, is freely available with open access: one-third is either owned or permission is needed for harvest, and in 33% of these cases, payment is required to traditional or village authorities. The majority (57%) harvested is naturally regenerating; 6% has been planted and 37% is a combination of natural generation and planting. Resource availability and sustainability were not seen as issues except in Adamaoua where decreasing resources were indicated. Craftspersons are typically married, middle-aged men, a third of who classified bamboo crafting as their major occupation. Prices reflect demand, quantity of raw material used and product quality. Their average annual revenue was 236,208 CFA (524 US$) (SD 467,712 CFA, 1,039 US$). Bamboo is consumed raw and after a series of basic primary and secondary processing, resulting in 14 major product types with over 43 different products, with 50% of the products used for construction , 30% as furniture, 22% in agriculture and the remainder as tools and utensils and as fuel . Afromontane bamboo (*Yushania alpina),* is used to create over 45 products, classified into 13 product groupings, all using the stem: furniture, fencing and hedges, construction material, utensils, baskets and containers, hunting implements, agricultural supports, water pipes, musical instruments, ornamental planting, fuelwood and paper. These different products are sold in different markets and to different consumers. Some, such as poles, are often exchanged. The leaves are used as fodder for animals and the flowers provide bee forage. The products are perceived by consumers as an affordable 'local' material producing a high quality product.

Illustrated in Figure 10.4, there is no specific statutory regulation addressing bamboo. It is not listed as a Special Forestry Product nor has it ever been included in the annual lists. It has been subject to a 1993 prefectural order in Oku division forbidding, among other activities, the 'cutting of young alpine bamboo'. Customary practices governing *Yushania alpina* in Kilum Ijim include a prohibition on grazing in the forest. Rule number 16 of the Fondom-Agreed Wide Rules introduced by the Bamenda Highlands Forest Project (see Chapter 6) stipulates that only mature or dry Indian bamboo should be cut. In cases where fresh young bamboos are needed, the community must be consulted. Enforcement has generally been via traditional councils. Around Bafut, where 'wild' and planted bamboo exists, strict control and regulations for harvesting are enforced by the Fon. In most cases, these result in monetary fines and payments for rights to harvest. Around Ngaoundal in Adamaoua, there are no customary rules for small-scale harvesting and most bamboo is located in 'open access' forests. In only one village, where there are no beekeepers but several large clumps of bamboo, have beekeepers from neighbouring Wendoka made arrangements with the village chief to harvest and collect cuttings for transplant to riverine areas nearer their village, to ensure security of their resource. Apiculture organisations indicate that the declining quantity of bamboo and increasing distances to harvest it have encouraged protection of bamboo groves by beekeepers (Michael Tchana and Paul Mboui, Guiding Hope, pers. comm.

2007). This has led to assisted regeneration since 2010 in four villages around Ngaoundal, with bamboo and raffia palms planted and protected by order of the local chief – with agreement of villagers – on land demarcated as community regeneration zones.

Figure 10.4 Intensity of governance arrangements in the bamboo chain



Gum arabic chain

Gum arabic is resin collected from *Acacia senegal (*producing a high quality resin), *Acacia seyal* and *Acacia polyacantha* trees in the savannah ecoregion. *Acacia senegal* plantations were first established Cameroon in 1985. The latter two species are found wild around Waza National Park and around Maroua and Mokolo, producing a lower quality and quantity of gum. Around 96% originates from open access savannah forest and the national park and 4% from enriched forest plantations by state development projects between 1990 and 2006, now no longer actively managed. Acacia trees have multiple uses. The resin is used locally to manufacture ink and as a fabric stiffener and internationally in the food sector (known as E414), in pharmaceuticals, textiles and paints; the leaves provide forage and flowers bee forage; its timber provides firewood and poles; the tree is used to counter soil erosion, improve fertility and the bark is used medicinally.

Around 1,900 people are active in the chain including 1,250 seasonal, mainly unschooled, women and child gum pickers in wild stands; middle-aged, wealthy male plantation owners; 60 plant nursery labourers; 550 growers; 125 wholesaler intermediaries; state, private and cooperative plantations; and one processer and exporter, CEX-

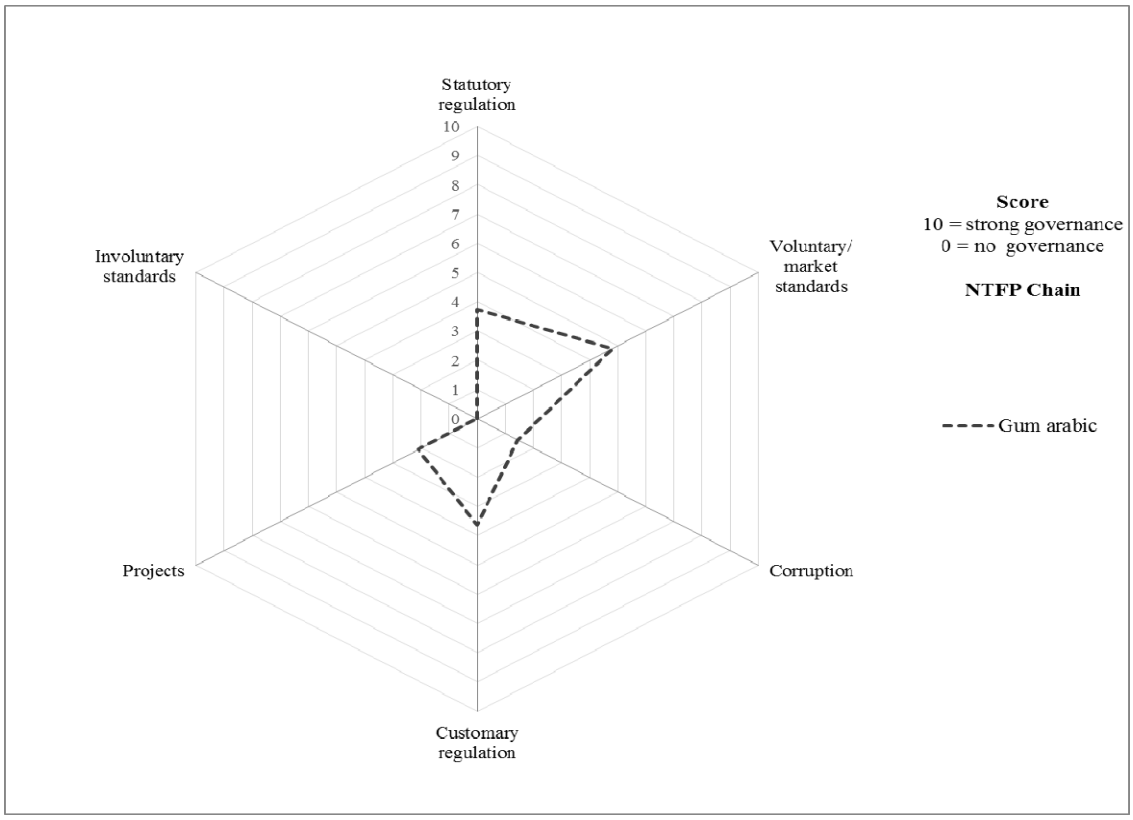
PRO. Collective action is low with around 3% of harvesters belonging to a group. In 2006, SNV supported the creation of a chain-wide interprofession to address problems in the chain. All the export companies are members of the Syndicate for Special Forestry Products (STIEPFS). Permits and official exports in the last six years have been dominated by four companies. Limited support to improve production and processing is provided by three local and three international NGOs, one chain platform and two government agencies (IRAD and ANAFOR). Gum contributes on average 162 US$ or 37% of a harvester's household income, alongside farming, livestock, commerce and woodfuel. Around 80 to 90% is sold; the remainder is auto-consumed, exchanged or perishes. Harvesters earn on average 210,000 FCFA (SD 66,468) (424 US$ SD 140 US$). Plantation owners earn higher values for the better quality Senegal gum on average 283,000 FCFA (SD 115966) (598 US$ SD 245US$). Cameroonian and Nigerian traders buy at between 175 to 200 FCFA (0.37-0.43 US$) per kg and export at 455 FCFA (0.92 US$) on average. An estimated 2,050 to 3,050 tons is harvested annually; 50 tons of *A. senegal*, 500 tons of *A. polyacantha* and 1,500 to 2,500 tons of *A. seyal*. Permit data indicates that on average 200 tons were exported annually by CEXPRO (see Appendix 10), mainly to the EU and USA. Trade data for gum arabic is not listed in COMCAM, making actual quantities officially exported uncertain. An estimated 400 to 2,800 tons annually is exported illegally via Kousséri to Chad and Nigeria. The total market value is estimated as at between 716,816 and 1,990,733 US$ annually. The SFP taxes, permits and high levels of corruption (between 1 to 10% of selling price) make illegal exports more competitive, leading to decreased sales and abandoned plantations. Threats reported to the trade include the destructive harvesting techniques, low productivity of wild stands, harvesting of the trees for fuelwood, the degradation of wild stands due to grazing and burning for pasture and increasing desertification threatening its existence in this ecoregion.

Photo 10.5 Gum arabic (*Acacia senegal and Acacia seyal*), Maroua, January 2006

The chain is not highly governed, shown in Figure 10.5. Although gum arabic is listed as special forestry product, harvesters wishing to trade and traders complain that the process to obtain a permit or *grè á grè* is difficult and costly and that conditions are unfavourable for business, with four larger companies dominating the market. The legal situation regarding the status of the now unmanaged, degraded plantations is ambiguous. Many exporters thus work illegally and cross the border to Nigeria and Chad unrecorded and informally for processing and further export. As collecting in the national

park is illegal, an agreement with MINFOF to make this customary activity legal and to create a community forest adjacent to the park have been sought, supported by SNV. These had not been implemented to date. Guidelines for harvest and management of wild strands have been proposed, given the high levels of unsustainable harvesting and lack of customary norms, but have not been adopted as legal instruments (Ofaken 2008).

Figure 10.5 Intensity of governance arrangements in the *Acacia* spp. chain



Conclusions

The analysis of the cola nut, bush mango, raffia, bamboo and gum arabic chains originating from the montane, savannah and humid forest ecoregions of Cameroon indicates that multiple configurations of governance arrangements exist, influencing how the chains are configured in terms of values. Alongside product characteristics, these arrangements also influence how the products are sourced, harvested and traded. This section draws conclusions, responding to research questions two to five on the governance arrangements in place; how these impact the livelihoods of actors and their sustainability; and how these impact chain and product sustainability.

These products have high economic, socio-economic and cultural values. Mirroring exactly the top ten uses of NTFPs in Cameroon presented in Chapter 4, the multiple products from these species are used as medicine, food, tools, construction, cultural, wood, fuel, condiments, oil and forage. They have subsistence use and their trade satisfies highly diverse rural and urban consumers in local, national, regional and international markets.

The governance arrangements of the five chains provide a stark contrast to the configurations found in the *Gnetum*, apiculture and *Prunus africana* chains. Not only are the arrangements governing all five chains of a less intense nature, but they are also all less plural, reflecting more the reality of governance arrangements for most NTFPs in Cameroon. Customary arrangements predominate, the de-facto system for most products, with highly local institutions and arrangements controlling mainly access to natural resources. These are strongest and most well developed for species producing products of high cultural value species, such as cola and raffia, and for high economic value products, such as bush mango. They are weaker for products with more everyday uses and lower economic and social values, such as bamboo. The gum arabic chain, with three species – indigenous and imported – creating products of differing values, illustrates how this characteristic has resulted in plural arrangements, which have been contradictory and temporal. These arrangements have been mildly tempered and altered by the gum arabic and bamboo chains by some limited interventions by projects. Market-based arrangements, typically the result of collective action by unions and associations of traders, affect access to markets. Statutory regulations are of limited intensity, mainly due to the high levels of illegality as enforcement is arbitrary or weak and permits systems are easily side-lined or avoided. Corruption casts form a persistent shadow over high-value products with longer distance, international chains.

The different impacts of these governance arrangements on livelihoods can be been seen. Customary rules regarding tenure and access to the resources, which enshrine long-established management and harvesting techniques, such as in the cola and raffia chains, enable long-term sustainable livelihoods. Rights and responsibilities are well defined and create clear, well-enforced boundaries to manage these resources. For raffia this is more exclusionary and akin to a private property regime, and for Cola a common pool regime. The analyses show that this works when the product is valuable. When products are of lower value, such as bamboo in Adamaoua until recently, the effort required to create and enforce such governance results in a void of arrangements. However, when livelihoods are negatively affected by resource scarcity or degradation, often combined with increasing product value, governance arrangements are crafted. Market-led and collective actions – often drawing on customary authority – are used to maintain or enhance livelihood resilience. These chains provide good examples of how critical the time scale is between which actors become conscious of threats to livelihoods, act to introduce changes and arrangements, and the time before these bear fruit (sometimes literally). The different ratios of cultivation as a reaction to livelihoods demonstrate the alternative strategies used by actors in the chains (and sometimes indirect actors, such as governments, research, conservation and development actors): where tenure and access to resources is difficult, such as the inability to own *Acacia* spp. trees in protected areas and on former state plantations, efforts have been directed to access to markets (collective action – the interprofession and illegal exports). The inconsistency and complexity of statutory arrangements has encouraged corruption, to the detriment of livelihoods as costs increase.

The impacts of governance arrangements on product and chain sustainability have been manifold. Strong customary arrangements have created systems to restrict access to selected actors, generally men indigenous to the ruling authority, and to enable species to be managed in order to repeatedly generate products over long periods of time. Statutory arrangements, despite also promoting cultivation, have had no such impact. By focusing on access to markets and the generation of state revenues and ignoring access to the resource and the specific characteristics of the species and local communi-

ties, they not provided systems that encourage sustainability, but instead extraction, as illustrated by the gum arabic chain. Market-based, collective action has not had an explicit focus on product sustainability, although the interprofession of gum arabic actors and bush mango-processing and marketing associations show that they are interested in chain sustainability.

Part IV: Conclusions

This section presents the conclusions, comparison and synthesis. It summarises the key findings on how governance arrangements have shaped the eight value chains based on the research and development experiences. The dramatic differences in governance arrangements and livelihood impacts between the eight chains were not apparent at the time of selection of research design and cases and strongly justify the number of value chain cases as providing a balanced view. The chapter summarises responses to each research question: the contexts in which the NTFP value chains are embedded and observable trends, how the value chains are configured in terms of products (uses and sources), actors, activities and values; the arrangements used to govern the NTFP chains; livelihood sustainability and product sustainability. The chapter ends with reflections and recommendations for policy and regulatory changes.

The Bannerman's Turaco – a bird of high cultural value and endemic to the Cameroon Highlands forests, feeding upon *Prunus africana* leaves and seeds. Card printed on paper made from *Yushania alpina* bamboo and grass by the Kilum Forest Craft Paper Cooperative, Oku,

11

How governance arrangements shape NTFP value chains[1]

Introduction

This chapter summarises the empirical findings about how governance arrangements influence NTFP chains originating in the Congo Basin and affect sustainable livelihoods, helping explain why some chains are subject to overexploitation and others are not. The main research question asked was how governance arrangements in forest product chains originating in Cameroon influence sustainable livelihoods? To respond to this, first the following sub-questions are answered in turn:

1. In which contexts are the NTFP value chains embedded and what trends can be observed?
2. How are NTFP value chains originating in Cameroon configured in terms of products (uses and sources), actors, activities and values?
3. What arrangements are used to govern NTFP chains?
4. How do these governance arrangements affect the livelihoods of actors along the chain and their sustainability?
5. How do these governance arrangements impact product and chain sustainability?

Shaping contexts and trends

This study shows how the ecological, socio-economic and governance contexts in which the NTFP value chains are located have strongly influenced how the chains have emerged, evolved and are currently configured. The ecoregions are all characterised by

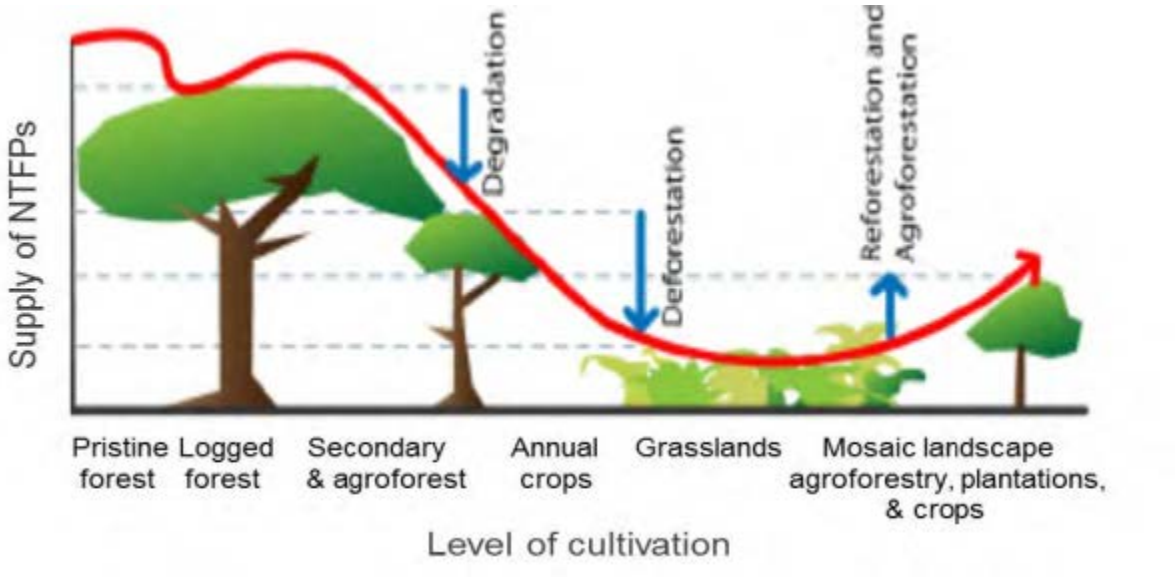
[1] Includes data published in peer-reviewed articles written or contributed to by the author (Awono *et al.* 2013; Ingram 2012b, Ingram *et al.* 2014a; Ingram *et al.* 2014b; Wiersum *et al.* 2013).

increasingly rapid reductions in the forest area and degrading quality in the last sixty or so years, mainly human-induced. Changes have been most severe in the Afromontane Cameroon Highlands and around urban areas. Deforestation results in a reduction in the number of species which provide products and/or their seed dispersers and pollinators and reduces the resilience of ecosystems. Although a much larger number of species were found used as NTFPs than previously recorded, this is due not to increased NTFP use, but to the methods and sources used to gather data. Instead, it appears that the availability of species used for NTFPs from natural forests has declined and that resource availability in natural forests has declined. Only a very small proportion of NTFPs in the ecoregions were classified as vulnerable. However four of the eight NTFP species studied were classified by international systems as vulnerable in some way – with *Gnetum* spp., *Irvingia gabonensis*, *Raphia regalis* and *Prunus africana* on the IUCN Red List and the latter also listen on CITES Appendix II (Chapter 6). All the plant-based species studied are perennials, with the majority of their parts harvested rated as having a medium to high level of impact – indicating they are inherently vulnerable at individual and possibly population level, depending upon harvesting techniques and management practices that mitigate negative impacts and/or promote positive impacts, such as sufficient reproduction or regeneration. These findings suggest that vulnerability is associated with high product value.

However, harvesters and new entrants to the chains (farmers, agro-foresters and different community, public and private sector organisations) have found ways to counter scarcity in the wild and vulnerability, with all the NTFPs studied being cultivated in varying degrees. Cultivation rates have been maintained or increased over time. *Cola* spp., *Raphia* spp. and *Apis mellifera adansonii* have all been cultivated between at least the last 50 to 100 years, such that the majority of products now originate from cultivated sources. Beekeeping has replaced wild honey hunting in the Northwest and also largely in Adamaoua in the last twenty years. Products such as *Prunus africana* have been cultivated more recently as demand and their values increase, and wild sources diminish. *Irvingia* spp. has been semi-cultivated in the last forty years, and bamboos, *Acacia* spp. and *Gnetum* in the last twenty five years. This suggests a general trend, depicted in Figure 11.1, of increasing cultivation as demand rises and availability in natural forests decreases, mirroring global trends of declining forest quality through deforestation and degradation with expanding small and large-scale tree planting in tropical countries (FAO 2011). From a SLA perspective, cultivation adds natural capital and, depending upon the rate of extraction, compensates for the conversion of natural to financial capital from wild resources.

The livelihoods context has shaped how the products are valued, used and traded. One of the most defining socio-economic contexts, prevailing over time, is poverty. The majority of the most numerous groups of actors in the chains, harvesters and retailers, live on or under the poverty level. This situation has hardly changed in the study period (National Institute of 2010), despite economic growth with poverty levels worsening in rural areas and for households whose head is not formally employed, with only slight improvements in urban areas since household data was first collected in 1996 up to 2010. A typical harvester in all of the chains studied has all the characteristics of entrenched poverty recognised in Cameroon (Republic of Cameroon 2009): living in rural areas – often with poor infrastructure – and in the poorest regions in Cameroon, having a large household size, low education levels, and with many being females. Given this

Figure 11.1 Relationships between forest quality, NTFP supply and demand



Source: Research results

context, the majority have engaged in NTFP harvesting, seeking to diversify and add sources of cash household income to meet their most basic needs for food, schooling, healthcare and housing. For the species with multiple, largely food, medicinal and fuel uses, these products also contribute to livelihoods, although with lesser importance than their cash contribution. The fairly long periods of time over which harvesters have engaged in trade, around eight years, suggest both a continued reliance on NTFPs but also entrapment in poverty, particularly for those chains where incomes are lower than the national average: apiculture in Adamaoua, *Prunus africana, Cola* spp., *Irvingia* spp., *Raphia* spp. and bamboo.

In all three forest-rich ecoregions, forest resources have been used to create products. Many of these species have been used for centuries, intricately embedded in the livelihoods of people living in and around the forests that they originate in. Whilst some species and products have remained in subsistence use, overall a rising pattern of commodification is apparent, with different sub-trends. One growing trend is for 'mainstreamed NTFPs'. These are products such as eru (*Gnetum* spp.), bush mango *(Irvingia* spp.) and honey which have changed from products with particular uses by geographically-specific ethnic groups, to popular products used by a wide range of mainly urban-based consumers across Cameroon and further afield by African diasporas. A second trend concerns 'global niche NTFPs': these highly profitable products have specific uses and increasingly global chains. Derived from traditional uses, commercialisation of these new products is driven by growing demand for 'natural products'. Examples are *Prunus africana* and *Irvingia gabonensis* based remedies and organic honey, beeswax and propolis for food and for the latter, multiple industrial uses. This trend reflects an increasing trade in forest products (European Forest Institute 2010) and steady growth in agricultural and forestry exports since the 1990s (Afdb *et al.* 2012), and slightly easier trading conditions in Cameroon (World Bank 2007). This increase is despite (or perhaps

because of) the general dip in exports from Cameroon and consistently pervasive corruption in the study period.

In contrast, a decreasing trend in the use of 'traditional NTFPs' is apparent. Cola nuts (*Cola* spp.), palm wine (*Raphia* spp.), raffia and bamboo furniture and tools and the traditional medicinal uses of *Prunus africana* and *Gnetum* spp. are being replaced by alternatives such as, respectively, cigarettes, bottled beer, plastic and Western medicines. Similarly, activities in chains, including harvesting, storage and particularly processing, have been transformed by labour-saving technologies and knowledge. This occurs as the availability and affordability of alternatives increases, traditional cultural prestige attached to these products and their production processes diminishes, and as synthetic alternatives for products are created, such as for *Prunus africana* and *Cola* spp. Taking such a historicising approach shows that such waxing and waning of products markets is nothing new and emphasises the dynamism of products and chains over time. This finding confirms Geschiere's (2007) contention that products and prices are shaped by variable historical contexts, not just economic supply and demand, with co-existing, multiple scales of values, built upon and combined by economic actors.

The governance context is characterised by a shift from largely separate customary and formal systems since colonial times, governing respectively access to resources and access to markets, to an increasing comprehensive – but not always well integrated – regulatory framework. On paper regulations set out rights to access NTFP species and regulate their trade. However in practice regulations have been largely ineffective, with enforcement highly sporadic and geographically specific, and non-adherence due to ignorance and/or a perceived lack of legitimacy, especially regarding tenure. As a result, many high value products – particularly honey – remain formally unregulated and others – notably *Gnetum* spp. and *Prunus africana* – are subject to considerable parallel 'governance' by corruption. In contrast, customary regulations have generally weakened in application and enforcement, threatened by formal regulation and by non-adherence, related to factors such as increasingly heterogeneous communities. Customary regulations are still clung onto for 'traditional' products such as *Cola* spp. and *Raphia* spp., as long as their values do not change. Changing product values have been both a stimulus and cause of changes in governance arrangements. Projects have played a critical role in devising, sometimes participatorily, new governance arrangements in the last three decades – at times crafted from local traditions. Hybrid arrangements have emerged, created by combinations of harvesters, processers and traders, which craft legal, customary and sometimes market-based systems together – such as geographic indication for honey. An increase in collective action and its formalisation, and in market-based arrangements are evident in recent decades, whereby actors have sought to control and manage access to NTFP species and markets, particularly in the face of scarcity and/or increasing values, mainly economic.

Value chain configurations

The second research question seeks to understand how NTFP chains originating in Cameroon are configured in terms of products and uses, actors, activities and values.

Product ecoregion sources and uses

The main uses of the species studied – *Gnetum* spp., *Prunus africana, Apis mellifera adansonii, Cola* spp., *Irvingia* spp., *Raphia* spp., *Yushania alpina* and *Oxytenanthera*

abyssinica and *Acacia* spp. – are for medicine, food, materials, construction, cultural, timber, fuel and condiment use. This closely mirrors the uses of NTFPs in Cameroon. These products rank among the top 5% of 'priority' NTFPs due to their exceptional economic, social and environmental value, and are exceptional in that they all have multiple uses, and that they have more multiple uses (on average 4.3) than most NTFPs in Cameroon, which have on average 1.6 uses. However, they are generally representative of NTFPs from Cameroon, displaying similar diversity in life forms, parts used and phytogeographic origin. This is partly derived from the fact that multiple parts are used (on average 3.6, compared to an average of 2.6 for all NTFPs). The products studied reflect the one third of NTFPs used both for subsistence and for trade are both used by harvesters, being traded, locally, nationally and internationally.

The NTFPs studied originate from all ecoregions and from different ecological niches in the regions, from primary to degraded forest to cultivated lands. Characteristics of the ecoregions have shaped the chains. Shown in Table 11.1, humid forests provide, as a proportion of the number of known species, the most products. The montane forests, covering just 1.1% of national land are a haven for biodiversity and endemism, harbouring an even larger number of known species. A smaller proportion of these montane species than in the lowland forests are however used as NTFPs, despite the generally higher population density (shown in Table 7.1). The savannah ecoregion is less species rich, but an equivalent proportion of these species are used as NTFPs (5% of plants and 1% of animals). This suggests possible links between species with high local abundance and multiple uses, in areas of high population density, characteristics which enhance the benefits of trade and cultivating species, as they ease the process of commercialisation. The result is short, local value chains, such as for traditional raffia, bamboo, cola nut and pygeum products, where actors exercise control over access to the resource and to their markets. This can be explained by the variety of reasons indicated in Chapter 4: gaps and biases in the literature and data, a shorter overall period of human habitation in the montane ecoregion, higher levels of over-extraction and subsequent disappearance of useful species (creating an empty forest syndrome (WWF International 2011/2012)), and higher rates of forest conversion to other land uses – leading to higher dependence on alternative sources of natural resources, such as farming. A major limitation of the conjecture about these causes is that species and products data is woefully incomplete.

Table 11.1 NTFPs per ecoregion

Ecoregion	Proportion national land cover type	Total number of species		Number of NTFP species (% NTFPs of total plant and animal species)				Proportion of total species	
		Plant	Animal	Plant	% of total	Animal	% of total	Plant	Animal
Afromontane[#]	1%	2,435	920	118	20	86	71	5	9
Lowland humid	35%	1,100	1,964	351	58	86	71	32	4
Savannah[Δ]	12%	965	417	57	10	47	39	6	11
Forest-crop mosaics	10%	n/a	n/a	26	4	6	4	n/a	n/a

Source: Research results *Notes*: * 2% of plants and 36% of animal species occur in all ecoregions. [#] 4% of plants occur in montane and humid ecoregions [Δ] 1% of plants occur in savannah and humid ecoregions. n/a = not available.

The number of uses of a species by harvesters and consumers is shown in Table 11.2. The differences provide an alternative perspective of dependence on a product by different actors and highlight in particular its subsistence use value. Harvesters tend to use more parts of a species and to utilise these parts for a larger number of uses, creating

higher natural capital from valuable multipurpose species. But in only a few cases is this natural capital translated into financial capital. Most of the species studied have only one part that becomes a traded product. Individual or industrial consumers tend to use these specific parts as products for one specific use. The exceptions concern wax – used by industrial buyers for cosmetics and pharmaceuticals, honey for food and medicinal use, and *Raphia* spp. products woven from the palm stem which have multiple uses. Comparing the value and use scores of the selected NTFPs, summarised in Table 11.2, differences between the chains are obvious, although all score as high value, due partly to the selection methodology. Harvesters create more uses for a species than end consumers or buyers, due to the larger variety of uses than for subsistence plus trade use. This is related to the number of parts used with, unsurprisingly, the higher the number of parts used associated with higher number of uses. Once traded, products tend to have just one use. An inverse relationship is apparent between the value score, number of uses by harvesters and number of parts used (see Chapter 4). This is attributed to the product characteristics as higher values derive from the combination of both subsistence consumption and local, national and international trade.

Table 11.2 Uses and values of NTFPs studied

NTFP	Value score	Number of parts used	Number of uses by harvester	Number of uses by consumer/buyer
Gnetum spp.	5	2	3	1
Apiculture	4	3	4	2
Prunus africana	5	4	5	1
Irvingia spp.	4	4	6	1
Cola spp.	4	2	1	1
Raphia spp.	4	4	6	2
Bamboo	3	4	4	1
Acacia spp.	4	6	6	1
Average	*4.1*	*3.6*	*4.4*	*1.3*

Source: Research results

Actors

People in the chains studied generally work as self-employed individuals, with on average 24% partaking in collective action, shown in Table 11.3. Many harvesters engage collectively through traditional *tontines* or *njangi* groups. These provide access to credit and social exchanges, but generally do not represent individuals in business or policy arenas. Enterprises, the vast majority small and medium enterprises, are found mainly in the processing, wholesale and export stages of the chains. This means that actors are largely 'silent' and the NTFP sector is largely invisible. Their voice is little heard in policymaking or business circles and ability to significantly influence business bottlenecks, such as access to formal credit and banking institutions, weak. This finding is similar to forest product chains in other countries (Macqueen *et al.* 2006). However, modest changes can be seen resulting from participatory action research, development projects and collective action, enabling actors to have more voice and visibility in the apiculture chain, where actors worked together to develop new policy on honey exports and standards for the sector, and the *Prunus africana* chain, where actors joined to counter the 2007 trade suspension. In the *Gnetum* spp. and *Irvingia* spp. chains, collective action bolsters the negotiating position of harvesters and traders.

Table 11.3 Percentages of actors per chain and stage engaging in collective action

NTFP	Harvester	Processor	Trader	Exporter	Retailer	Average
Gnetum spp.	7	0	45	55	42	*30*
Apiculture	18	24	0	0	21	*13*
Prunus africana	69	0	50	0	-	*30*
Cola spp.	0	-	-	-	-	*0*
Irvingia spp.	39	0	75	-	-	*38*
Raphia spp.	1	-	-	-	-	*1*
Bamboo	13	32	-		-	*23*
Acacia spp.	38	-	-	0	-	*19*
Average	*23*	*11*	*43*	*14*	*32*	*25*

Source: Research results.- signifies no data. Averages calculated only where data available.

The data presented in Chapters 7 to 10 highlights that actor's profiles generally change according to the activities they conduct in a chain. Extrapolating from the sample of actors interviewed to obtain the estimated number of actors per chain – shown in Figure 5.1 – indicates that most actors (71%) harvest in rural areas (farms, fallows and forests), followed by retailing (16%) and wholesaling (6%), occurring generally in peri-urban and urban areas. Table 11.4 and Chapter 5 show that the majority of actors (60%) are male. However their participation varies significantly per chain and stage. Women tend to be most engaged in retailing, wholesaling and export, and harvesting in the *Gnetum* spp., *Cola* spp., *Irvingia* spp. and *Acacia* spp. chains.

Table 11.4 Average number of sources of income per chain and actor type

NTFP	Harvester	Processor	Trader	Exporter	Retailer	*Average*
Gnetum spp.	5	2	-	1	4	*3.0*
Apiculture	5	2	2	1	-	*2.5*
Prunus africana	8	-	3	2	-	*4.3*
Irvingia spp.	6	-	5	2	2	*3.8*
Acacia spp.	3	5	-	3	6	*4.3*
Bamboo	8	5	-	-	-	*6.5*
Cola spp.	3	5	-	2	-	*3.3*
Raffia spp.	7	-	-	-	-	*7.0*
Average	*5.6*	*3.8*	*3.3*	*1.8*	*4.0*	*4.3*

Source: Research results.(- signifies no data. Averages calculated only where data available.

Specialisation creates dependence. In comparison to harvesters, actors further along the chain have less access to other income sources and subsistence livelihood activities. Harvesters tend to have more diverse livelihood strategies, with a slight majority relying mostly on farming (44%) and 39% relying primarily on forest–based revenue to generate cash income, shown in Table 11.4. Harvesting households had on average six sources of income. Although most harvesters use the specific NTFP for subsistence use, the main incentive for its harvest is trade: on average in the eight chains 80% is harvested for trade. This figure is clearly affected by the methodology, as being traded was a selection criterion. Hence the proportion of harvest that is used, traded, perishes, given as gifts or exchanged, is not archetypal for all NTFPs. However, this figure appears representative for the 21% of the plant-based NTFPs noted as traded in Cameroon (see Chapter 4). Diversification by harvesters provides a safety net and way to spread risks. It is also inevitable, given the seasonal nature of most farmed and forest products. In contrast, processers, wholesalers and exporters tend to specialise, benefiting from economies of scale and market knowledge to increase revenues, and manage the often high

risks inherent in transport, bulking, storage and export. Retailers generally specialise less, but more than harvesters. Household dependence upon income from specific NTFPs thus generally increases as the chain extends further from the forest.

Actor profiles and livelihood impacts change with the stage they operate in the chain, and are also determined by the location where the activity takes place. This parallels the findings of studies in the Amazon (Stoian 2005) and in Asia (Ruíz Pérez *et al.* 2004). Harvesters tend to be lower educated than other actors in the chain, attributed to lower levels of access to schooling than for actors situated in generally peri-urban and urban areas and tend to have slightly higher levels of dependents. Actors – both in rural and urban areas – which are female have lower educational levels and larger households are particularly susceptible to poverty, mirroring national trends (United Nations Population Fund 1999). Shown in Chapters 5 and 7 to 9, most harvesters belong to the dominant ethnic group of the area where they harvest in. In the bush mango (*Irvingia* spp.) chain in the East region, both the main Bulu ethnic group and the minority Baka'a pygmy participate. However in the Highlands, it is uncommon for the minority Fulani group to engage in apiculture, *Raphia* spp., *Cola* spp. and *Prunus africana* products. This finding indicates that harvesting is mainly conducted by ethnic groups with cultural ties with and traditions of forest use. As the chain extends towards consumers, actors tend to be more ethnically diverse. This social-cultural characteristic explains why perceptions of value and the number and types of product uses differ strongly between actor groups, and why different arrangements govern access to production and to markers (Wiersum *et al.* 2013). Generally harvesters from the predominant ethnic group are bound by local customs. As a chain extends to urban areas, different arrangements increasingly apply. In most chains, customary institutions governing medium to large markets (types II, III, IV and V) have been watered down by the melting pot of ethnic groups in peri-urban and urban areas. This allows new hybrid cultures, market-based and statutory arrangements to influence actors' behaviours, activities and values, including institutions enforced by local governments in physical markets. Ethnicity is also a major reason why a forest product continues to be consumed in urban areas far from its source of origin. The strong cultural identity of specific ethnic groups with certain products can mutate over time, illustrated by eru/okok (*Gnetum* spp.) and cola nuts (*Cola* spp.), which are now perceived as national 'Cameroonian' products.

Activities

Activities in the value chains are generally highly gendered, varying with product characteristics and stage in the chain. This is strongly determined by customary governance arrangements and shaped by project and market-based governance arrangements. High-value products, such as pygeum, gum arabic, palm wine and bamboo are primarily male-harvested, due to strong customary rules governing tenure and access. Products such as eru and bush mango are largely female-harvested. Where both men and women participate in harvesting in a chain, women generally use more of their harvest for home consumption, while men sell a greater proportion. Men tend to capture value more effectively by larger scale activities, by engaging in processing, wholesale and export where higher profits (but also highest risks) are possible. Whilst these findings generally mirror other studies (Ruíz Pérez *et al.* 2003; Awono *et al.* 2010a), indicating that gendered patterns in retailing have changed little, some new trends are visible. Interventions by external agencies have positively influenced the benefits gained by women in NTFP chains, allowing access to resources and creating value-adding opportunities. This oc-

curs for example by disseminating new harvest and cultivation techniques, opening access to new and existing markets through novel and cost, and labour-saving processing activities.

Most activities carried out in the chains studied have characteristics in common. There is generally a low level of value adding in Cameroon and activities are highly segregated with little vertical integration. Actors generally engage in only one or two chain activities, except in the bamboo and apiculture chain, not conducting the full range possible. This is starkly illustrated by the *Prunus africana* chain which has returned to a classic 'low added-value' model since processing to a finished pharmaceutical product stopped in Cameroon. The consequence is that actors tend to have limited means to upgrade or add value, relying instead on increasing harvested quantity to generate increased revenues, mainly from wild harvested sources. For apiculture, cola, raffia and on a small scale for bamboo, *Acacia* spp., *Gnetum* spp. and *Irvingia* spp. cultivation has allowed control of quantity and, partially, quality. As upgrading and adding value is a key mechanism by which actors can strengthen their economic, social and organisational capacities – leading to increased control and power in chains (Grieg-Gran *et al.* 2005; van den Berg *et al.* 2007; Will 2008; Webber *et al.* 2009), the lack of value-adding leads to entrenched positions in a chain, less ability to compete or appropriate greater shares of profits (Kaplinsky and Morris 2000).

Values

That benefits gained by different actors in the chains differ is not surprising: it is a central element of the value chain concept that values change and augment along a chain (Kaplinsky and Morris 2000). The NTFP chains studied, shown in Table 11.5, reflect this. The further the chain extends from the harvest zone, the higher the average household income per actor type with an increase up to 60%. Exporters and wholesalers generally have highest income. The highest revenues were obtained in international and niche markets. Looking at the average proportion the selected NTFPs contribute to household cash revenues, it is intriguing that the further the chain extends from the forest, the higher the importance to household cash income revenues. Whereas 38% of harvesters rank the specific product as their main source of household income, 42% of exporters and 52% of retailers do. This finding is in contrast to the common view presented in NTFP literature (Stoian 2005), which ignores the higher level of dependence by actors in peri-urban and urban areas. Factors explaining this dependence are these

Table 11.5 NTFP annual average household income (US$) per chain and actor

NTFP	Annual average household income from NTFP (US$)						Average annual market value
	Harvester	*Processor*	*Wholesaler*	*Exporter*	*Retailer*	*Average*	
Gnetum spp.	1,276	0	818	8,741	1654	*2,498*	6,211,688
Apiculture	469	377	0	8,953	2458	*3,064*	5,390,999
Prunus africana	374	213	0	11,563	0	*4,050*	1,332,601
Cola spp.	184	0	347	0	0	*265*	1,859,053
Irvingia spp.	331	0	10,437	0	620	*3,796*	8,049,410
Raffia spp.	432	0	325	0	0	*378*	6,762,475
Bamboo	536	1,010	0	0	1608	*1,051*	2,367,673
Acacia spp.	167	0	0	97,959	0	*49,063*	714,852
Average	*471*	*533*	*2982*	*31,804*	*1585*	*7,475*	4,086,094
% average	38	23	37	42	52	*38*	

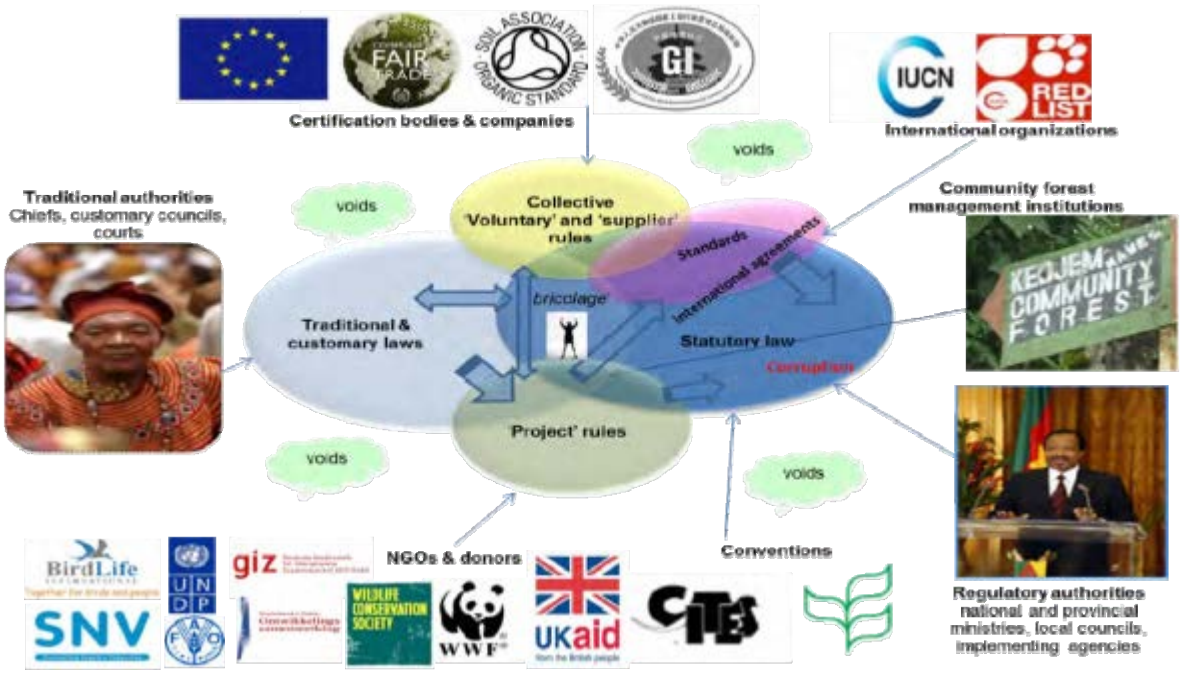
Source: Research results

actors' physical proximity to markets, higher levels of education and collective action. These appear to contribute to greater social capital and increased access to markets and information. This allows specialisation, economies of scale, innovation and more profitable trade.

Governance arrangements

This section responds to the third research question by summarising the arrangements used to govern NTFP chains. The context and analysis in Chapters 6 and 7 to 10 make clear that governance is messy. All the chains have overlapping and multiple layers of institutions and arrangements, illustrated in Figure 11.2. The three chains illustrate extremes of pluralism and voids where no institutions govern access to resources and markets. Such pluralism and intensity of governance arrangements is also found in some other high value and special forestry products (see Chapter 4 and 6). This justifies the use of five other chains to illustrate the less extreme and intense arrangements that are typical for most NTFPs in Cameroon. The configurations are highly dynamic, with some changing dramatically over the last forty years. Some actors, notably NGOs, project-related and market-based actors fulfil roles normally the reserve of the state. In others, the state performs some of its duties, in others not. Customary authorities, projects, civil society and market-based collectives dominate. Customary arrangements have been largely imposed by traditional authorities. Statutory laws, standards and international agreements are also largely involuntarily placed on actors, but have also been encouraged to further direct actor's competitive advantage. Project rules and corruption illustrate both bricolage and involuntarily foisting upon actors.

Figure 11.2 Plural governance arrangements in NTFP chains in Cameroon



All these arrangements seem unlikely to be smoothed into a mono-governance arrangement anytime in the near future. This is evidenced by the chequered history of the governance arrangements, slow land and regulatory reforms and business environment changes, increasingly tenuous grasp of customary governance in some areas, the insidiousness of corruption, and increasing influence of new economic, cognitive and social institutions. Thus, actors in chains are forced to stay, and become even more adept bricoleurs: making the best of the arrangements in which they find themselves and creatively using capitals available to change these. They build on natural capital to construct new institutions and/or remould existing ones to advance their livelihoods, individually and collectively, to meet their current objectives, circumstances and livelihoods. This reflects both productive bricolage (Ros-Tonen 2012) with its focus on livelihoods as the flexible and dynamic crafting of livelihood options and associated impacts on landscapes, and institutional bricolage (Cleaver 2002, Cerney 2010), with its emphasis on experimentation with institutions by private and public sector actors frustrated by institutional weaknesses, barriers and their impacts on livelihoods.

The scoring mechanism (elaborated in Chapter 3) allows the governance arrangements and their intensity to be made explicit. Figure 11.3 illustrates the 'fine mess'[1] of governance arrangements in the chains and Figure 11.4 shows the wide variances in intensity between arrangements in chains and between chains, whereby the following patterns are discernible:

- All the NTFP chains have multiple, plural governance arrangements, combining customary, voluntary or market-based standards and corruption.
- The intensity of governance arrangements varies. The *Prunus africana*, apiculture and *Gnetum* spp. chains respectively are the most intensely governed chains (indicated by their combined governance scores in Figure 11.3). Whilst there are no absolute voids of governance, there are voids of certain types of arrangements; for example, formal regulations do not exist in three of the chains (bamboo, raffia and cola). These extremes and differences were not apparent at the time of selection of the eight chains and justify the number of cases. Intensity and pluralism reflects the specific ecoregion and socioeconomic context, combined with product value and characteristics.
- Voluntary and market-based arrangements have the most pervasive influence in all the chains, affecting prices, activities, types and timing of transactions, and quality. When summed they are rated as moderate. Customary regulation, generally location and culturally specific, also occurs in all chains, but to a lesser extent, being mainly concerned with the beginning of the chain, rated as mediocre. They tend to be strong in the montane forests (Chapter 6) but have generally become weaker with improved access to markets, immigration, decreased dependence on forests and increasing pressure (and conflicts) over natural resources and upcoming hybrid arrangements (Chapter 4). Statutory regulation, often shadowed by corruption and weakly enforced, is overall rated as weak as it exists only in some chains, notably *Gnetum* spp., *Irvingia* spp. and *Acacia* spp.

[1] Silent, silver screen actors Stan Laurel and Oliver Hardy coined the catchphrase "This is another fine mess you've gotten us into". Similarly actors in NTFPs chains often have little or no voice in formal governance arrangements and act to create their own 'messy' arrangements that work well for them. 'Fine' in Cameroonian pidgin means good or well.

Figure 11.3 Intensity of governance arrangements in eight NTFP chains

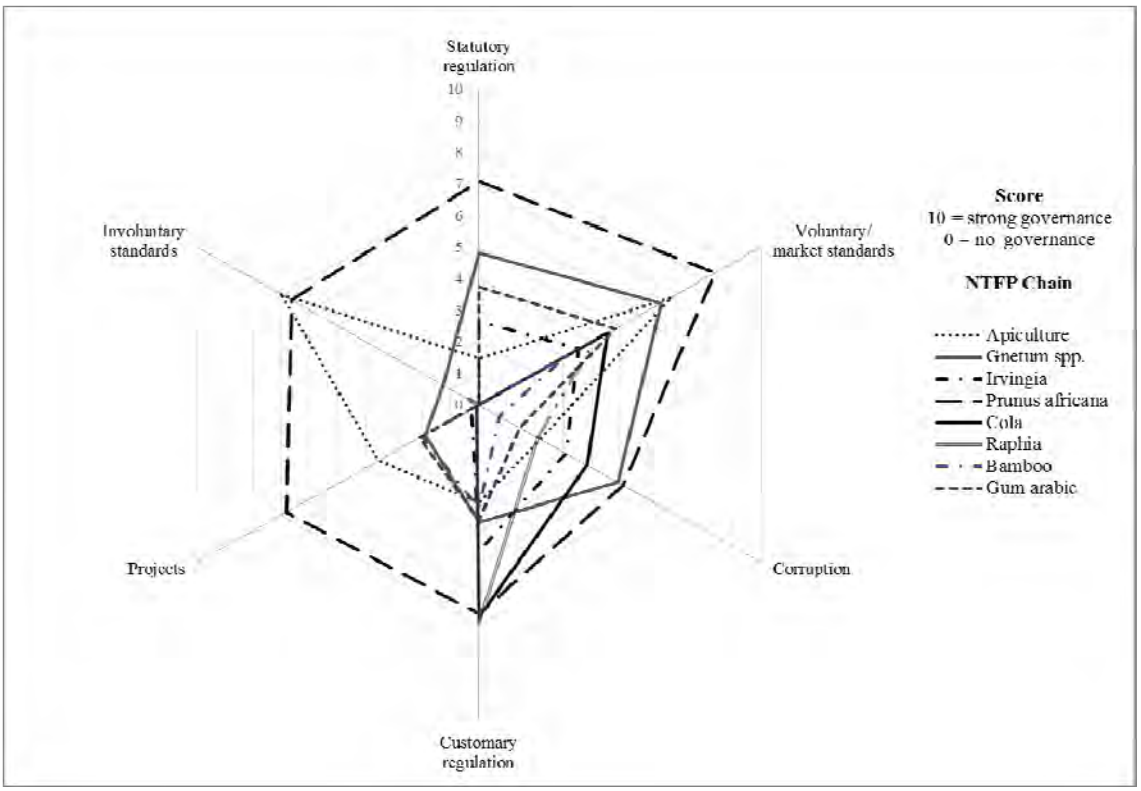
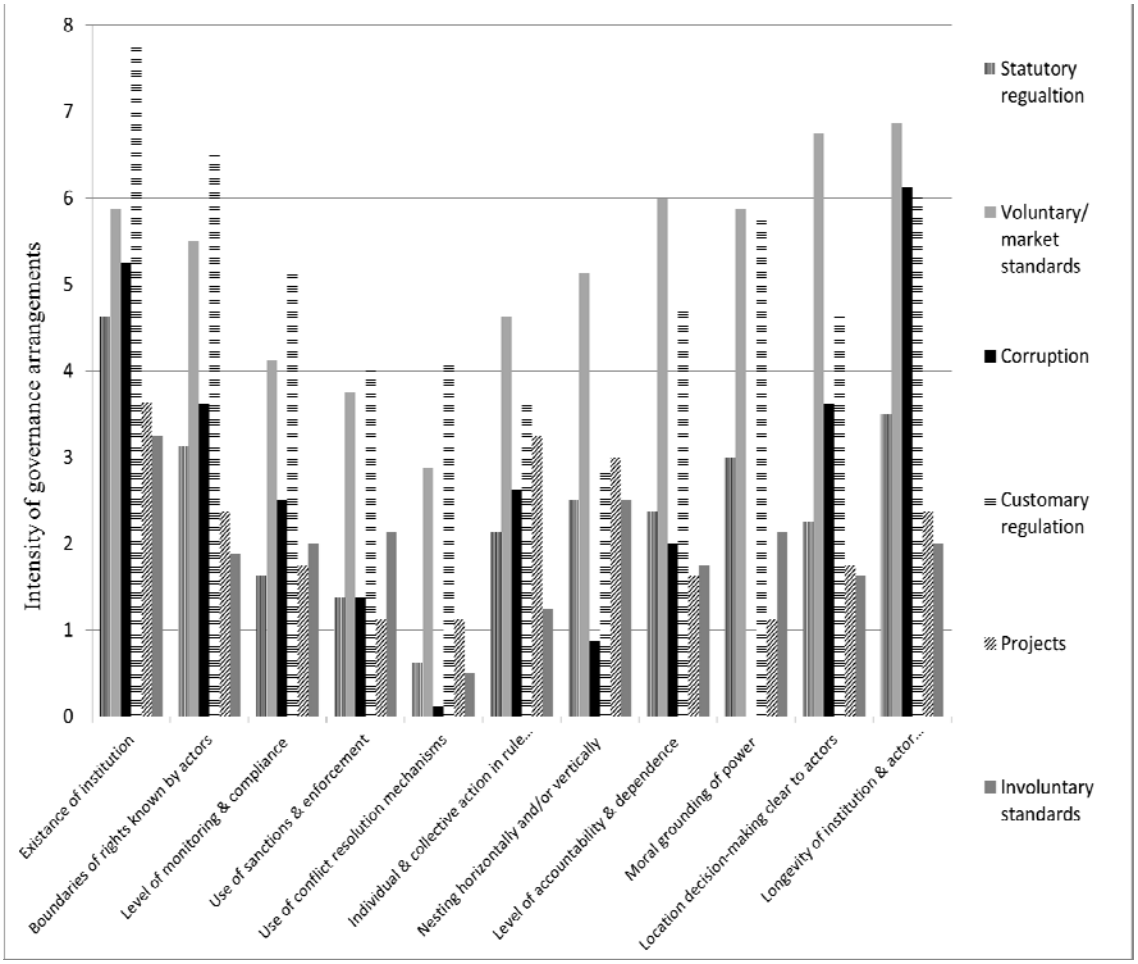


Figure 11.4 Overview of intensity of NTFP chain governance arrangements



- Arrangements governing access to production (the resource base) and access to markets are usually separated (Wiersum *et al.* 2013). Some arrangements nominally focus on resource access; statutory regulations generally have a wider geographic and social scope and tend to influence access to markets mainly. Few systems – such as recent regulations in the *Prunus africana* chain and organic certification in the apiculture chain – govern both spheres of chain activity.
- Hybrid governance arrangements such as community forests and certification schemes have developed as regulatory, project and market-based systems have sought legitimation and embeddedness in pre-existing customary arrangements. These bricolaged arrangements originated in response to contextual changes and changes in product value with a view to securing market access.
- Regulatory arrangements have generally weak influence on the chains, with the exception of *Prunus africana* recently.
- Corruption influences all chains, its influence varying dramatically by chain. In the high volume, high value and particularly highly statutorily regulated chains such as *Prunus africana* and *Gnetum* spp., opportunities for corruption flourish as parallel, 'shadow' arrangements to formal laws. Corruption also occurs in chains where no statutory framework operates, such as the *Cola* spp. chain, due to its systemic nature in Cameroon and in neighbouring countries to which the chain flows.
- Market-based, voluntary and collective arrangements tend to focus on access to markets, using mechanisms to enhance access or control by specific actor groups and/or enhance their power, whilst limiting or excluding access for others.
- Involuntary standards such as conventions affect the governance of four chains. In the *Prunus africana* and apiculture chains this worked by enhancing and legitimating the existence of statutory and project-based governance arrangements. Overall, however, they tend to be poorly disseminated in the chain.
- Project rules, due to the highly geographically and specific activities of projects, are only recognised by a few, many mistaking them for statutory regulations. They tend to be strong in the *Prunus africana,* apiculture and gum arabic chain.

This plurality is despite the common environmental and socio-cultural context for products originating from the same eco-region, and the common economic and regulatory context in Cameroon. Geographical location explains some of the differences in governance arrangements – particularly in customary arrangements. Product values and characteristics and chain history have a far greater impact and better explain power differences in arrangements. Value, mainly economic, but to a limited extent socio-cultural, exerts a strong influence on the number and type of governance arrangements in place. Generally the economically higher-value chains tend to have more arrangements actively and greater intensity of institutions and arrangements governing access to resources and to markets.

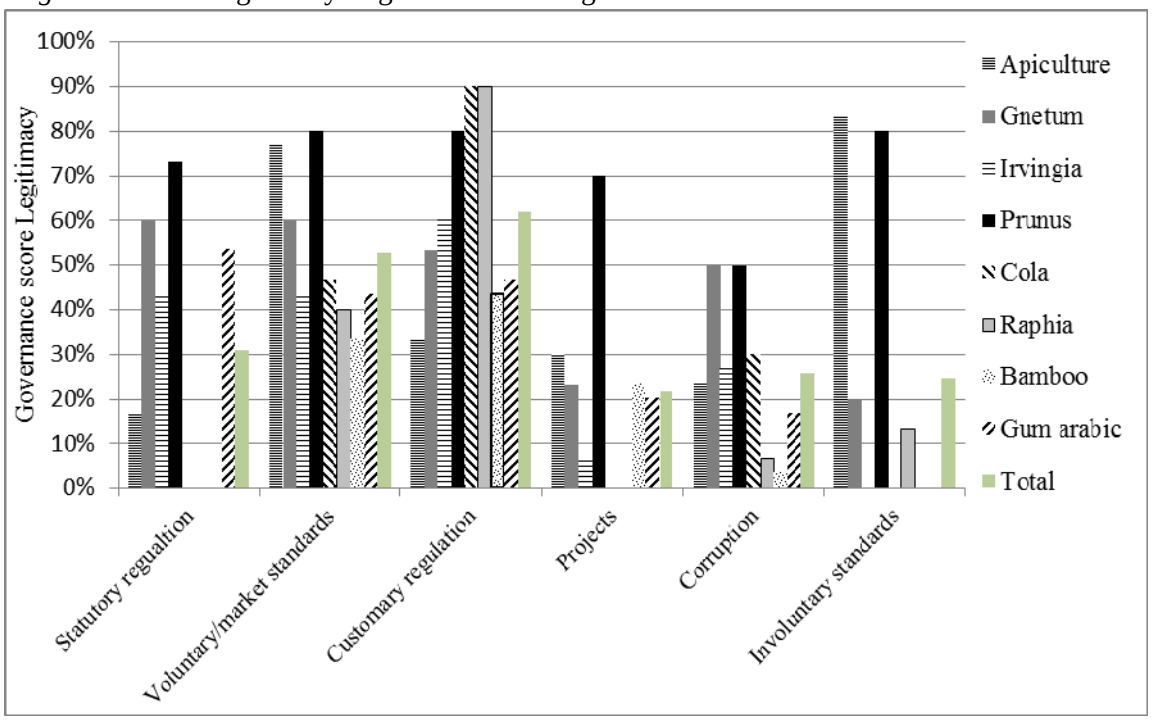
How governance arrangements shape sustainable livelihoods

The fourth research question asks how these governance arrangements impact the livelihoods of actors along the chain and their sustainability. Drawing on Chambers and Conway's (1999) definition, a livelihood is deemed sustainable when it can cope with risks and recover from stresses, shocks and maintain or enhance its capabilities and assets (capital), both now and in the future, while not undermining the natural capital re-

source base. The main capitals assessed in this study are financial, social-cultural and natural. Whilst it is difficult to predict future sustainability, an indication of the future can be given by looking back at the historical trends of the products, chains and livelihoods. This section draws two main conclusions on how governance shapes livelihoods, focussing on the positive and negative impacts of plural and overlapping arrangements and the effect of where power and control in the chains is located. These are derived from the concepts introduced in Chapter 2.

The extent to which arrangements impact livelihoods and sustainable resource management depends in part upon their legitimacy for actors in the chains, and thus adherence. This finding mirrors literature on governance (van Kersbergen *et al.* 2004; Cotula *et al.* 2007; Peach Brown *et al.* 2010). Legitimacy is indicated by three governance criteria: acknowledgement of the existence of a governance arrangement, belief in its moral grounding and compliance, illustrated in Figure 11.5.

Figure 11.5 Legitimacy of governance arrangements



For all chains, customary governance arrangements have the highest levels of legitimacy. These are most prevalent in rural, forest areas and have the effect of excluding access to resources on the basis of social-cultural capital and personal characteristics: sex, age, familial and societal status, allowing actors meeting their conditions to benefit. The same customary traditions are less legitimate in urban areas, and for migrant and 'outsider' harvesters. Collective action, such as unions and associations, has the second highest level of legitimacy. This can be explained as collective arrangements are most controlled by direct actors in chains and as their legitimacy increases as more actors adhere, illustrated in the *Gnetum* chain. Collective action operates by restricting access to markets on the basis of membership, using economic and social capital, benefitting those who have access with higher and often more stable prices. Statutory regulations have the next highest level of legitimacy, albeit much weaker. The legitimacy of statutory rights holders is diminished by corruption and exclusion due to the lack of know-

ledge about their rights, for example, concerning subsistence harvest and permits required to commercialise special forestry products and to obtain a community forest. Actors using their social and political capital can benefit from their knowledge of rights and procedures to generate higher incomes and avoid corruption.

Plural, overlapping and segmented governance arrangements

Governance arrangements generally focus on only *some* chain activities – access to NTFP resources (shown in Table 11.6) and access to markets (shown in Table 11.7). This characteristic is a double edged sword, having both positive and negative impacts for the livelihoods of actors along the chain and for their sustainability.

Well defined, well-known, enforced and functioning arrangements and institutions provides a clear framework allowing actors to operate with security and to manage risks inherent in the natural resource base (i.e. irregular seasonality and fluctuating harvest volumes). Examples are the customary arrangements governing access to the cola and raffia, and clear market-based arrangements in the eru and bush mango chains. However, when the intensity of arrangements is weak, this is counterproductive to sustainability. For example the inconsistency and arbitrariness with which formal regulations are implemented and enforced does not set a clear playing field to access and trade NTFPs. Similarly, project arrangements well known on a local level, but not well nested and with a short and contested duration, have created uncertainty and added to costs as actors comply and invest in project-based institutions, only to see them decline or morph once the project closes.

Table 11.6 Governance of access to NTFP resources

NTFP production system	Governance arrangements [1]	Approach to extraction	Dominant tenure type	NTFP
Gathering wild from natural forests	Voids, customary Statutory	Uncontrolled and controlled extraction	State forests, with customary rights, Community forests	*Prunus africana, bamboo, Cola,* apiculture, *Gnetum, Acacia*
Extraction from resource enriched [2] and managed forests	Customary (limiting access to specific places, periods or species)	Uncontrolled and controlled extraction	State and community forests, customary with individual claims to specific species	*Irvingia, Cola, Raphia*
Production in mixed arboriculture and agriculture systems (farms and fallows)	Customary, Statutory	Purposeful regeneration, cultivation	Private property of land and NTFP species	*Prunus africana, Irvingia, Cola,* Bamboo, *Gnetum*
Production in plantation systems	Statutory, market	Purposeful regeneration, domestication and cultivation	Land and NTFP species as private property	*Prunus africana, Gnetum, Acacia*

[1] All governance regimes may be subject to collective or market-based governance regimes, e.g. if NTFPs traded in international markets to meet certain minimum standards or voluntary standards. [2] Deliberately or unconsciously by anthropogenic actions and naturally regenerated wild trees. *Source*: adapted from Wiersum et al 2013.

Corruption, which shadows and overlaps statutory governance arrangements, imposes considerable costs and unpredictability for direct actors, over which they have only limited control. Whilst the location of power in corrupt practices is known (the government and ruling authorities), its moral grounding is perversely double edged. Most direct actors in NTFP chains indicated that corruption applied to their commerce is moral-

ly unjust. Some corrupt government officials have no choice but to participate in institutionalised chains of 'dash'. Collective action is used to counter corruption, legitimatise and enhance the power of actors to negotiate with corrupt state authorities.

Table 11.7 Governance of access to NTFP markets

Market type	Governance arrangements	Degree of formalisation	Access to markets	NTFP
Type 0: Physical forest-edge, farm-gate and village based transactions, proximity to supply zone, direct transactions producer & buyer *Type I:* Physical small, local markets, high self-sufficiency, proximity to supply zone, high local supply & exchange, supplies regional & national markets, direct producer-consumer transactions	Customary	Informal	Open, free, easy, low transaction and logistic costs, low levels competition with producers from outside immediate production area	Apiculture Raphia Bamboo Prunus Irvingia Cola, Bamboo Apiculture Gnetum Acacia
Type II: Physical, medium sized, regional importance, medium level of self-sufficiency, secondary nodes for type I and intermediate markets, bulking points for type III, intermediaries often involved	Customary Collective Market-led	Informal	Open, easy, low entry barriers	Prunus Irvingia Cola Gnetum Apiculture
Type III: Physical, large urban markets, national projection, large range of products, weak self-sufficiency, reliance on close and far supply areas, hubs for type I & II, intermediaries involved	Collective Market-led Regulated	Informal Formal	Closed, entry barriers (F, P), compete with other production zones	Irvingia Cola Gnetum Bamboo
Type IV: Physical, frontier markets, small & high value transactions, high supply dependence on other areas, specialisation in high volume products, chain of intermediaries	Regulated Collective Market-led	Informal Formal Illegal	Open & closed, high entry barriers (R, Fi, F, P, C)	Gnetum Irvingia Cola
Type V: Physical, export, high transaction values, dependence upon distant supply zones, specialisation in large volumes, long chain of intermediaries & transactions	Regulated Voluntary Market led	Formal Informal Illegal	Open & closed, significant entry barriers (R, Fi, F, T, Q, L, C)	Apiculture Prunus Gnetum Irvingia
Type VI: Non-physical transaction channels (e.g. internet), mainly export/international, low to high transaction values, dependence upon distant supply zones, specialisation	Market-led Unregulated	Formal Informal Illegal	Open, moderate entry barriers (F, T, Q, L, C)	Apiculture Prunus Acacia

Source: Inspired by Ruiz Pérez *et al.* (2000) and Wiersum *et al.* (2013). *Key:* R= regulatory P= procedural Fi-=fiscal F= financial, T=technical, Q= quality, L= logistical, C= competitive

Overlapping arrangements incur additional costs for direct actors to participate in and comply with multiple arrangements. Many chain actors can ill-afford such costs, given the high incidence of poverty. However, the overlaps and voids in governance arrangements, and tendency to cover only part of chain activities, shown in Figure 11.6, also create benefits. Direct actors can grab control, particularly when engaging in multiple chain activities, well-illustrated by the apiculture chain. Voids also result in entry to the chains generally being easy, enabling actors to generate income and to *bricole* their own responses to improve livelihoods. Overlaps mean that actors can 'shop', participate and

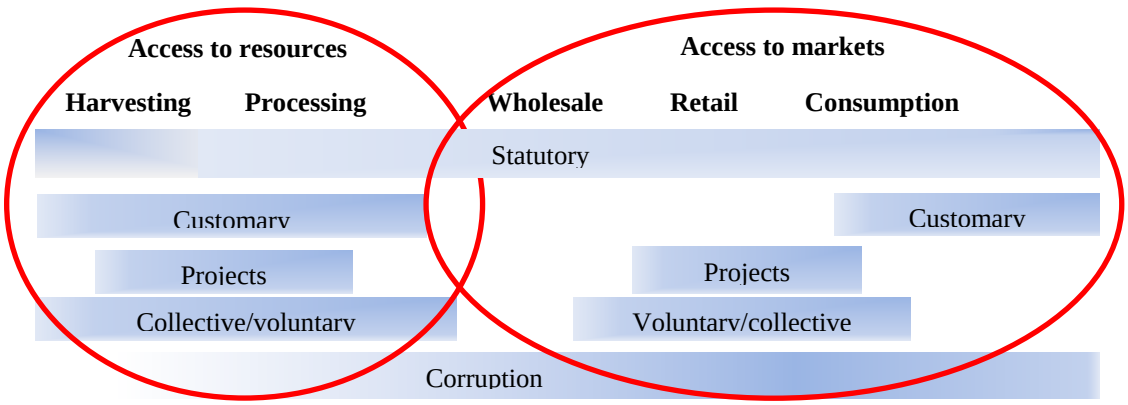
comply with arrangements that best suit their own mix of capitals and situation, exemplified by harvesters and exporters in the *Prunus africana* chain. Where no suitable arrangements exist, or are of low intensity, such as early in the apiculture chain, actors have also used voids to create new arrangements.

The chain cases show that unless there are governance arrangements to ensure that the natural capital resource base is not undermined, an impact is that long-term sustainable livelihoods and chains are difficult to obtain. This leads to livelihood shocks and stresses, due to chain booms and busts as NTFP resources are exploited, deteriorate in abundance, become less exploited and then recuperate over time. The international *Prunus africana* chain well illustrates the negative impacts of booms and busts, mirroring NTFPs such as rubber and ivory (see Chapter 5). In the apiculture, *Cola* spp. and *Raphia* spp. chains in contrast, busts have been avoided and long-term, secure livelihoods and sustainable chains have been maintained. This has been achieved through long-established customary arrangements, involving highly managed customary production systems, restricted tenure and resource access, and cultivation.

Voluntary market-based systems such as geographic indication and organic certification have a similar impact. They have explicitly linked demand with supply, controlling access and harvesting methods, creating non-tangible product characteristics and value, using sustainable sourcing as a unique selling point. However, as voluntary, market-based arrangements have only recently been adopted, an assessment of how enduring and sustainable these arrangements are over time is not possible. Whilst shorter term, profitable livelihoods are possible, such as in the *Gnetum* spp. and *Prunus africana* cases, the increasing scarcity and vulnerability of these resources in the wild indicates that these chains are not sustainable in the longer term.

The segmented nature of how NTFP chains are governed and negative implications for sustainable livelihoods indicates that vertical nesting of governance institutions for a chain maybe as important as horizontal nesting. This reflects the institutional design principles (Ostrom 1990; Scott 2001; Agrawal *et al.* 2006; Cox *et al.* 2010, see Box 2.5). The voluntary, market-based arrangements in the apiculture chain allow better vertical integration and nesting, and seek to balance demand and supply, creating more sustainable livelihoods. This reflects the concept that chain of custody certification supports sustainable trade (Shanley *et al.* 2008). To add this element to the institutional design principles, more testing is required.

Figure 11.6 Plural governance arrangements covering chain activities



Power and control of access to capital

The second major conclusion concerns how governance arrangements influence the power and control of direct and indirect actors in the chains, and thus sustainable livelihoods. The chain cases show that the nature of the governance arrangements affects actor's ability to maintain and enhance their capabilities and capital, shaping their rights and responsibilities towards natural capital and impacting the level and type of values and benefits derived from the NTFPs. Governance arrangements are critical in influencing who controls what along a value chain, determining power between actors and institutions. Their configurations have had significant effects on the mechanisms actors use and create to gain and control and access to NTFP resources and markets, affecting costs and benefits.

Drawing on the conceptual framework (Chapter 2), particularly Boelen's echelons of rights concept (2009), Schlager *et al.* (1992) and Larson *et al.* on tenure (2010a) and Fortmann (1985) on bundles of rights, the study shows that plural governance arrangements result in multiple bundles of rights and responsibilities. These are summarised in Table 11.8.

Table 11.8 NTFP resource access rights and responsibilities

Rights & responsibilities		Statutory regulations	Voluntary/ market	Corruption	Customary regulation	Projects	Involuntary standards
Rights to NTFP species & products	Inheritance				X		
	Management		X			X	
	Access for harvest	X	X		X	X	
	Own use/consumption	X			X		
	Trade	X	X	X		X	X
	Ownership	X			X		
	Revenues		X	X			
	Exclusion	X	X		X		
	Withdrawal access	X	X		X		
	Alienation	X			X		
	Transfer/ sell rights				X		
	Cultivation				X		
	Intellectual property	X					X
	Maintain/protect traditional knowledge				X		X
	Organise (re resource)	X	X			X	
Responsibilities for NTFP species & products	Inventory	X					X
	Management	X					
	Revenue distribution		X	X		X	X
	Rule setting	X	X		X	X	X
	Monitoring	X	X				X
	Enforcement	X	X	X			
	Conflict resolution	X	X		X	X	X
	Sanction setting	X			X	X	X
	Devise institutions	X				X	

Source: Research results *Key:* X = Explicit rights and responsibilities.

Whilst some governance arrangements complement each other, others have created competing rights and responsibilities and differing access to resources and markets. One result is that female harvesters, traditionally forest gatherers and family rearers, are gradually profiting more from the increasingly fluid socio-economic context and opportunities provided by changing arrangements, to generate cash income. This is alongside subsistence products, used as diversification, safety-net strategy. However this strategy

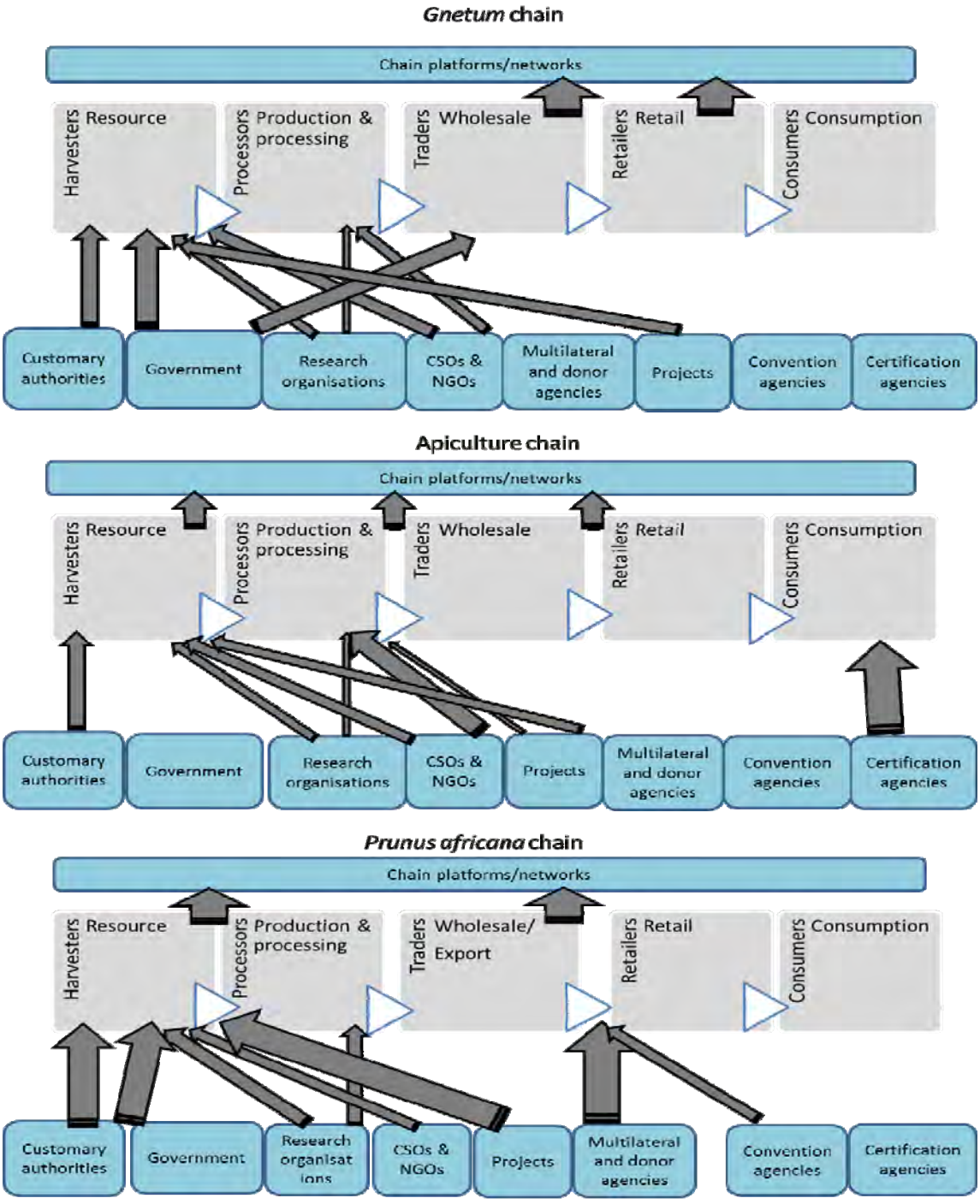
generally does not lift harvesters significantly above the average poverty level of the regions they inhabit or the national level. In contrast, male harvesters tend to join the chains when commercial product values increase, illustrated by the *Irvingia*, *Gnetum* and *Acacia* spp. chains. They pursue different strategies from women, with elite males blending customary and statutory rights to appropriate land and forest resources, and young males opportunistically ignoring customary and regulatory systems, to earn significantly higher than average incomes, as in the *Gnetum* chain. The highest profits, but also highest risks, are generally carried by traders, wholesalers and exporters. This numerically small group of actors, both male and female, play along with regulatory systems, and use parallel strategies of market-based, collective action, ethnic ties and corruption to limit the often high losses resulting when product sale are delayed by corruption, bureaucracy and poor infrastructure. Retailers generally earn higher incomes than harvesters, but not significantly higher than national averages. Collective action is used to control prices, quantity and product quality. Whereas harvesters use products as one of many income sources, urban-based actors have fewer income-generating opportunities and seek to control mainly though collective and market-based systems.

Most of the chains are segmented, with very few actors engaging or controlling the whole chain from access to resources to access to markets. Higher levels of multiple and competing rights were more common in the high economic value chains (*Prunus africana, Gnetum,* apiculture and *Irvingia* spp.). The extent to which this diminishes sustainable resource management depends strongly on the composition of bundles of rights. Whilst customary rights cover inheritance and ownership, management, use, exclusion, withdrawal and alienation, they have not addressed intellectual property or rights to organise.

As Kooiman and Bavinck (2005) emphasise, it is the interactions between the system-to-be governed (the NTFP chains) and the governance arrangements, that affect the natural capital (the NTFP species and their environment). This interaction also determines the resource users' sustainable livelihoods. The study shows that livelihood impacts for those in the value chains are as varied as the species and products. Chapter 4 makes clear that the characteristics of the species – their lifecycle and form, seasonality and abundance – affect ease of harvest, tolerance and vulnerability to harvesting, product perishability, possibilities for use as (multiple) products – and ultimately value. Value in turn impacts livelihoods, determining economic, environmental and social outcomes. The most significant relationships are between species and product characteristics, and value (calculations detailed in Appendix 18). Higher levels of cultivation are linked to importance for subsistence use, whereas lower abundance, high seasonality and more difficult harvesting is associated with higher market value. This finding mirrors Agrawal and Chhatre (2006), who found that in ecologically and socio-culturally variable contexts, the biophysical factors of resources strongly influence socio-cultural conditions and the impact of resource governance.

Using Gereffi *et al.*'s (2005) governance type continuum (Chapter 2), power relations in the chains are shown for three chains studied in-depth in Figure 11.7. It is notable that all of the eight chains studied have market-based governance channels, with actors dealing with other at arms-length exchange transactions, many customers and suppliers, some repeat product transactions, limited information flows and no or little technical assistance. Some balanced networks are formed with harvesters and producers collaborating in the bamboo and cola chains, with often repeat transactions between pro-

Figure 11.7 Actor power and control in NTFP value chains



ducers and processers. In the international *Prunus africana*, gum arabic and honey channels, the export market is characterised by hierarchy, dominated by a major lead firm who drives the chain, reacts to quality specification from its international buyers, and provides some financial and technical assistance to producers, and has greater access to information on international prices, processing and demands. Few of the governance institutions affect wholesalers. Exporters in these chains benefit from greater pow-

er and have correspondingly higher profit margins. Powerful leaders can provide positive externalities to groups in the form of norms. However, greater power inequality tends to lead to higher levels unsustainable harvest, as larger firms and elites dominate a chain and dictate terms, prices and quantities, even when unsustainable, echoing Pérez-Cirera *et al.* (2006). Some of the channels in the apiculture and bamboo chains are also characterised by hierarchy, with vertically integrated enterprises. These more tightly governed chains can reduce production costs, increase quality and production and coordinate information. Because they are organised as cooperatives and associations, the power inequalities and price margins along these chains are lower than assumed. Market-based, collective action has been shown in these cases as a mechanism by which direct actors seek to increase their power and control for various ends: to ensure product quality, reassure consumers, enable partnerships, access finance and technical support, and control trade – with the ultimate goal being to secure their livelihoods. Collective action is enabled and strengthened by shared geographic location, kinship and ethnic ties.

Development-focussed debates about value chains have concentrated on the lack of equity between actors and issues of inclusion and exclusion of what are perceived the most vulnerable actors, such as rural harvesters (Meyer-Stamer *et al.* 2007; Laven 2009). In contrast, this study, due to its focus on NTFP harvesters rather than farmers, (albeit that both are active in global chains) finds that exclusion is not an issue: the poor and forest-adjacent, marginal ethnic groups are not excluded at all and participate fully in these chains. Most of the projects intervening in the chains studied have however taken an exclusionary approach – a pro-poor emphasis on harvesters, excluding any examination of the level of poverty of other actors in the chain. Projects have used a simplistic analysis of market prices and the proportion of the end-price gained by harvesters to justify focusing on harvesters. The empirical evidence from this thesis indicates that where actors in Cameroon have little control (when they are engaging in high-value, export-orientated chains), there is a higher chance that they obtain a lower proportion of profits and run risks, and that there is a more likelihood that long-term product and chain sustainability are lower. This finding is in common with the observations of Berdegué *et al.* (2005) and Laven (2010) that risks arise with the inclusion of poor, rural actors in global chains. It is also clear that governance outcomes can be 'bad' and 'good' for certain groups in society, indicating that a differentiating outcomes for different actors is important.

Photo 11.1 Harnessing apiculture marketing and product knowledge, Guiding Hope, Yaoundé, November 2008

Impact of governance arrangements on product and chain sustainability

The fifth research question asks how governance arrangements impact product and chain sustainability. To answer this, the two aspects are separated and clarified.

Product sustainability

As highlighted in Box 2.1, an NTFP is economically sustainable if the value increases or remains constant. It is ecologically sustainable when the species from which a product is derived can be extracted with no long-term deleterious effect on the reproduction and regeneration of harvested populations. Also if there is no discernible adverse effect on other species in the community or on ecosystem structure and function. These effects can be determined by comparing harvested to un-harvested systems (Hall *et al.* 1993). Product sustainability also implies no negative environmental, social and economic impact through a product's lifecycle or value chain. The cases show that sustainability depends on:

1. The abundance of the species from which a product originates – both in the wild and cultivated – the interplay of which has generally been overlooked;
2. Threats and vulnerabilities to species populations, both anthropogenic (i.e. forest degradation and deforestation and climate change) and natural;
3. Inherent species vulnerability which depends on the part(s) harvested; and
4. A species' low tolerance to harvesting and unsustainable harvesting techniques – illustrated by the natural *Gnetum* and *Prunus africana* populations – can lead to continuing species population decline, even though persistent demand keeps market value constant.

In the absence of inventories for any of the products except pygeum, perception-based indicators highlight the negative effects of trade on the sustainability of natural capital. Across all chains, 97% of harvesters indicated longer forage distances in the last five years. Nearly a quarter indicated the NTFP was becoming scarcer and 23% reported increased forage time. Threats include increasing numbers of new harvesters and over half of the harvest techniques being unsustainable. Deforestation for farm clearance was a threat for *Gnetum* spp., *Irvingia* spp., *Raphia* spp. and *Cola* spp. Forest degradation due to multiple pressures (such as fuelwood harvesting and livestock grazing) prevented regeneration of pygeum and bamboo and is problematic for apiculture. *Gnetum* and *Prunus africana* were the most unsustainably harvested products, due both to the above factors and their inherent vulnerability due to the part harvested and, especially for *Prunus africana*, low tolerance to the harvest techniques commonly used. As NTFP species populations become depleted and products scarcer, economic returns can increase even when demand remains constant. Scarcity can however have an adverse impact, increasing extraction costs, driving prices upward and reducing demand. Ultimately, with complete resource depletion, there is no sustainability, only local extinctions of populations, and eventually extinction of the species. This has not occurred in the cases examined, but is known from historical examples of wild rubber and ivory in Central Africa. The evidence collected suggests that governance arrangements which do not balance economic and ecological interplays result in unsustainable products and chains.

The cases show that where arrangements institutionalise harvest techniques for species vulnerable to harvesting, product sustainability is higher. Norms for tapping gum arabic and raffia palm sap have been built up over centuries and are embodied in customary arrangements, enabling production to be maximised whilst maintaining the via-

bility of repeated harvests from the same population. Similarly, long practised beekeeping harvesting techniques have, *ceteris paribus*, resulted in little reported impact on bee populations. Although severe over-exploitation results in almost immediate mortality, detection of the ecological effects of unsustainable extraction of natural populations can take years and species population declines decades, especially for long-lived trees such as *Prunus africana*, *Irvingia spp.*, *Cola* spp., *Acacia* spp. and bamboo. Product and, therefore chain sustainability, are thus strongly time-bound.

Using the language of the Sustainable Livelihoods Approach, timescales to convert natural capital to financial capital are often much shorter than the time it takes to undermine the natural capital resource base. Detection depends on harvesters not only being aware of the impacts of harvesting, which the interviews confirm occurs, but also aware of population dynamics over a long term. However, generally harvesters have not been active in the chains long enough to be aware of long-term species dynamics, are active on a limited geographic scale and due to the fragmented and geographically dispersed nature of most chains, have few opportunities to exchange with other actors in the chain on the state and sustainability of the product. Alternative sources of knowledge about resource abundance, such as inventories and assessments, have not occurred, except in the *Prunus africana* chain, and then only recently and still with limited geographic scope. Thus knowledge about abundance, scarcity and vulnerability may only become visible and acknowledged by all actors along the chain when critical levels of wild populations are reached.

A mitigating factor in product sustainability is the level of cultivation of a species. Cultivation makes products more sustainable by seeking to control production and regenerate the micro, farm level population harvested. This enables direct actors to craft more secure livelihood strategies as they can better predict and control quantities produced and ensure access, by moving from open access to common property and private property regimes. For harvesters, reasons to engage in cultivation have been a realisation of locally diminishing resources and an expectation that marginal costs of cultivation will be less than forage costs. This implies that not all costs are explicitly taken into account. Calculating the opportunity costs in economic terms is difficult, particularly when NTFPs are opportunistically harvested as part of diversified, individual livelihood strategies, when several NTFPs are harvested at the same time, or when conducted during farm and fallow cultivation.

Reinforcing the relationships illustrated in Figure 11.1, a continuum of strategies ranging from wild sourcing to full cultivation is apparent in all ecoregions (see Table 11.6). An estimated 95% of plant species are wild harvested in Cameroon (see Table 4.10). For the chains studied, around 48% originate from some form of cultivated production system; varying from 5% to 95% in the eight chains (see Figure 11.8). Chains with higher levels of cultivation (apiculture, *Prunus africana, Cola, Raphia* and *Acacia* spp.) originating from montane forest ecoregion highlight how cultivation and management of wild products has enabled high demand to be met and deflect higher levels of pressure on wild resources, becoming the norm to obtain products. Table 11.6 and Figure 11.8 also show that cultivation and domestication has occurred for species with longer histories of high social and cultural values, such as cola nuts, honey, raffia palms and to some extent, *Prunus africana*. For *Gnetum* spp., large-scale trade has only resulted in increasing scarcity being signalled in the two decades, during which cultivation has slowly commenced. Timescale is thus a critical element in realising unsustainability and reacting to it with cultivation.

Table 11.9 NTFP cultivation strategies

Strategy	NTFP species	Features	Ownership regime
Domestication	*Apis mellifera*	High value hive and by products, low cost, domestication skills passed down through generations	Individual harvester, unregulated or customary, private property on open access or CPR regimes
Small-scale cultivation	*Gnetum* spp.	Cultivated since 1990s, small projects and research, initially difficult to cultivate.	Household, trade regulated, private property
Active planting	*Acacia* spp.	High economic value, plantations	Community, government, trade regulated, customary rules, private property
	Cola spp.	High economic and cultural value, traditionally planted	Household, customary regulation, private property
	Prunus africana	High economic value, multiple uses, international and local trade	Community, household private property, customary, national and international regulations,
Active management	*O. abyssinica*	Wild sources appropriated and managed	Individual harvester, household and open access, customary regulation, common property
	Raphia spp. *Cola* spp.	Wild sources 'owned' and managed, high cultural value	Individual harvester, customary regulation, Common property
Preserved	*Irvingia* spp.	Left during field clearance and in fallows	Household, customary regulation
	Cola spp.	Left during field clearance, in fallows, cocoa & coffee farms	
Spontaneous	*Irvingia* spp.	Grows along forest to village paths, left during field clearance and in fallows	Open access
	Y. alpina	Locally widespread on Mt Oku	Open access
Wild harvest	*Acacia* spp.	High value export trade	Open access, trade regulated, customary harvest rules
	Gnetum spp.	Own use and cash crop, depending on ethic group	
	Apis mellifera	Limited wild harvested in Adamaoua	

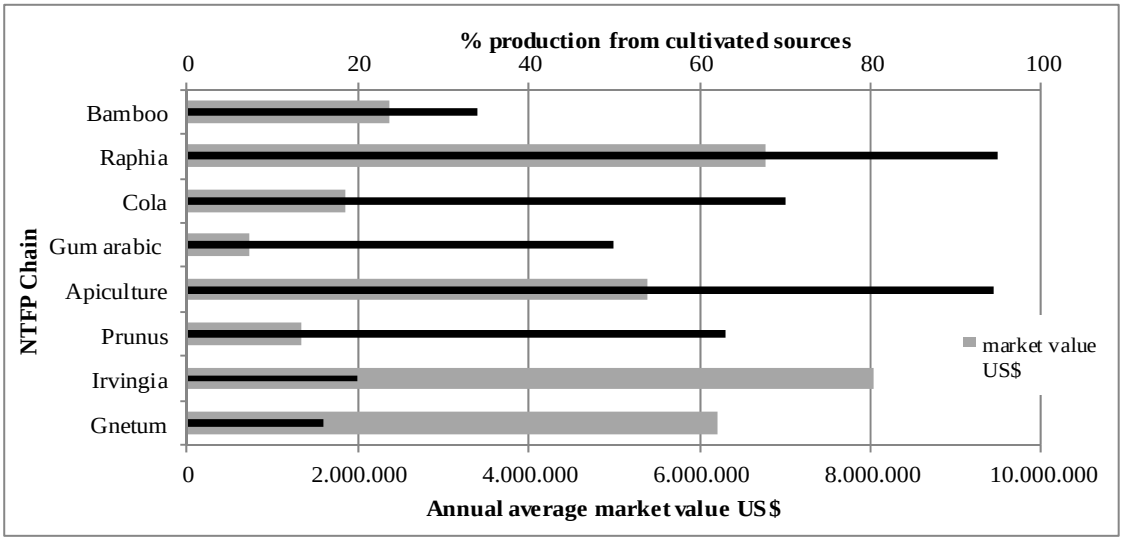
Source: Research results

Governance arrangements which incorporate institutions supporting planting and domestication, such as *Gnetum* and *Prunus africana*, have had a positive impact on product sustainability and continued trade. These can take decades, shown by the apiculture chain, and centuries to perfect, implement and pay dividends, as illustrated by the *Cola* spp. and *Raphia* spp. chains. In ecoregions subject to high rates of deforestation and degradation, such as the Northwest highlands, the largely customary and market-based arrangements are critical in maintaining viable species populations.

Statutory governance arrangements have not distinguished the resulting continuum of different sources, treating all forest products as wild harvested, despite tacit government acknowledgement that cultivation does occur, due to it having supported. In practice, it is almost impossible to distinguish the provenance of products, blurring the line between forestry and agricultural policy and regimes (Wiersum *et al.* 2013). However customary arrangements do distinguish, having more intricate land and species tenure and ownership rules. Involuntary arrangements have also struggled with how to deal with and acknowledge species cultivation and the absence of data indicating its scale, illus-

trated by the perpetuation of the Red listing and vulnerable status attributed to *Prunus africana.*

Figure 11.8 Average annual market value and cultivation levels in NTFP chains



Chain sustainability

A chain is sustainable not only when the product is sustainable, but when the governance arrangements acknowledge and deal with economic and social aspects and show an understanding of the links between species ecology, life form and harvesting. Customary and voluntary market-based arrangements enshrining such practices have created sustainable chains. When combined with strong commercial pressure, or market arrangements that are short-term, customary laws have proven incapable of counteracting unsustainable harvesting techniques and over-extraction, particularly by outsiders, but also by local communities. Most statutory regulations have not addressed the ecology-life form-harvesting relationship for species inherently vulnerable to harvesting. This absence has led to diminishing natural populations and a crash in trade when *Prunus africana* exports were prohibited – the ultimate sign of chain unsustainability. Corruption does not address chain sustainability at all. It aggravates the difficulties small-scale traders have in operating legally, promoting informality and illegality as the (slightly) easier business operating environment. Thus a persistent 'culture of disobedience' (Roitman 2005) is created that undermines the rule of law and reinforces 'dash'. Project-based and involuntary standards have sought largely to create sustainable products, rather than chains. Some projects have introduced harvesting guidelines, such as for honey and *Prunus africana*, their status and legitimacy making them enforceable, and sometimes monitoring their impact, these practices have not always persisted upon the closure of a project. Thus only some forms of governance arrangements, for specific products in specific contexts, promote both economic and environmental sustainability. Interactions occur between chains – such as those between the apiculture and *Prunus africana* chains, and apiculture, bamboo and raffia chains, where demand for one product affects demand and use of other species and products – also demonstrates that cumulative impacts on the environment occur, which can be positive or negative. Such knock-on effects can occur within very different timeframes, making interactions difficult to disentangle. They are also affected by the ability of actors to bricolage solutions

to changes in the availability of some resources, for example by finding alternatives (i.e. wooden eucalyptus hives to replace traditional grass hives). Environmental sustainability is however decisive in determining long-term economic sustainability.

Conceptual implications and contribution to knowledge

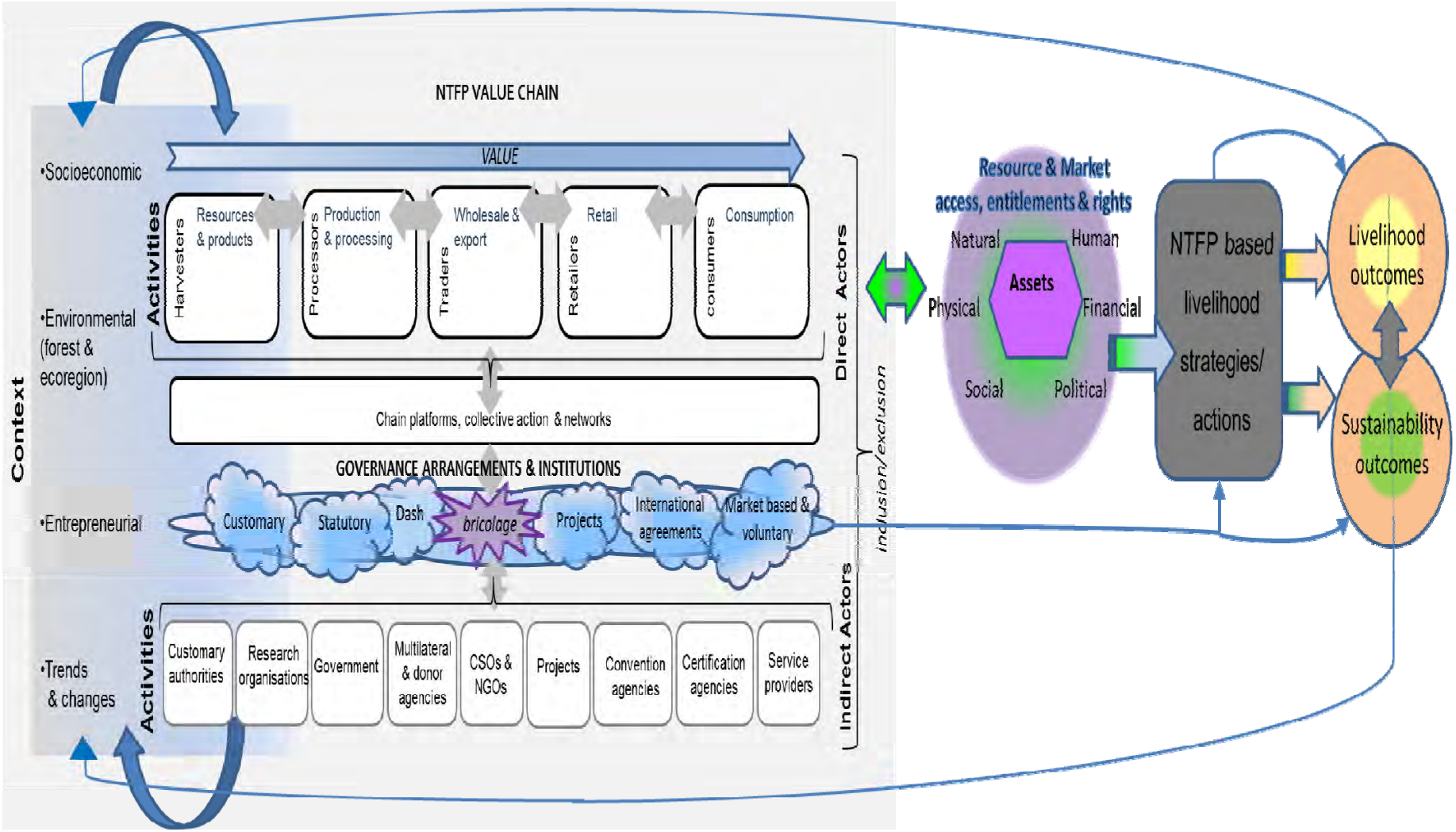
Some of the implications of this research that advance concepts and add to existing knowledge have been stated in Part III. This section briefly revisits the conceptual framework to enhance understanding of NTFP governance, value chains and sustainable livelihoods and how win-wins can be created. Figure 11.9 illustrates how this thesis had contributed to and refined the conceptual scheme presented in Chapter 2.

Empirical data on NTFP value chains: making the invisible visible
This study aimed to present empirical data on NTFP value chains and their values from an economic, environmental and social perspective. The main contribution this study has made is by developing indicators of value to address these three perspectives (Appendix 17), using mixed methods (literature, stakeholder interviews, situational analysis, value chain analysis, trade data, resource assessments, PAR and local knowledge) to source and triangulate data. The result is a more extensive database than any previous studies of the NTFPs used and traded in Cameroon. By refining the definition of priority NTFPs (Box 3.1) and developing a scoring mechanism to summarise their values (Table 4.1), NTFPs were prioritised and their economic, social and environmental value made explicit, many for the first time. This thesis provides an alternative valuation methodology. Using this method revealed the extent of NTFP trade and indicated the much higher economic, social and environmental values of NTFPs in Cameroon than had previously been recognised. It provides a foundation for policy decisions about trade-offs that occur, and can be affected, by the sets of governance arrangements for each chain and the sector. This empirical data allowed the eight chains studied to be placed in context. The results bust some common (and partly already debunked) myths: that NTFPs are a panacea for poverty reduction; that harvesters have low incomes; that most harvesters are women; that NTFPs are only wild sourced; and that NTFP harvesting is environmentally benign and per se sustainable.

Typologies of cultivation strategies and access to resources and markets
Empirical evidence helped develop a new continuum of access to resources. This builds on work by Wiersum (1997), Ros-Tonen (2012), Ingram (2012) and Wiersum *et al.* (2013). The continuum refines the characteristics of access to NTFP markets, adding to Ruíz Pérez *et al.*'s (2000) work and elaborating NTFP cultivation and tenure strategies. The study also demonstrates that entitlements, rights and institutions governing access to resources and markets change with the type(s) of governance arrangements and their intensity; it also has showed how different actors combine and create different bundles of access rights and entitlements.

Participatory action research
PAR has been shown to be a valuable tool in understanding value chains and pro-poor, sustainable livelihoods, albeit one that is tricky and requires regular surveillance to counters its limitations of depended, partiality and bias. The experiences gained in this

Figure 11.9 Conceptual implications



study indicate that a long-term commitment to both implementation and monitoring is essential to determine if impacts have their intended consequences.

A methodology for forest product value chain analysis incorporating sustainability

This study aimed to provide a tested methodology for the holistic valuation of NTFP chains. It sought to incorporate livelihood outcomes and sustainability outcomes further into the value chain concept. It showed the strong, time bound, interdependent links between these outcomes depending on the chain activities, governance arrangements and livelihood strategies chosen by different actors at different stages of the chains. The main innovation introduced is that the methodology used for forest product value chain analysis (VCA) has included an assessment of both NTFP and chain sustainability. Definitive VCA guidelines and conceptual frameworks to date have not addressed sustainability (Porter 1985; Kaplinsky & Morris 2000), with only a handful of publications considering the sustainability or environmental aspects of natural or wild-based product chains (Bolwig *et al.* 2008, Seuring and Miller 2008). Nang'ole *et al.*'s (2011) review of guidelines and manuals for value chain analysis for agricultural and forest products confirms this, with just a handful addressing sustainability (Lecup 2006; Bolwig *et al.* 2008; Will 2008). The need is great, because as Wiersum *et al*. (2013) point out, being based on natural, often wild resources, product sustainability is key to chain sustainability and to sustainable livelihoods. This thesis has shown how chain sustainability depends to a large part upon how sustainable the product is, which in turn depends on factors such as (1) the abundance of the species from which a product originates, (2) threats and vulnerabilities to species populations, both anthropogenic (such as forest degradation and deforestation) and natural (such as climate change), (3) inherent species vulnerability which depends on the part(s) harvested, and (4) a species' tolerance to harvesting. The second aspect is that the methodology has shown that how chains are governed. The arrangements regulating access to species and the forest in which they originate, and access to markets, are also key to determining their sustainability. In contrast to harvest for subsistence use, there are generally negative associations between commercialisation and species sustainability and conservation unless institutions effectively avoid, control and, if necessary, mitigate unsustainable exploitation. These two aspects of sustainability and governance of forest product chains have not been explicitly addressed together in literature to date. A third aspect is that the methodology links commercialisation and poverty, due to the high levels of spatial coincidence between Cameroon's forests and both the rural and urban poor depending on forest products for their livelihoods and the estimated millions worldwide benefitting from these products.

Governance intensity

This work builds on concepts of (regulatory and legal) pluralism and multilevel governance, providing empirical evidence of six types of governance arrangements and hybrids thereof. It shows that governance arrangements are not all present all of the time and in equal measure and that are dynamic, affecting chain activities, values and consequently livelihood strategies and actions and livelihood and sustainability outcomes. The method to measure of the intensity of governance arrangements introduced in this thesis is novel. There are no existing measures of the strength or intensity of different governance arrangements and the scoring mechanism allows configurations of (plural) governance arrangements to be made explicit. The closest equivalent is the World Bank's annual Doing Business report, which uses indicators of the strength of regulatory envi-

ronment and their influence on the ease of doing business in national economies. Building on work on institutions and their design, originally, the scoring system was designed to define the existence of governance arrangements, as it was clear from the outset of the research that at least customary and formal arrangements shaped the chains. The results of this study indicate however that the picture is more complex, with more systems shaping chain activities, actors, introducing and influencing institutions, and shaping values and norms. Why is this measure significant? Because it illustrates the nature of competing claims over access to NTFP resources and access to markets and provides a qualitative and quantitative way of measuring these. This is important, because, as Ribot *et al.* (2006: 1878) state, multiple, competing and conflicting claims over forests resources eviscerate the ability of any authority to protect them. This raises the questing on of which and whose claims constitute rights and their legitimacy, and if there are institutions (such as the state, or alternative alliances or partnerships (Ros-Tonen *et al.* 2007), which mediate to resolve competing claims. The method needs to be tested further in practice. It could be further improved by getting actors to rate intensity directly, rather than implicitly drawing on interviews and explicitly from expert consultation. The language and terms used need to be accessible to local actors – rather than the academic and development parlance used here.

Recommendations for policy and practice for forest governance and sustainable livelihoods based on NTFPs

Reiterating Elinor Ostrom's often repeated tenet[1], this research shows that there are no silver bullets: no one institutional design or governance arrangement that leads to wins-wins. This finding indicates a need to be pragmatic about the role of forest products in poverty alleviation, their contribution to biological diversity, and to ecosystem services, as key aspects in reconciling global environmental values with local livelihood needs (Ros-Tonen *et al.* 2005c). But, as Dietz (2011) states, there is a silver lining. Revisions to the Cameroonian regulatory framework so far have been insufficient to produce win-wins, but the current (2013) revisions to which this study contributed offer hope that formal regulations can take account of other arrangements and produce a more complementary mix reflecting the reality of trade from the forest to urban areas nationally, regionally in Central Africa and globally. Drawn from this study are some – perhaps ambitious – recommendations for policy and regulatory changes[2]:

1. Local-level (land) administration and registration in rural and urban areas, where customary boundaries are known, and customary and statutory alternative dispute resolution processes can be used to secure tenure and promote NTFP cultivation.
2. Regulatory systems should be coherent with national goals, and legal rules adapted to meet constitutional (and international) conventions, norms and standards relating to gender equality, administrative justice, access and benefit sharing regarding local

[1] Opening speech IASC Conference 2011 and key note speech World Forestry Conference 2010.

[2] See FAO (2008, 2009, 2010) and Laird *et al.* (2010) for more details. This research also fed into recommendations made to MINFOF as part of the GIZ Support Programme to the Forest Environment Sector Programme re the revision of the 1994 Law and recommendations for implementing texts in 2013.

knowledge of uses and processing, and the protection of private and communal property rights.

3. Linking top-down planning to participatory customary, community-based and informal and formal market institutions, with officials playing a more advisory role, taking into account citizen wishes. This reflects Bavinck *et al.'s* (2005) contention about interactive governance, that challenges can be addressed only if actors work and learn together. The powers and duties of public officials should be delineated, regulated and exercised transparently and accountably with clear rules for actions and transactions, and mechanisms for enforcement.
4. The range of values NTFPs hold for communities and chain actors – economic, environmental, cultural and social – which this thesis makes visible should be acknowledged in laws and policy on forests, agriculture and business. The subsistence use of NTFPs should be recognised as central to rural and urban livelihoods and cultures, and exempted from taxation and direct government oversight and intervention, as is small-scale local NTFP trade. Trade in priority NTFPs (see Chapter 4): those traded in national markets, high volumes and exported and species that are vulnerable to harvest or that originate from vulnerable ecosystems, should be regulated, aligning with existing parallel governance arrangements. These designated priority NTFPs (replacing the 2006 special forestry products) should be selected on the basis of economic, social and environmental criteria. However it is important to acknowledge the risks of increased visibility and formalisation, if the political and business environmental does not change. It can be counterproductive, it inducing unwanted corruption, bureaucracy and a dis-enabling environment.
5. Management and governance of priority NTFP species is impossible without knowledge of resource availability and the sustainable post-harvest regeneration period. This implies that resource assessment and harvesting guidelines are developed with harvesters using local and scientific knowledge. Participatorily developed management plans involving all actors in the chain can respond to pressures to create sustainable NTFP-based commerce and reconcile conflicting pressures.
6. Actors and issues in chains are generally unknown to each other. Stimulation of platforms (such as chain platforms and interprofessions) to share information, develop market arrangements and resolve conflicting interests could contribute to increase contacts among actors and the sustainability of chains in the interest of all.
7. Land tenure and resource rights for local communities should be rationalised. All trees growing on lands used and managed by individuals and communities should be their property.
8. A move should be made towards a regulatory system that fuses two coequal sets of legal rules – statutory law and customary law. This would allow communal and collective rights over land and resources to be recognised and protected. Customary law regulating NTFPs currently should be critically analysed, including by chain actors, to see where it can be an important complement to statutory law.
9. The regulatory framework for NTFPs should be streamlined and clarified with implementing texts elaborated, to improve its effectiveness, minimise opportunities for corruption, reduce bureaucracy and costs associated with operating legally, and encourage actors to participate in a legitimate and helpful legal framework.
10. The results of the revision of the 1994 Forestry Law needs to be relayed back to all affected stakeholders in an accessible form.

11. Forestry and environment laws should strengthen the clarity and consistency of their NTFP elements. The nature and scope of the products regulated need better elaboration and definition, particularly the implementing texts. The objectives of regulating NTFPs (to promote sustainability, improve local livelihoods, strengthen the sector and raise state revenues) should be explicit, and trade-offs between objectives made clear. NTFPs should be integrated into management plans for timber and other land uses, where these uses and management objectives conflict (Ndam *et al.* 2004; Ingram *et al.* 2009).
12. Taxation and trade levies should be rational, legitimate and just, and the law communicated to the many levels and agencies of government involved in these activities, and to potentially taxpaying traders and their associations.
13. Government institutional capacity to regulate these products should be improved. Staff should be trained and their capacity built, and resources provided to relevant institutions. The government's understanding of the vast range of NTFP uses, values and roles in local livelihoods, and their relationships with each other, should be strengthened. A sustainable livelihood and chain-based approach needs to be more seriously considered in external projects, state-project partnerships, where authority is devolved, and when new governance arrangements are imposed. The collection of data on NTFP trade should be expanded and systematic, and resources allocated for this purpose. Cooperation and coordination within and among ministries concerning wild and cultivated NTFPs should be improved.
14. Government and other groups should undertake outreach with traders, harvesters and other chain actors, informing them about the laws and policies regulating NTFPs, and learning from their experiences.
15. Support could focus on the most vulnerable and key chain actors and activities: supporting women's role in domesticating and cultivating priority NTFPs under pressure from over-harvesting; addressing unfavourable customary norms restricting the possession of valuable species by women; improving value adding opportunities and supporting collective action to access credit and increase bargaining power.
16. Corruption adds costs and uncertainty for many actors in NTFP chains. Although it provides income to state officials, dash is counterproductive to developing or maintaining economically and environmentally sustainable NTFP chains and incompatible with the stated aims of public policies. As an insidious problem in Cameroon and not limited to the forest sector, multiple 'sticks and carrots' combined with political willingness are required to overcome its negative impacts.

Some of the emerging, bricolaged governance systems based on institutions that integrate livelihoods and species and product sustainability, provide glimmers of hope and opportunity that may reconcile both poverty alleviation/development and conservation agendas. Governance arrangements which combine control of access to resources and to markets appear better at creating sustainable chains and livelihoods, for example the organic certified honey and geographic indication systems. However, as these are still young and embrace a small number of people, their efficacy remains to be tested. Combinations of project-based, statutory and market-led arrangements that promote, support and encourage cultivation, and build on customary knowledge and rules, have also been effective in creating 'win-wins'. However, these tend to be exclusive – such as the cola, raffia and gum arabic chains – often restricting access for example, to certain ethnic

groups or sexes. Information sharing, role models, capacity building and training have helped overcome this on some chains, bringing and resulting from social-cultural changes, the long-term implications of which also remain to be seen. Recent experiments in developing new statutory systems, such as for pygeum, drawing on the successful project-based institutions, building on new hybrid forms of collective action and customary rules, taking a pragmatic approach to using statutory instruments and borrowing from agricultural and forestry models of governance, also show promise. What is clear in this 'mess' is that the outcomes and impacts of institutional design are extremely difficult to predict in the short term, an understanding of the natural cycles of the species upon which products are based is critical if the livelihoods based upon these are to be sustained. Also, 'getting into the mess' is essential to understanding.

Recommendations for further research

Subjects identified for further research to benefit policymakers, chain actors and support organisation's understanding of NTFPs, their chains and impact of governance arrangements include:

1. Analysis of the full value chain from other regions for the NTFPs studied and for other priority NTFPs. This allows a 'difference in difference' approach to test the findings of this study and improve chain governance to ascertain changes and the full value of these chains nationally, allowing the representativeness of the selected NTFP chains for NTFPs across Cameroon to be determined. This is critical for further developing and implementing policy and regulation;
2. The ecology and impact of harvesting for priority NTFPs. Research on sustainable harvesting techniques and cultivation methods is needed to increase chain sustainability;
3. Sustainable harvesting techniques and cultivation methods, to increase chain sustainability;
4. Measuring governance intensity using direct methods of questioning measure, to confirm its utility;
5. Longitudinal PAR to further the impact of changing governance arrangements, and particularly of cultivation, voluntary and market-based arrangements and development interventions – to allow policy and practices to be more effectively designed and implemented;
6. The impact of land tenure reforms and the revision of the forestry law to monitor the impact of statutory changes.

Conclusions

A pidgin phrase from the Northwest 'Chop, no broke pot' (eat, but don't overdo it) advocates sustainable consumption. It has been used to refer to unsustainable *Prunus africana* harvesting (Ndam *et al.* 2004) and the politics promoted (but not practised) by president Paul Biya, ridiculing both for their short-sighted, arrogant pillaging of resources (Doh 2008; Kah 2010). The expression is highly symbolic of how sustainability and governance are entwined. Using this analogy, conclusions can be drawn from the chains studied: broken pots illustrating a sad tragedy of the commons; dramas of fine messes; silent comedies of errors with half empty or half full pots depending on the

reader's optimism; brimming pots and full bellies; and glimmers of hope with bricolaged and emerging, more sustainable governance arrangements.

Commodification has enhanced livelihoods by translating natural capital into a financial, monetary value. It also makes available the social values of forest products to meet comfort, cultural and symbolic needs and basic requirements for health care, food and energy. Governance arrangements in NTFP chains originating in Cameroon have a significant influence, both positive and negative, on sustainable livelihoods. How the chains are governed affects how products are perceived and value is created along a chain. When arrangements effectively restrict access to NTFP production areas, species and markets, greater value can be accrued over longer periods of time as production systems are maintained. Less intense arrangements paradoxically permit more people to benefit, and generally have lower costs to implement, ensure compliance and enforce arrangements. Trade-offs between livelihoods and sustainability are most acute when there are no governance arrangements; when arrangements do not take account of the species susceptibility to harvesting; when they do not control the whole chain or do not ensure resources are managed such that supply matches demand. All hinge on the difference between immediate and short-term livelihood benefits from a chain and longer-term sustainability of the product – indicating that a time-bound sustainability trade-offs need to be recognised. Where people live in poverty – as most chain actors were found to – households generally have a limited number of options to create capital and accumulate wealth. In urban areas actors tend to have higher dependence on NTFP trade, with fewer income or subsistence sources, compared to those in forest-adjacent, rural areas. Timescales of sustainability are highly dependent upon the species, the part(s) harvested and technique used. This makes generalising the impact of governance arrangements difficult. The tragedy of scarcity is that it enhances values, such as in the G*netum* and *Prunus* chains, exacerbating unsustainability and further shortening the time period in which trade-offs occur. Governance arrangements adapted to the species, product(s), context and chain, that linking supply and demand, access to resources and to markets are more likely to create enduringly sustainable livelihoods. Another time bound trade-off occurs when arrangements promoting cultivation lessen pressure on wild resources, but usually restrict access, as resources become private property, formally or customarily recognised. Further trade-offs occur as a result of power differences, allowing individuals or groups to benefit at the expense of others rather than through value addition, and strikingly exacerbates unsustainable practices by increasing costs and uncertainty.

Multiple governance arrangements are a reality. A mono system is neither realistic or desirable, given the current socio-political economic context. Complementary, plural arrangements can be effective in creating sustainable livelihoods when they jointly provide bundles of rights and responsibilities governing a species, its ecological niche, the activities and processes in a chain. The ability to craft sustainable livelihoods, fill gaps or replace ineffective institutions with more effective and sustainable ones, depends on the current patchwork of contexts in which a product in a specific location is embedded, as well as the ability, resourcefulness and power of actors in chains to harness capitals to construct or 'bricole' new governance arrangements.

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Appendices

Provided on the CD-ROM and
https://www.dropbox.com/sh/b199y27jqnoh05i/hf3IZmy_db?n=125865634

Appendix 1	Exchange rates Annual FCFA to US $ exchange rate conversion factors used
Appendix 2	Database of NTFPs in Cameroon Database of NTFPs in Cameroon by species, local and scientific name, ecoregion, use, parts use, values and references
Appendix 3	Species specific NTFP studies List of references of species specific NTFP studies and literature
Appendix 4	Subject specific NTFP studies List of references of specific NTFP studies and literature
Appendix 5	Location specific NTFP studies List of references of geographically specific NTFP studies and literature
Appendix 6	Value chain analysis activities Chronological list of main value chain research activities conducted
Appendix 7	Survey Questionnaires Example of questionnaire per actor group used for value chain analysis
Appendix 8	Market surveys Survey questionnaires: Questionnaire market master Observations during market surveys Overview of markets surveyed Calibration
Appendix 9	Equations used for analysis Details of equations used for analysis of livelihoods aspects
Appendix 10	Markets, volumes and prices 1995-2008 Details of price and volumes of NTFPs traded in major markets in Cameroon from 1995 to 2008
Appendix 11	Exported NTFPs from Cameroon List of NTFPs exported, destinations, values and references
Appendix 12	Participatory Action Research activities Chronological list of major participatory action research activities conducted
Appendix 13	Governance scores Detailed scoring per chain of governance arrangements

Appendix 14 Reports

On the CD, a digital copy of the following reports:

AWONO, A., D. MANIRAKIZA & V. INGRAM (2008). Etude de base du Ndo'o (*Irvingia* spp.) dans les provinces du Centre, Sud et Littoral Cameroun. Yaoundé: CIFOR.

AWONO, A., D. MANIRAKIZA & V. INGRAM (2008). Etude de base de *Prunus africana* dans les Provinces du Nord-Ouest et du Sud-Ouest Cameroun. Yaoundé: CIFOR.

EWANE, M., A. AWONO & V. INGRAM (2009). Baseline study on *Irvingia* spp. in the South West and East Regions of Cameroon. Yaoundé, Cameroun

FOAHAM, B., S. DAGOBERT, V. INGRAM & A. AWONO (2009). Inventaire de *Prunus africana* dans les provinces du Sud-ouest et du Nord-ouest du Cameroun, Novembre 2007 – Novembre 2008. Yaoundé: CIFOR.

INGRAM, V., A. AWONO, M. CHE & S. NZE (2007). Problem analysis, assessment of impacts and status of the *Prunus africana* chain.

INGRAM, V. & G. BONGERS (2009). Valuation of Non-Timber Forest Product Chains in the Congo Basin: A methodology for valuation. Yaoundé, Cameroon:

INGRAM, V., A. AWONO, J. SCHURE & N. NDAM (2010). Guidance for a National *Prunus africana* Management Plan, Cameroon.

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INGRAM, V., J. C. TIEGUHONG, E. M. NKAMGNIA, J. P. EYEBE & M. NGAWEL (2010). Bamboo Production to Consumption System, Cameroon. Working Paper 50. Bogor, Indonesia: CIFOR/INBAR

Appendix 15 Technical data sheets on honey, wax and propolis and ecoregion honey profiles

Information on apiculture products including technical specifications and results of chemical and physical analyses

Appendix 16 Priority NTFPs in Cameroon

List of prioritised NTFPs with scoring and economic value

Appendix 17 Indicators for VCA

Economic, social and environmental indicators developed for value chain analysis

Appendix 18 Melliferous plant species

List of plants with local and scientific names, ecoregion location, uses and honey characteristics.

Resembling the silent stars of the 1930s silver screen, ‘actors’ in the NTFP value chains also often have little voice or power in formal governance arrangements, and so act to create their own fine but messy arrangements.