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“We’re managing!”

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“We’re managing!”

Climate change and livelihood vulnerability in Northwest Ghana

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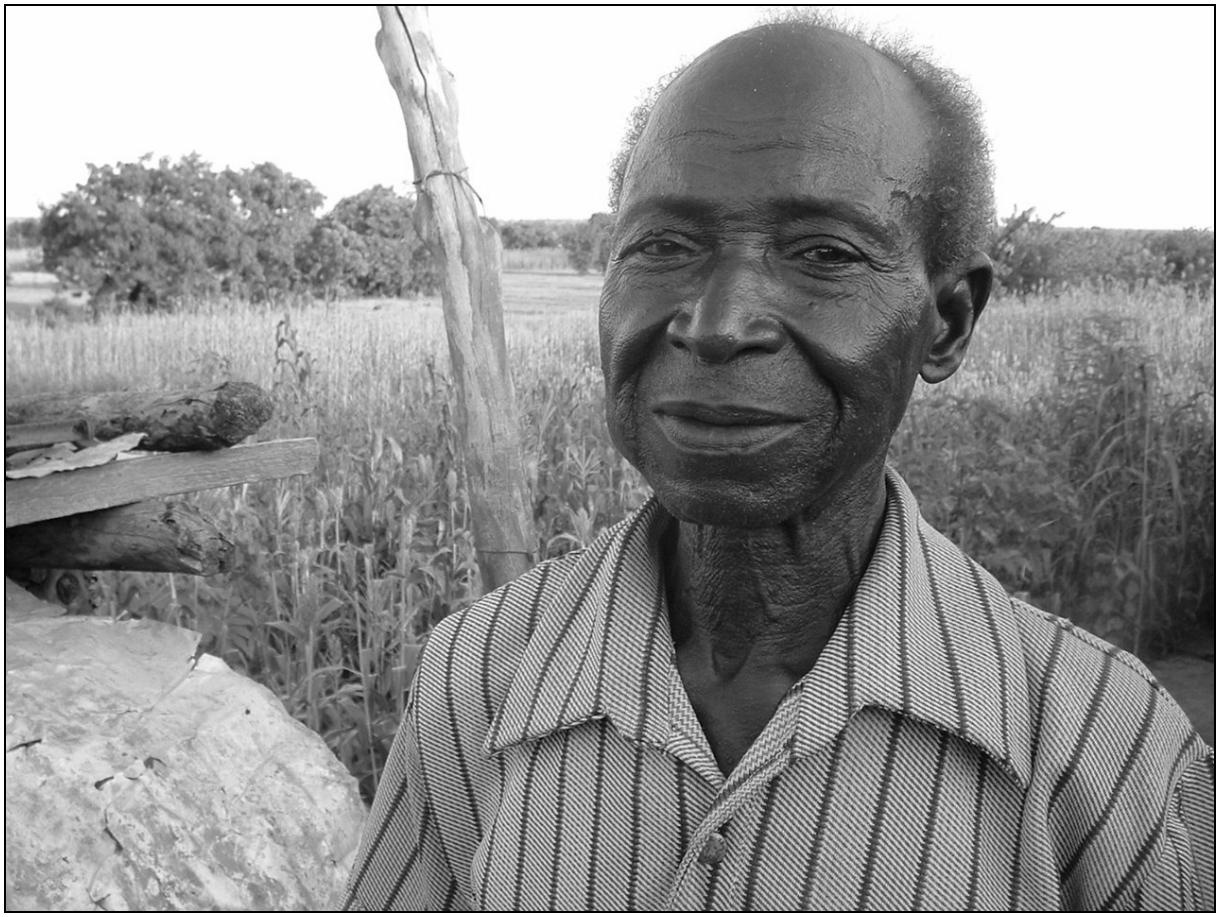
This book is dedicated to:



Mister Kontana

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Introduction and acknowledgements

"We are managing!" In the Nandom area in northwest Ghana, you are likely to get this answer when you ask somebody: "How do you do?" It expresses that people in the research area somehow manage to make ends meet. It also indicates that people face a number of constraints or difficulties that have to be managed in order to secure a certain standard of living and well-being. But are they really managing? Is it not just a matter of politeness to say that you are fine: that your situation is manageable? If politeness indeed blinds the true picture, then further inquiry into people's livelihood should reveal who is managing and who is not.

Philibert Maniaasie and Francisca Mweyang are both in their late fifties. They live a stone's throw away from each other. Philibert has lived and worked in southern Ghana for more than twenty years. When he returned to the Nandom Area, he started farming again. In the dry season, he supplements his income by working as a mason. His wife, his two grown-up sons and his daughters help him on the farm, and together they always harvest enough to eat. Even in the hypothetical case of a total crop failure, he would have sufficient alternative sources of income to deal with the problem. His livestock and especially his strong family network play a major role in his coping strategies.

Francisca is a widow. Unlike many other widows in the research area, she has no relatives to whose 'households' she can contribute her labour and from whose granary she can eat. Her brothers have all migrated to southern Ghana and don't support their sister in any way. In the fifteen years that she has been without husband, she has had to take care of three children. She farms a small area around her house. The produce from this field is exhausted in just a few months after the harvest, even in a very good agricultural year. To be able to buy food, Francisca engages in a variety of different income generating activities, such as fetching firewood, brewing beer and selling bean cakes. These activities are very low yielding. Moreover, she cannot spend all the money on food; she has to spend some on school fees and for other basic needs. It is rare that Francisca and her children eat more than once a day. In the lean season before the harvest, they sometimes eat a meal every second day. For Francisca's household, every year is a bad year.

These two examples indicate that indeed, some people are managing much better than others. In this book, I will analyse and describe how rural people manage the opportunities and constraints that cross their paths. Initially, the main focus was on climate variability and change. Rain plays a very central role in the livelihoods of the people in my research area. In the course of my fieldwork, other opportunities and constraints have entered the analysis, however. As a result, this book gives a more complete picture of rural livelihoods in 'just a place' in Africa.

Geographical setting

The research area is located in the extreme northwest of the Upper West Region of the Republic of Ghana (see map 1, 2 and 3). The centre of the research area is Nandom Town (10°, 50' N; 2°, 45' W). Nandom lies roughly ten kilometres east of the Black Volta River whose middle reaches form the border between Ghana and Burkina Faso and, approximately 150 kilometres downstream, between Ghana and Côte d'Ivoire. People can cross the river into Burkina Faso by foot or by dugout. There is no bridge nearby. Fifteen to twenty kilometres north of Nandom Town, the 11th degree Northern Latitude forms Ghana's northern border with Burkina Faso. Here we find the market town of Hamile, and an official border crossing. An all-weather gravel road links Hamile with Nandom. Following the same road in the opposite direction (to the south), one arrives in the district capital Lawra after 25 kilometres. The towns of Nandom and Lawra are more or less the same size. The current Lawra District was created in 1988 when the Jirapa-Lambusie District was separated from the old Lawra District. A small part of my research area lies in the Jirapa-Lambusie District, and the larger part lies in the Lawra District. The Upper West Region is the least accessible region in Ghana. With public transport, it usually takes about two days to travel from Accra to Nandom.

Approximately ten kilometres east of Nandom, one finds a chain of low, eroded hills. The hills extend north into Burkina Faso and south, beyond Wa, into West-Gonja (Northern Region). Most urban centres of the Upper West Region lie between the Black Volta River and this chain of hills (both running north-south) and population density is relatively high here (50 to 100 inhabitants/km^2). The area east of the hills is very sparsely populated (10 to 15 inhabitants/ km^2). The whole of Lawra District and most of Jirapa-Lambusie District lie in the densely populated area. The Sisala District lies entirely in the sparsely populated area. The other two districts of the Upper West Region (Wa and Nadawli) stretch over the two areas.

Northern Ghana looks more like Burkina Faso than like southern Ghana, both in its physical appearance and in its people. But the ties with the rest of Ghana are becoming stronger through migration, economic integration and modern (English) education. Consequently, the North is becoming more 'Ghanaian'. In the Nandom area, eyes are turned to the South rather than to the North. Virtually all men and many women have travelled to southern Ghana, while few have travelled far into Burkina Faso. On the other hand, the research area still looks more like southern Burkina Faso in terms of vegetation, climate, farming systems, etc.

Project context of this study

The research on which this book is based was part of a larger project called "Impact of Climate Change on Dryland, with a focus on West Africa" (ICCD) in which the Amsterdam

research institute for Global Issues and Development Studies (AGIDS) participated. The ICCD research project was part of the National Research Program (NRP) on Global Air Pollution and Climate Change. My study ran parallel to sub-project two (in-depth studies) of the ICCD research. The objectives of phase two were:

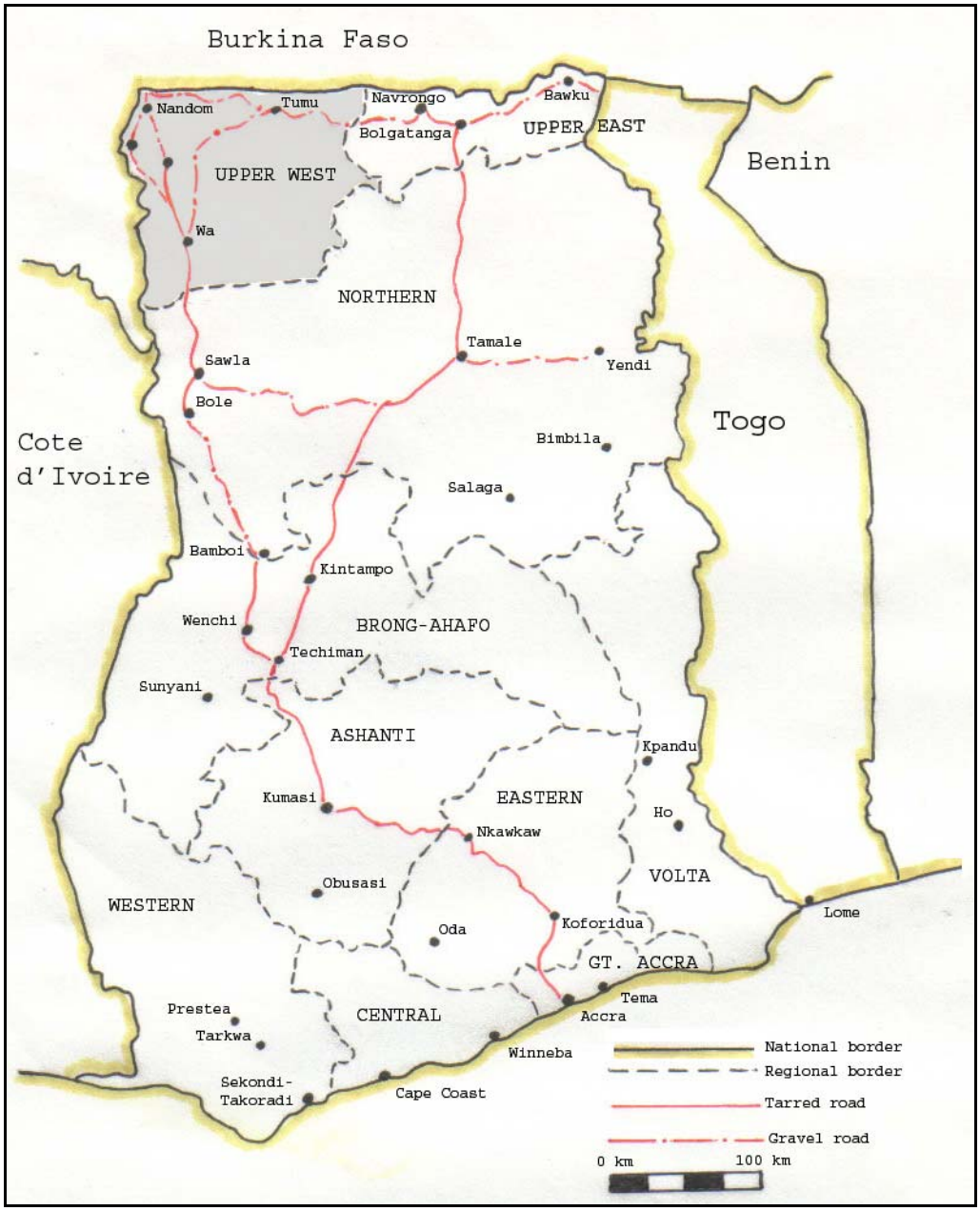
1. To establish a link between rainfall variability and yield variability using a drought risk index and crop growth simulation models;
2. To gain insight in the driving forces of changes in land use and agricultural production;
3. To establish geographical and socio-cultural differences in existing coping strategies, to assess the adaptive capacity of groups and individuals. (Dietz et al 2001a: 1).

Acknowledgements

First of all, I want to say a big "barka yaga" (many thanks) to my host father and friend Constantio Nurudong (Mr. Kontana) to whom I dedicate this book. Without his hospitality, wisdom, jokes, stories, skills and friendship, my stay in the research area and in his 'mud castle' would not have been as enjoyable and fruitful as it was. I also owe this to the other 'house people', especially the late Mr. Edmund Dery, Mr. Rogation, Fostina and Kwaku. A special word of thanks goes to Mr. Kontana's late wife Beauty who passed away a few months after I returned to the Netherlands. I want to thank my parents (Sjaak & Betty) for their love, for their support, for their 'Ghana connection', for their visits and for everything they did for me over the years. Sjaak also gave me good advice on how to edit the original document for this publication. I want to thank Arjen Schijf for his friendship in the field and back at home. Our STAR beer sessions and our lengthy discussions on theory, methodology and findings have been invaluable. I want to thank my Ghanaian supervisor Dr. Millar for his good advice in the field, and I want to thank my professor (Ton Dietz) for his contagious enthusiasm, for his confidence, for his advice and for letting me benefit from his extensive academic and social networks in several ways.

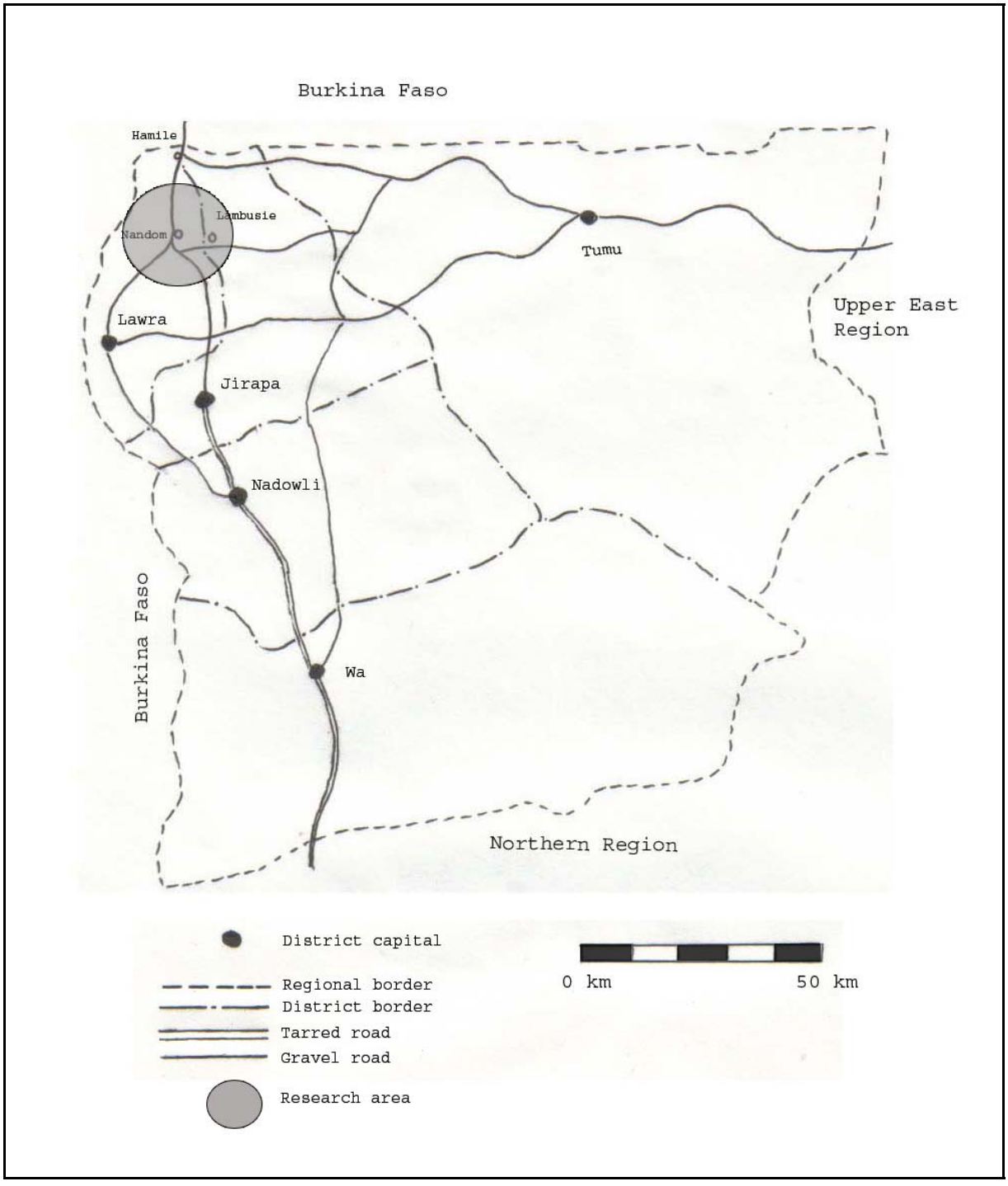
I want to thank furthermore the following persons for different things they did for me: Brother Dick van der Geest (FIC), John Yirkuu, Brother Wim Luyten (FIC), Festus Langkuu, Victor B. Damian, Abraham Navele, Ernestina Bagson, Augustin Yelfaanibe, Ben Wymer, Liesbeth Rijlaarsdam, Geeske Hovingh, Andrea Düchting, Prof. Dr. Carola Lentz, Prof. Dr. Leo de Haan, Dr. Fred Zaal, Dr. Mirjam de Bruijn, Dr. Marcel Put, Dr. Daniel Arhinful, Brother Arnold Smal (FIC), Brother Albert Ketelaars (FIC), my geography teachers Mr. Roelofsen and the late Mr. Van der Zon, Mr. Cyril Yabepone, the staff of the regional Ministry of Food and Agriculture in Wa, especially Mr. John Mwingye, Dr. Mark Hansen and Mr. Salifu Issaka, the staff of the Meteorological Services Department in Wa and Accra, Town and Country Planning in Wa, the Survey Department in Wa, Prof. Dr. Ofori-Sarpong, Prof. Dr. Saa Dittoh, Dr. Charles Imoro (the Paramount Chief of Nandom), Dr. Jan van der Horst and Tenzu Navele, Father Patrick, Sister Virginia, Dr. Adams Bodomo, Francisca Mweyang, Egidius Dugyi, Suurib Kyoo, Philibert Maaniasie, Osman Ali, all the people of the Producer Enterprise Promotion Service Centre (PEPSC) in Nandom, all the people of the Nandom Agricultural Project (NAP), all the FIC Brothers in Wa and Accra and all the people of Nandom. Last but not least, I want to thank Cate Newsom, AGIDS, Dr. Dick Foeken and the Africa Studies Centres for making this publication possible.

Map 1 Ghana and its ten administrative regions.

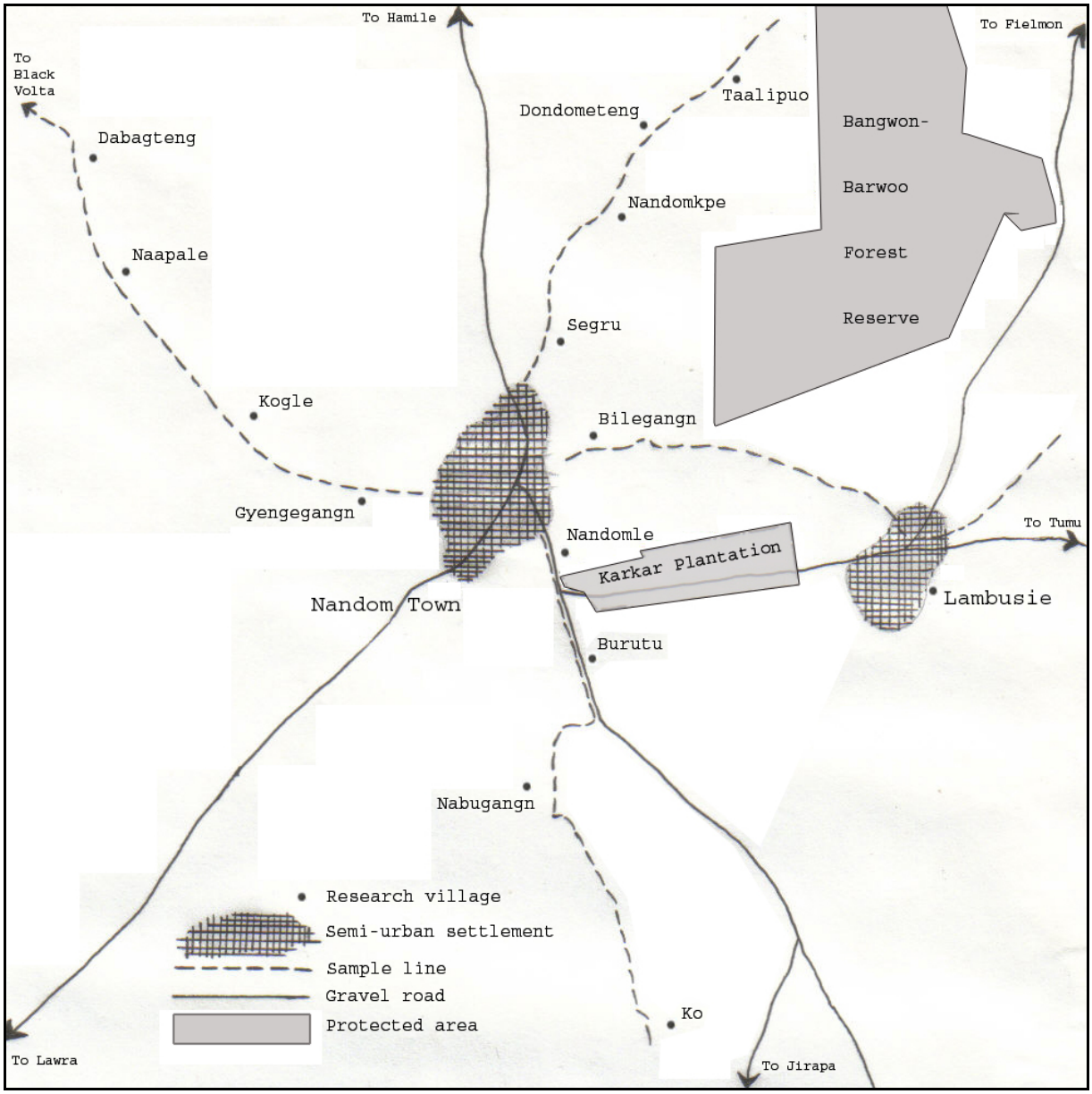


Note: The road infrastructure is only shown for Northern Ghana and the connection to southern Ghana.

Map 2 The Upper West Region and its five administrative districts



Map 3 Nandom Town, the research villages and the transect lines for my survey sample



1

Theory: Climate, vulnerability and livelihood strategies

This book is about the impact of climate change on rural people's livelihoods. It explores how farmers deal with unreliable rainfall and extreme weather events in the context of increased population pressure; land scarcity; land degradation; economic underdevelopment; partial integration into a national economy; and changing social structures. It therefore touches on the scientific debates about global climate change and its local and regional impacts; the influence of climatic variability[1] on rural people's food and livelihood security[2]; the development of early warning systems against famine; agricultural intensification; livelihood diversification; the impact of migration and remittances; and the functioning of a 'moral economy'.

Most central to my research, however, are the debates about (1) rural people's vulnerability to hazards, like droughts and floods; (2) how rural people cope with such hazards and (3) how rural people adapt their livelihoods to changing conditions. In this chapter, a reconstruction of these debates will result in a categorisation of three different concepts of responses: insurance strategies, coping strategies and adaptive strategies (or adaptation). These concepts will be combined in a conceptual framework for studying 'farm

[1] In this book, I use the terms 'climate variability', 'rainfall variability' and 'unreliable rainfall'. Each term has its own advantages and drawbacks. 'Climate variability' is the term most used in the scientific literature. When I talk of *climate* variability, this suggests that I have also investigated the variability of other climate elements (besides rainfall and temperature), such as evaporation, sun hours per day, etc. That is not the case. I could then use the term 'rainfall variability'. There are several *types* of variability (see below), however, and variability as such is normal; it is not a problem. Rainfall variability *becomes* a problem to farmers when it is very high. I prefer to use the term 'unreliable rainfall' to refer to inter-annual rainfall variability because it points directly to the major climatic risk for farmers in Sub-Saharan West Africa. Seasonality and unreliability of rainfall are two types of rainfall variability (intra-annual versus inter-annual) that have to be clearly distinguished.

[2] In fact, food security is a specific component of livelihood security (I thank Prof. Dr. Leo de Haan for making this point). I highlight it because for farmers in the research area, attaining food security is the most central objective in their overall livelihood strategy and the poorer farmers do not achieve this goal every year.

household vulnerability and responses to normal opportunities and constraints, unusual events and changing conditions'.

I will start this chapter with some theory on climate and weather. From there, I will move on to the debate about people's vulnerability to hazards in general and climate related hazards particularly. This will be followed by an outline of theory on rural people's strategies to offset risk, and to pursue food and livelihood security in good times and in bad times. I will conclude this chapter with the aforementioned conceptual framework. The scientific debates about some contextually important issues, such as land degradation, agricultural intensification, livelihood diversification and the impact of migration will not be dealt with in this chapter. In the more empirical chapters, I will occasionally link my findings to the scientific debates concerned. The theory in this chapter is mostly focused on Sub-Saharan West Africa (SSWA).

Climate

Climate change

Climate change is not new. The climate has always been changing, throughout the history of the Earth. Between 2500 B.C. and 2300 B.C., for example, the climate in the present Sahara changed rapidly from a situation in which wheat, barley, millet and guinea corn could be cultivated into a situation in which only livestock could be kept (Curtin 1978: 9-10). Climate change is a normal phenomenon (Ribot *et al.* 1996: 23). Natural changes in climatic conditions have resulted in ice ages and relatively warm periods in temperate regions, while wet periods have intermitted with dry periods in Africa (see Kemp 1994: 40). 'Climate' is the average weather. It describes the condition of different weather variables for a specified area during a specified time interval. Many natural factors influence the climate and have the potential to change it. One of these factors is the greenhouse effect. Although not all the ins and outs of the greenhouse effect are fully understood, scientists do understand the basic functioning of this complex mechanism. The sun is the driving force behind weather and climate. By heating the Earth's surface, the sun provides the energy for the cycle between oceans, atmosphere, glaciers, surface water, groundwater and vegetation through precipitation and evapotranspiration.[3] Solar radiation is absorbed by the Earth's surface and it later leaves the Earth as outgoing radiation. Part of the outgoing radiation is, however, absorbed by greenhouse gases in the atmosphere and re-emitted to the Earth's surface. This makes the Earth warmer. Without natural greenhouse gases, the Earth would presently be approximately 33°C colder. Some human activities increase the concentrations of greenhouse gases in the atmosphere. Consequently, more outgoing radiation is re-emitted; this is how humanity is capable of increasing the global temperature. We call this the *enhanced* greenhouse effect (Houghton *et al*. 1990: xiii-xiv), or the *anthropogenically enhanced* greenhouse effect (Ribot *et al.* 1996: 15).

Bearing in mind that the climate is dynamic, one could wonder: "What is the problem with climate change this time?" The problem is that the speed with which greenhouse gases are emitted through human activities like industry, transport and deforestation are predicted to

[3] Evapotranspiration is evaporation from the Earth's surface plus transpiration by plants (Kemp 1994: 46).

cause an accelerated climate change that has no precedent. Due to uncertainty about (1) the direction of *natural* climate change; (2) positive and negative feedback mechanisms started by global warming; and (3) future developments concerning population growth and per capita emission of greenhouse gases, it is still difficult to accurately predict regional climate change (Houghton *et al*. 1990: xx-xxii; see www.grida.no/climate/ipcc/ for more recent IPCC Reports). The different computer models or General Circulation Models (GCMs), designed by various groups of scientists and used to predict the impact of an anthropogenically enhanced greenhouse effect are improving, however. Dietz *et al.* (2001a: 26-30) have compared the climate change predictions for Sub-Saharan West Africa by two GCMs and three scenarios of population and economic growth. The two GCMs generate quite different predictions. One GCM (MPI) predicted an increase in temperature of 1.5 to 2.5°C and a decrease in annual precipitation of 100 to 400 mm by the year 2050, based on medium population growth and medium economic growth. The other GCM (GFDL) predicted much less dramatic changes in the climate of Sub-Saharan West Africa: a substantially lower increase in temperature and no decreases in precipitation.

Some models predict that the decrease in average rainfall will be accompanied by a much larger inter-annual variability of rainfall. If the more gloomy predictions come true, the northern limit for crop cultivation will be shifted southwards by several hundreds of kilometres. Many areas that presently have a semi-arid climate will become arid, and sub-humid areas will become semi-arid. Since rainfed agriculture is the main source of livelihood for most people in dryland West Africa, the combination of decreasing annual amounts of rainfall, increasing rainfall variability, increasing temperature and population growth *could* cause a serious decline in the population's capacity to secure its food and other needs. Agricultural droughts would occur more frequently and, without a dramatic shift in agricultural and non-agricultural production strategies, the region would become much more prone to famine.

That is why climate change in Sub-Saharan West Africa, albeit being an age-old phenomenon, has to be taken seriously. The Sahelian droughts of the 1970s and the early 1980s may have been a first warning. They were much more extreme than the 'normal' oscillating trend (Hulme 1994: 62). Although precipitation levels have partly recovered in the late 1980 and 1990s, they are still well below the average of the first part of the century.[4]

If climate change is an age-old phenomenon, the same is true for droughts and famines. For hundreds of years, dry and wet periods have alternated and Sub-Saharan West Africans have suffered droughts and famines. These famines occasionally caused high mortality rates because solutions had to be found locally[5] (Kemp 1994: 40; Kenworthy 1991).

To summarise, we cannot exactly forecast the characteristics of tomorrow's climate in dry land West Africa, nor anywhere else, but if the more gloomy predicted scenarios actually materialise and climatic conditions for agriculture in the region deteriorate, we had better be prepared. Several authors (e.g. Bohle *et al.* 1994: 44; Ribot *et al.* 1996: 15 and Adger 1999: 249) agree on the importance of gaining insight into the various ways people and social

[4] More details about rainfall trends in the research area are presented in chapter four.

[5] Chen (1991: 167-168) compared the 1899-1900 drought with the 1985-1987 drought in Gujaret, India. She quotes village elders who state that the former drought was more severe because in those days there were no pumps to extract ground water; because they did not migrate for employment opportunities elsewhere; and because of the absence of government relief works. The situation in most of SSWA must have been similar to the situation in this Indian case study.

systems have adapted to drought and current rainfall variability to assess the opportunities and constraints of future responses to climate change. Policy interventions regarding future climate change "must be rooted in a full understanding of the complex structure and causes of present-day vulnerability to climatic variability" (Bohle *et al*. 1994: 37). Interventions should be of the 'no-regret' type, i.e. they should be valuable regardless of whether the climate will worsen or not (Ribot *et al*. 1996: 15).

Droughts and floods

A research that focuses on how people deal with unreliable rainfall should look at both 'normal' (near average) and extreme (either very dry or very wet) years. Droughts have received much more attention in literature than excess rainfall. Wet years are usually referred to as good years: 'the wetter the better'. Excess rainfall is, however, detrimental to crops like millet and sorghum, especially in certain stages of plant growth.

Only when abundant rainfall causes very serious floods in which people lose their houses, harvests, grain stores, livestock or even their lives, will the public hear about it. Recent examples are the dramatic events in Mozambique and Venezuela in 2000. This type of flood has also received attention in scientific literature (e.g. Blaikie *et al*. 1994: Chapter 6). The less extreme cases, when excess rainfall at the wrong moment causes serious declines in yields for some crops or even total crop failure, are often neglected. This is probably because *widespread* disasters like the Sahelian famines of the late 1970s and early 1980s were caused by shortages of rainfall rather than excess rainfall. When rain is abundant, some crops might fail, but others, like rice and yams, might do very well.

Wilhite & Glantz[6] distinguish three types of physically measurable drought. In order of appearance and increasing complexity, these are: meteorological drought, agricultural drought and hydrological drought. A *meteorological* drought is a temporary deficiency of rainfall significantly below the normal or expected amount in a year, season or month. The analysis of meteorological droughts is relatively easy because they are mainly defined in statistical terms (Mortimore 1989: 11). A meteorological drought in a certain area can, for instance, be defined as a situation in which the rainfall is deficient by at least two times the standard deviation of the average.

Agricultural droughts occur when crops do not get enough water to grow fully and produce acceptable yields. Since different crops and grasses have different moisture needs in different stages of plant growth, the advent of an agricultural drought in a given area is hard to define, especially when a wide variety of crops is grown. By linking drought to the crops or fodder grown in an area, we define a drought relative to the needs of human beings[7] (Hewitt & Burton 1971, in Mortimore 1989: 11). Definitions of agricultural drought can be expressed in drought indices like the Palmer Drought Severity Index, the National Rainfall Index and Bailey's Moisture Index (Put & Dietz 1998: 12). Monitoring agricultural droughts is not a straightforward exercise, however. The soil moisture needs of crops depend *inter alia* on the type of crop, the seed variety, the sowing date, the stage of plant growth and physical and

[6] See the web pages of the National Drought Mitigation Centre: "Are we having a drought yet?" http://www.enso.unl.edu/ndmc/plan/define.htm (updated: April 28, 1999) and "Understanding and defining drought" http://www.enso.unl.edu/ndmc/enigma/def2.htm (first published: November 15, 1995).

[7] This is less directly the case with meteorological drought although the criteria (cut-off points) for meteorological droughts differ per location and may depend on characteristics of the local economy.

chemical characteristics of the soil on which the crop is grown (Grigg 1995). In chapter four, I will investigate the relation between drought risk and agricultural production in the Upper West Region of Ghana.

Hydrological drought concerns the effect of deficient rainfall on water bodies like streams, lakes and ground water tables. While agricultural drought usually appears soon after meteorological drought, there is a time lag in the advent of a hydrological drought. When the agricultural drought is over, the hydrological drought can still linger a long time because it takes longer for streams, lakes and groundwater to be replenished than for soil water.

Wilhite and Glantz distinguish a fourth type of drought that results from the impact of agricultural and hydrological drought on supply and demand of some economic goods: the *socio-economic* drought. When a lack of precipitation causes the supply of a certain good to be deficient as compared to the demand for this good, one can speak of a socio-economic drought. As opposed to the first three types of drought, socio-economic droughts are not measurable in physical terms. It also depends on the market conditions of the area concerned. According to Mortimore (1989: 11), who also distinguishes the first three drought types of Wilhite and Glantz, an *ecological* drought occurs "when the primary productivity of a natural or managed eco-system (...) falls significantly owing to reduced precipitation." For all these types of drought, the impact is especially severe when several *subsequent* years are dry.

Rainfall variability: Unreliable rainfall and seasonality

It is not the low *average* level of precipitation that makes an area drought-prone. It is rather the inter-annual *variability* of rainfall that causes dry years (Kemp 1994:42). This becomes clear when we take into account the difference between aridity and drought. Aridity results from a low average rainfall and is a permanent feature of a region's climate (*ibid*: 41), while drought is a temporary deficiency of rainfall significantly below the normal or expected amount in a year, season, or month.[8] The higher the rainfall variability, the higher the chance of receiving significantly below-average rainfall and thus the higher the risk of a meteorological drought that can evolve into an agricultural drought. When we talk of rainfall variability, we have to be more precise. Generally, three types of rainfall variability are distinguished: spatial variability, inter-annual variability and intra-annual variability or seasonal concentration (Van Schaik & Reitsma 1992: 22-23).

Spatial variability concerns the differences in rainfall received between places, either structurally or proximately. Spatial variability is high when great differences occur between places that are relatively near to each other. When two nearby villages are separated by a mountain range, one can expect structural differences in precipitation and thus high spatial variability. The village on the weather side will be wetter than the village on the lee side. In the absence of mountains, the amounts of rainfall can still vary greatly over short distances. This can result in different annual drought risks within a small area and this has consequences for the use of agro-climatological information to predict stress in agricultural production and for designing effective early warning systems against famine. High spatial variability has a positive side in terms of coping with food stress. If crops fail in one village due to drought, but neighbouring villages harvest well, part of the food gap can be filled by inter-village

[8] The definition used here is of meteorological droughts. The same time dimension is characteristic for agricultural droughts, however.

transfers (see Toulmin 1986: 65). Moreover, food prices are less likely to increase as sharply as in the case of a region-wide crop failure. This makes it easier for affected households to purchase food. There is a negative correlation between spatial variability and mean annual rainfall. In relatively dry regions, the variation of rainfall amounts between places is usually high (Foeken 1989: 9).

Inter-annual variability is the annual deviation from a long-term average, or the difference in rainfall between years.[9] The analysis of inter-annual variability is usually limited to a comparison of *total annual amounts* of rainfall in different years, while the year-to-year variation in the rainfall distribution[10] is neglected (see e.g. Van Schaik and Reitsma 1992: 23). This is strange because it is the year-to-year variation in the distribution of rainfall that exposes rainfed agriculturalists to uncertainty and risk. The analysis of inter-annual variability should therefore not only include the annual amounts of rainfall, but also the distribution of rainfall. Foeken (1989: 9) indeed highlights the importance of analysing the inter-annual variability of *monthly* rainfall.

There is a negative correlation between average annual rainfall and inter-annual variability[11] of annual rainfall (Ruthenberg 1980: 22 and Foeken 1989: 9). In arid regions inter-annual variability amounts to more than 50%, while in semi-arid regions the figure is usually around 30%. In sub-humid regions, it is less than 30% (Van Schaik & Reitsma 1992: 23). Higher average rainfall does not automatically mean lower inter-annual variability in total rainfall, however.[12]

Intra-annual variability or seasonal concentration refers to the distribution of rainfall *within* a year. It would be zero if every day – or month or whichever time unit is used in the analysis – experienced exactly the same amount of rainfall (Foeken 1989: 7). In the semi-arid and most of the sub-humid[13] regions of Sub-Saharan West Africa, the rainfall pattern is unimodal, i.e. rainfall is concentrated in one wet season in which the rainfed farming activities take place, leaving the dry season for other activities. This means that farmers can only harvest once a year,[14] making the period to bridge between two harvests rather long, and concentrating risk into one instead of two harvests. The months before the harvest are often difficult for farmers because food stocks run low and consumption has to be reduced while hard agricultural work has to be carried out in the same period (Dietz & Van Haastrecht 1997: 51). The seasonal concentration of rainfall gives rise to a seasonality in the agricultural cycle, labour demands, food availability, food prices, the prices of consumer goods and labour, health, births, deaths (Dietz 1991: 86) and migration patterns.

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[9] In statistical terms, inter-annual variability of annual rainfall is the standard deviation of annual rainfall divided by the average annual rainfall multiplied by 100%.

[10] For example: the onset and offset of the rainy season, the occurrence of dry spells and excess rainfall, the number of rainy days, etc.

[11] The rainfall data in the research area show no exception (see chapter four). The existence of a negative correlation between average annual rainfall and rainfall variability is hardly surprising because variability is calculated as the standard deviation divided by the average. When the average is low, the variability is likely to be high. This is not to say that it is not correct to measure variability in this way. The difference between receiving 500 and 700 mm usually has a bigger impact in terms of drought risk than the difference between 1200 and 1400 mm.

[12] See Van Schaik & Reitsma (1992: 29) for an empirical example.

[13] For a definition of semi-arid and sub-humid regions, see below.

[14] In northern Ghana, cowpeas form an exception. Cowpeas can be harvested twice in the same rainy season because it takes only two months for this crop to mature.

In Sub-Saharan West Africa, the length of the rainy season decreases when one moves from south to north. The rainy season coincides more or less with the summer in the northern hemisphere's temperate regions. This pattern of rainfall results from the annual north-south shift of the Inter Tropical Convergence Zone (ITCZ). This is the area where a dry, continental air mass and a moist, tropical one converge. The northward shift of the ITCZ brings moist and relatively unstable air from the ocean and causes precipitation. Droughts in West Africa have been associated with the failure of the ITCZ to penetrate northward as far as usual (Kemp 1994: 48), but this phenomenon cannot explain all West African droughts (*ibid*: 66). It certainly cannot explain the high spatial variability of droughts.

Without seasonal concentration, crop production would be impossible in many areas because an even distribution would mean that the monthly rainfall throughout the year would in no period be sufficient to sustain plant growth (Van Schaik & Reitsma 1992: 23). Intra-annual variability can pose problems to farmers when it is so high that they get too much rain in a short period while the rest of the year does not experience sufficient rainfall for crops to fully develop. This does actually happen in some years. But again, we have to distinguish inter- and intra-annual variability. The analysis of rainfall data in the Upper West Region of Ghana suggests that the *average* seasonal concentration of rainfall does not pose problems to farmers.[15] The problem lies in the fact that the distribution of rainfall varies from year to year. In other words: it is the inter-annual variation in the distribution of rainfall that causes agricultural stress. While the average seasonal concentration is favourable for rainfed agriculture, there are years in which the rain is too concentrated in one or two months and/or interrupted by detrimental dry spells.

I have tried to indicate that the real problem for the farmer is the unreliability of rainfall, caused by inter-annual variability of both total amounts and distribution of rainfall. Erratic rainfall makes agricultural planning very difficult. Every year before the farming season, decisions have to be made concerning crop mix, sowing moments, seed varieties, the location of fields, the application of manure and the seedbed type without knowing when the rains will start, how intensive the rains will be, how long the rains will continue and whether or not the rains will be interrupted by dry spells.[16] This makes farming in areas with high inter-annual variability a risky enterprise (Van Schaik & Reitsma 1992: 25). Some farmers in the research area even compared farming to gambling.

Climate classifications

In West Africa, five climatic zones can be distinguished: the hyper-arid, arid, semi-arid, sub-humid and humid zones. This classification is based on the aridity index.[17] In the hyper-arid zone ($P/ETP<0.03$), agricultural activities are only possible in oases and flood plains. Arid regions ($0.03<P/ETP<0.2$) are not suitable for rainfed crop cultivation either, but animal husbandry is possible. The aridity index of 0.2 separates the arid and semi-arid regions and approximately marks the northern limit of rainfed agricultural production because of its

[15] See chapter four.

[16] Not all decisions are made *before* the first rains. If necessary, farmers adjust their cropping strategies in the course of the rainy season.

[17] The aridity index is P/ETP, where P = average annual rainfall and ETP = average annual potential evapotranspiration, as proposed in the United Nations Environmental Program's (UNEP) World Map of Desertification (1977, in Mortimore 1989: 7).

proximity to the 350 mm isohyet[18] and the minimum probability of receiving 75 percent or more of normal rainfall in eight out of 10 years.[19] Passing the 0.5 aridity index and thus moving from the semi-arid to the sub-humid region, annual precipitation increases, the rainy season lasts longer and inter-annual variability decreases, making crop cultivation less risky and allowing a more diverse crop mix (Mortimore 1989: 7). The World Map of Desertification (1977, in Mortimore 1989: 7) groups the sub-humid and humid regions together, but UNESCO's Map of the world distribution of arid regions (1979, in Put & Dietz 1998: 3) further distinguishes the two, setting the aridity index limit at P/ETP=0.75. In most of West Africa, sub-humid regions have one rainy season and humid regions have two rainy seasons. As we will see in chapter four, the aridity index in my research area oscillates around 0.5. The research area is situated in the transition zone between semi-arid and sub-humid regions.

Vulnerability

I have started this chapter with some theory about climate and weather. As a human geographer, however, I am not so much interested in the climate and weather *per se*. I am interested in the link between climate and people, between the natural environment and human society. Unreliable rainfall poses production risks to farmers and other occupational groups and it has the potential to trigger off disaster. For many years, it was assumed that natural hazards – and many of them associated with the climate and weather – *caused* natural disasters among human populations. It is now widely recognised that natural hazards do not necessarily lead to disasters (Cannon 1990: 1). A drought does not have to result in a famine. Two earthquakes with the same intensity in two different places can cause high mortality in one place and only small material damage in the other. When an area is affected by floods, for one family this can result in a tragedy from which it might take years to recover, while for a neighbouring family, it might be a mere disturbance of daily life.[20]

A natural hazard becomes a disaster when it hits vulnerable people (Blaikie *et al*. 1994: 22; Cannon 1990: 1). While the natural hazard acts as a *trigger event* for a disaster to occur, the underlying causes are to be found in people's vulnerability. These causes are often economic and political. Inequality is the root cause of vulnerability (Ribot 1995: 121).

The concept of vulnerability needs further explanation. Vulnerability is often confused with poverty, but although poor people are usually more vulnerable than rich people, the two concepts are not the same. Vulnerability, to distinguish it from poverty, is "not lack or want, but defencelessness, insecurity and exposure to risks, shocks and stress" (Chambers 1989: 1). Vulnerability has an external side of exposure to risk, and an internal side that consists of the inability to cope with trigger events (ibid.) and the limited potential for recovery afterwards (Watts & Bohle 1993: 45). Vulnerability and its opposite, security, are thus determined by the degree of risk exposure, coping capacity and recovery potential (Bohle *et al*. 1994: 39).

The above definition helps us to distinguish vulnerability from poverty. We talk of vulnerability as relative to a certain hazard (Blaikie *et al*. 1994: 59) and a certain consequence (Ribot *et al*. 1996: 16). People are vulnerable to different hazards and consequences to

[18] This is considered the minimum amount necessary to cultivate very drought-resistant crop varieties.
[19] This is a function of the inter-annual variability of total annual rainfall.
[20] Similar examples can be found in Blaikie *et al*. (1994: 47).

different degrees. Subsistence farmers are more vulnerable to food insecurity (consequence) caused by drought (hazard) than teachers. The latter group, although generally less poor, may be more vulnerable to food insecurity triggered by hyperinflation because they rely more on the market for their food needs.[21] The difference between poverty and vulnerability lies in the external side of vulnerability: the exposure to risk.[22] The internal side is more directly related to poverty. Inability to cope and recover is mainly caused by a lack of resources, alternatives and buffer capacity associated with poverty. In Box 1.1, I have used a human body's vulnerability to disease as a metaphor for household vulnerability to hazards. I hope the comparison will make the concept of vulnerability less abstract (see Box 1.1).

Vulnerability is now a widely accepted concept in social science. Many scholars have written about it, although in very different ways and more often theoretically than empirically. The early theory on vulnerability was developed to explain how famines occur (Watts and Bohle 1993: 47). The ultimate objective is to prevent future famines by 1) identifying which groups in society are vulnerable to different hazards at different moments; 2) developing early warning systems against famine and 3) designing and implementing policy interventions that reduce vulnerability. According to Davies (1996: 38), however, "rarely are attempts made to monitor *how* people are vulnerable, *how* they are responding and hence what the most appropriate form of intervention might be." That is why conventional early warning systems are rarely ever effective and capable of preventing famine.

We should also bear in mind that vulnerability assessments are hypothetical and predictive (Blaikie *et al.* 1994: 59). Assumptions have to be made about which factors increase vulnerability and which factors create security (see chapter six). One can only 'prove' whether the assumptions were valid once the hazard strikes. What follows is a review of some important contributions to the theorisation of vulnerability.

The entitlement approach to vulnerability

Sen's entitlement approach to hunger and famine is still very influential in vulnerability research. It argues that hunger and famine are often not caused by a decline in the availability of food (i.e. production failure), but by a failure of people to exert their command over food (i.e. exchange failures or entitlement failures). A person's entitlement is defined as the set of different commodity bundles (including food) that he can acquire by using his original bundle of ownership (his endowment)[23] and the various alternative bundles he can generate by using this endowment. A person will go hungry if his entitlement set does not include a commodity bundle with enough food. Famines occur when large groups of people experience this type of entitlement failure (Sen 1987: 7-8). In normal years, entitlement to food and livelihood is gained through a combination of production (both primary and secondary), exchange (of cash, goods, services, sale of labour) and assets (including investments, stores and claims). These three categories can be labelled the endowments. Households with an adequate endowment

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[21] Note that hazards do not have to be natural; they can also be socio-economic and political.

[22] This is not to say that exposure to risk does not correlate with poverty. The poor are relatively more exposed than the wealthy because they often live in poor housing (exposing them to earthquakes and extreme weather events); because they often cultivate marginal lands (exposing them to agro-climatologic risk), etc.

[23] This includes human resources such as the quality and quantity of labour and social claims over resources based on informal rights and networks (Swift 1989, in Bohle *et al*. 1994: 40).

Box 1.1 Household vulnerability to hazards and a human body's vulnerability to diseases: A comparison

Human bodies are vulnerable to disease to varying degrees. Whether or not someone becomes sick depends on his exposure to the source of disease (bacteria, viruses) and the physical condition of the body (resistance). Someone in Europe is not exposed to malaria parasites, so as long as he stays in Europe he will not get malaria. People in tropical Africa are exposed to malaria parasites to different degrees. Those who sleep under mosquito nets are less exposed than those who don't. When people are highly exposed, they do not have to become sick. Their bodies might have developed effective defence mechanisms through which sickness can be avoided. When someone does fall ill, he can be affected very seriously and even die. This is the case when his body is weak, when medical attention is late or absent and/or when the disease is further complicated by a second or third disease. If the patient survives, he might have lost a lot of weight and strength, and his immune system might have weakened. This makes him more vulnerable to the same and other diseases until he is fully recovered. But full recovery is not guaranteed. The person might be ailing for a long time, and he might never be able to live the way he did before falling ill. Perhaps he has to find a new profession, more suitable to his physical condition. He might even have to depend on other people or social welfare for his survival. If nobody is there to help him recover and build up new reserves, he will easily become sick again.

Sickness usually does not have such dramatic consequences, however. When the patient is strong because he has lived a healthy life in which he has built up reserves; when he has relatives and friends to help him; and/or when there is a clinic or hospital nearby, providing affordable and good medical care, the patient may not become very sick. He will be affected, but not very seriously and he will be able to recover soon afterwards. A person's vulnerability to disease depends on exposure; personal strength; the help he can receive from relatives, friends or even strangers; and the medical care and social security available to him.

There are various similarities between a person's vulnerability to disease and a household's vulnerability to livelihood stress. The above lines can be rewritten, changing a person/human body into a household; disease into risk, hazard or stress; sickness into food insecurity or hunger; physical condition into buffer capacity, etc.

Households are vulnerable to hazards to varying degrees. When a household is confronted with a certain hazard, this can result in hunger. Whether or not the household will go hungry depends on the degree of exposure to this hazard and the strength of the household in terms of insurance strategies and buffer capacity. A Dutch teacher's household is hardly exposed to drought. African households have different degrees of exposure to drought. Households in drought-prone areas and households that depend on rainfed agriculture are more exposed to drought than households in areas with more reliable rainfall, and households that have non-agricultural livelihoods. Even highly exposed households do not have to go hungry when a hazard strikes. They may have developed effective insurance mechanisms and coping strategies through which food insecurity can be avoided. When a household does go hungry, the situation can become very serious and its members can even die of starvation or diseases related to under-nutrition. This can happen when a household is very poor and help from relatives, friends or the government comes too late and/or when one hazard (e.g. a war) is aggravated by another hazard (e.g. a drought). If the household members survive, they may have lost all their assets. Their insurance mechanisms are no longer effective, and the household is more vulnerable to the same and other hazards until it fully recovers. But full recovery is not guaranteed. The household's livelihood might have collapsed and the people may have to find new sources of livelihood that are often less secure, or they have to depend heavily on relatives and friends.

A period of food stress does not necessarily have such dramatic consequences, however. When the household has been able to build up some buffer capacity in previous years or when the members have been able to lay effective claims on relatives, local 'patrons', the state or even the international community, the crisis will be less severe and they can preserve their productive assets and sources of livelihood. When the crisis is over, they can take up their lives and recover from this crisis. Vulnerability to a certain hazard depends on the degree of exposure to this hazard and the capacity to cope with this hazard by drawing on one's own buffer capacity and/or help from others.

portfolio are relatively secure. In times of food stress, coping strategies form an additional set of entitlements that are derived from the endowments.[24] The same accounts for adaptive strategies. Adaptation occurs when households have to respond to more permanent changes in their environment or to changes in the household's composition or entitlement base.[25] Together, these five categories are the sources of entitlement to food and livelihood, or the income side of entitlement. To monitor food security, one should look at both sources of and calls for entitlement because both fluctuate over years and seasons. Calls for entitlement, or the expenditure side of entitlement, do not only arise from consumption. Investments and claims from other people or the state are also calls for entitlement (Davies 1996: 35-36). Consumption does not only concern food intake. Even the poorest households have essential non-food cash needs.[26]

Food security is a sub-set within the pursuit of livelihood security. Contrary to what is often thought, poor households do not always pursue short-term food security. When they are faced with stress, they make a trade-off between satisfying immediate food needs and longer-term sustainability and survival. When the granary is getting empty, a household can choose to sell a goat to buy food, but the household can also refrain from depleting certain assets if this endangers their *future* income opportunities. They can choose to go hungry in order to pursue future livelihood security (Swift 1993; De Waal 1989, in Davies & Hossain 1993: 60).

People are vulnerable when they face a high risk of entitlement failure. In early entitlement research, the most vulnerable people were considered those who were exposed to extreme market fluctuations and disturbances. The entitlement approach emphasises temporary shifts in entitlement and has been criticised to neglect the structural-historical processes that cause the unequal distribution of entitlement to resources. Another shortfall of this approach is the failure to explain what happens *after* a disaster, the recovery process (Watts & Bohle 1993: 47-48). According to Swift (1993: 4), the entitlement approach has neglected food production failures in favour of exchange failures. By endeavouring to show that famines do not have to be caused by a decline in availability of food, they have shifted emphasis away from production failures, while in fact there have also been many examples in which production failures and a decline in availability of food *did* cause famine. Crop failures still have the potential to cause serious food stress among cultivators (directly, as a production failure) and among market-dependent households because of skyrocketing food prices (indirectly, as an exchange failure).[27] More recent entitlement research, or extended entitlement research (e.g. Davies 1996) has incorporated these criticisms.

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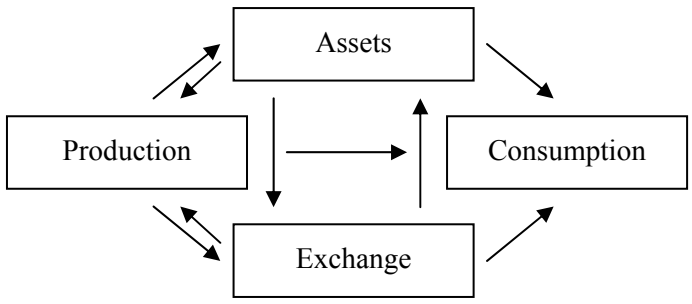
[24] This formulation of endowment and entitlements comes from Davies (1996: 35-36) who can be considered a representative of the *extended* entitlement approach. The original formulation by Sen (1981: 45-46, in Mortimore 1989: 88) was different. There, a distinction was made between a person's endowment (land, labour and other resources he owns) and what he can obtain in exchange for his endowment in a market economy: his exchange entitlement mapping.

[25] Coping strategies and adaptive strategies will be dealt with in more detail below.

[26] In the 'two 80 percent rule', people in ultra-poverty are defined as those eating less than 80 percent of dietary energy requirements, *despite spending more than 80 percent of one's income on food* (Lipton 1986: 4). Most people will spend less on food and more on other needs. Sources of entitlement must also provide for these needs.

[27] In the same vein, Leach *et al.* (1999: 232) warn against an excessive polarisation of the distinction between *availability of* and *command over* food because in practice, the two phenomena are often interconnected.

Figure 1.1 The role of assets and exchange as a buffer between production and consumption



Source: Adapted from Swift (1989: 11)

Swift (1989) has developed a relatively simple model of four factors that determine immediate, short-term vulnerability (see Figure 1.1). He acknowledges that other, underlying factors explain *structural* vulnerability. In this model, production (failures) and consumption are mediated by exchange (failures) and *assets*. 'Exchange' concerns a household's position and participation in labour and commodity markets. Assets are defined in a broad sense to include investments, stores and claims. Assets form a buffer between production, exchange and consumption. Assets are created when a surplus in production and exchange is used – willingly or unwillingly – to invest and to build up stores or when a surplus is shared with other community members. In times of dearth, these buffers can be converted into productive inputs or into food for consumption, either directly or through selling, buying, bartering and inter-household transfers.

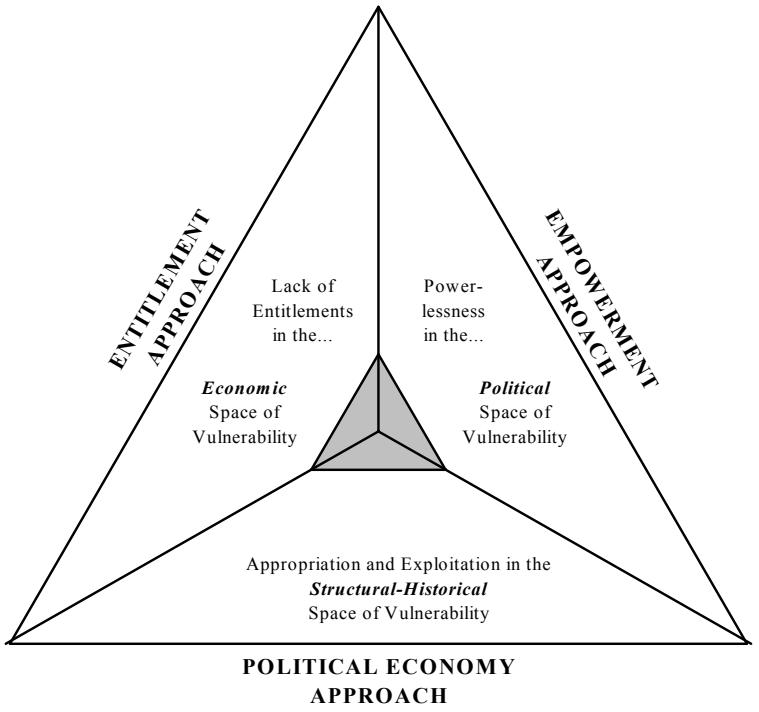
"The causal structure of vulnerability"[28]

The *empirical* analysis of vulnerability at the household level is a relatively unexplored field. According to Watts and Bohle (1993: 45), "vulnerability as a concept does not rest on a well developed theory; neither is it associated with widely accepted indicators or methods of measurement." In their article, they endeavour to narrow the theoretical gap in vulnerability analysis by bringing together different approaches. Their effort is an important contribution to the theoretical debate about vulnerability (see Ribot 1995). They do not, however, succeed in providing methods of measurement, especially at the household level.

Watts and Bohle (1993) present what they call "the space of vulnerability: a causal structure of hunger and famine." They distinguish and review three complementary approaches to vulnerability that together form an 'analytical triangle': the entitlement approach, the empowerment approach and the political economy approach (Figure 1.2). The entitlement approach has already been outlined above. The *empowerment* approach emphasises that limited command over food results from limited rights and power in three political domains: the domestic domain, referring to intra-household politics; the work domain, referring to production politics; and the public-civil sphere, referring to state politics (*ibid*: 49-51). The *political economy* approach uses a class perspective to explain the structural-historical patterns of entitlement and empowerment in a society. Commercialisation, proletarianisation and marginalisation are processes that increase inequality and vulnerability through the appropriation of surplus from direct producers (*ibid*: 51-52). Although there is some overlap between the approaches, each emphasises its own causality. Vulnerability is caused respectively by:

[28] The title of this section was taken from Watts & Bohle (1993).

Figure 1.2 The causal structure of vulnerability



Source: Adapted from Watts & Bohle (1993: 53, 54)

1. Lack of entitlement or command over food in the economic space of vulnerability;
2. Powerlessness in the political space of vulnerability; and
3. Appropriation and exploitation in the structural-historical space of vulnerability.

The space of vulnerability is the intersection where these three causal powers determine risk exposure, coping capacity and recovery potential. The three bundles of causality are not mutually exclusive: they exist simultaneously and reinforce each other. Their relative weights can explain the distribution of vulnerability and security among different regions and social groups in the real world. Vulnerable groups in society are (1) the resource poor and those vulnerable to market disturbances; (2) the powerless and (3) the exploited. Vulnerable regions are (1) the marginal regions (2) the peripheral/dependent regions and (3) the crisis-prone regions (*ibid*: 52-57).

Watts & Bohle (1993: 57-62) also present five historical case studies from South Asia and Sub-Saharan Africa in which they attempt to link the *empirical* differences in the space of vulnerability to their model. They differentiate class, livelihood system and gender, and they trace changes in the type and degree of vulnerability over different historical periods. They also differentiate livelihood system vulnerability in different years (crisis vs. normal) and seasons (slack vs. peak). Such an analysis can give very interesting insights in the evolution of vulnerability among different social groups over time, but their case studies draw on secon-

dary sources: on research that was not designed for empirical vulnerability analysis. Consequently, social groups are assigned different types and degrees of vulnerability in different epochs, based on interpretations of historical processes. I therefore see no improvement in terms of methods of measurement.[29]

Empirical analysis of the political and structural-historical space of vulnerability differs fundamentally from an empirical analysis of people's entitlement to food and livelihood in the economic space of vulnerability.[30] Powerlessness and exploitation do not cause vulnerability *directly*. They cause some people to have a limited set of entitlements that in turn produces direct food insecurity and livelihood vulnerability. The three spaces of vulnerability do not work simultaneously: two spaces relate to underlying causes, while the limited set of entitlements causes immediate vulnerability. The latter type of vulnerability can be measured, but the underlying causes of vulnerability can only be recognised, interpreted and described. It should be noted that lack of entitlement is not only caused by powerlessness and exploitation; the entitlement approach has its own cluster of causes (explaining *temporary* shifts in vulnerability) to which these two clusters of more *structural* causes can be added.

If the objective of vulnerability analysis is to design effective early warning systems against famine and disruption of livelihood systems, it should focus on entitlement to food and livelihood, taking account of the changes over time in sources of and calls on entitlement. It should be borne in mind that a target group's entitlement to food in a given year (or *proximate* food insecurity) can only be fully understood if more is known about medium to long-term changes in the baseline of entitlements.

If, on the other hand, *structural* reduction of vulnerability is the objective, then the conjunctural aspects of entitlement, though they have to be understood, can be given less attention and focus should be primarily on the processes that can explain why some groups in society have a more limited entitlements set than others.[31] Combining the two policy objectives is most desirable and perhaps imperative. If combined, vulnerability should be analysed by looking at both its immediate and its structural causes.

Vulnerability to unreliable rainfall and climate change

In this section, I will narrow the discussion on vulnerability by focusing on rural people's vulnerability to unreliable rainfall and climate change.[32] As a *hazard*, unreliable rainfall can

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[29] Watts & Bohle do not claim that they *did* develop a method of vulnerability measurement. That was not their objective: "Each of the following five cases are necessarily sketchy but our intent is to trace, comparatively, the broad contours of vulnerability across space and time" (Watts & Bohle 1993: 57).

[30] According to Adger (1999: 253) entitlements to resources are also difficult to measure because of their temporal and seasonal dimensions and intra-household transactions. In his assessment of vulnerability to climate variability and change in Coastal Vietnam, Adger uses income as a proxy for poverty, and poverty as a proxy for entitlement to resources. Adger's study will be briefly dealt with at the end of this section. According to Davies (1996), vulnerability analysis requires a careful disaggregation of poverty and detailed insight in the way people gain access to food, both in normal years and in stress years. She further emphasises the importance of seasonal variation in access to resources across occupational groups. Contrary to Adger, she therefore does not use proxies (like poverty) for vulnerability.

[31] Following Ribot's (1995: 120) line of thought: "empowerment is the ability to shape the political economy that in turn shapes entitlements."

[32] Obviously, rural people face many other sources of risk in addition. In my empirical analysis, I have tried to consider these other sources of risk as much as possible. Emphasis lies, however, on unreliable rainfall because one of the purposes of this study, and of the ICCD research project (see introduction), is to assess

either be a situation of insufficient rainfall or excess rainfall. Such a hazard will trigger food and livelihood stress when vulnerable people are affected. In many regions, unreliable rainfall is also a 'normal' characteristic of the natural environment and so is the seasonality of rainfall. In that sense, these climatic phenomena should figure, with other natural characteristics, like low soil fertility, among the *structural causes* of vulnerability.

I started the section on vulnerability by stating that natural hazards do not *cause* disaster. Hazards become disasters when they hit vulnerable people. They act as trigger events. In the vulnerability theory as outlined in "the causal structure of vulnerability", natural factors have not come to the fore; social, economic, and political factors act together to cause limited entitlements and therefore vulnerability. This notion combats physical determinism in studying disasters (Ribot 1995: 120). It might, however, introduce some kind of social or political-economic determinism (see Blaikie *et al*. 1994: 12) that overlooks the importance of the natural environment for rural people's livelihoods. Natural factors do not only act as trigger events. In agricultural settings, natural factors largely determine people's entitlement to food and livelihood in 'normal' years; their prospects for creating a surplus; and their ability to accumulate assets that reduce vulnerability. In rural areas, subsistence food production is still often the major source of entitlement to food, although this is rapidly changing as a result of livelihood diversification and de-agrarianisation (see Bryceson 1997a). Rural people who live in areas that are endowed with high quality natural resources and a favourable climate have a more reliable set of entitlements than do people in risky environments with poor soils and little wild natural resources. To summarise, natural factors can act as trigger events as well as causes of vulnerability. Underlying factors in the social, political-economic and cultural domain will have to be considered in order to explain why some communities live in areas with low-quality natural resources (marginal areas).

Ribot (1996: 16) argues that environmental (including climatic) variability and change should be incorporated in the social framework of vulnerability. "Vulnerability occurs at a junction of physical, social and political-economic processes and events. Hence, complete climate impact analyses must include this multi-causal perspective, placing climate as one causal agent among many". Reintegrating natural or environmental variables in the causal structure of vulnerability requires a careful distinction between natural factors as *causes* of vulnerability and natural factors that act as *trigger events*. Land degradation as a long-term process and 'normal' climatic variability in semi-arid regions are not trigger events. They are natural factors that make people or regions more vulnerable because they put a structural constraint on farmers' productive entitlements and their capacity to accumulate assets.

In an article about climate change and social vulnerability, Bohle *et al*. (1994) present an adjusted causal structure of vulnerability (see Figure 1.3). Following Dreze and Sen's (1989) incorporation of 'totality of rights' in the entitlement approach, the 'empowerment' and the 'entitlement' approaches are grouped together under 'expanded entitlements'. The 'human ecology' approach of vulnerability is now added to the analytical triangle. Human ecology refers to the relation between *nature* and *society*. It focuses on understanding both the risk

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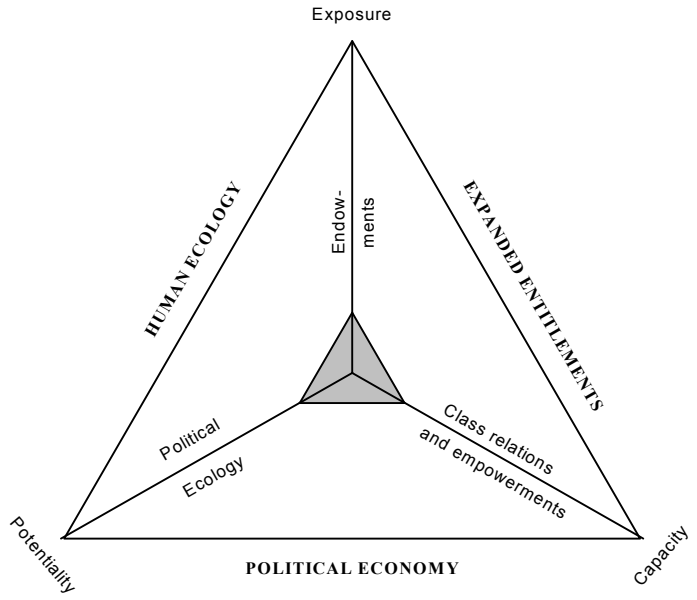
people's vulnerability and responses to climatic variability in order to inform policy interventions related to climate change. Moreover, unreliable rainfall is one of the principal sources or *the* principle source of risk for rainfed agriculturalists in my research area.

environment that vulnerable groups confront, and the quality of their resource endowments, including their *natural* resource endowment. This adjusted model is more suitable for studying rural people's vulnerability to unreliable rainfall and climate change than the one presented above. Bohle *et al*. (1994: 42) position vulnerable livelihood groups in their model according to the three causal powers that determine vulnerability. Refugees, cultivators, pastoralists, urban poor and wage labourers clearly face different types of vulnerability. Subsistence farmers (the livelihood group I studied) are positioned in the human ecology space of vulnerability because they are vulnerable to climatic perturbations and because their livelihoods depend to a large extent on natural resources. A degraded or resource-poor natural environment exacerbates farmers' vulnerability. Their vulnerability to food entitlement decline results from the low productivity of their livelihood system, rather than from a situation of exploitation or powerlessness. Within livelihood groups, certain social groups (women, the elderly, new settlers, etc.) can be especially vulnerable due to limited rights and powerlessness (Bohle *et al.* 1994: 42).

Figure 1.3 The causal structure of vulnerability after integration of the 'human ecology' approach



Source: Bohle *et al*. (1994: 39)

Adger (1999: 251) has tried to assess vulnerability to climatic variability and change in coastal Vietnam. He distinguishes between *individual* and *collective* vulnerability. Individual vulnerability is determined by "access to resources and the diversity of income sources, as well as by social status of individuals or households within a community". Collective vulnerability of a nation, region or community is determined by "institutional and market structures, such as the prevalence of informal and formal social security and insurance, and by infrastructure and income." An additional characteristic of collective vulnerability is high inequality in access to resources. Adger's collective vulnerability is similar to what Cannon (1990: 5) has called the *social-protection* element of vulnerability. It concerns the level of 'preparedness' of the state and civil society to reduce the impact of a hazard. Adger uses poverty indices and the proportion of income dependent on risky (climate related) resources as quantitative indicators of individual vulnerability. GDP per capita and income inequality are used as quantitative indicators (proxies) for collective vulnerability. In his study, the quantifiable factor that is related to climate is the degree to which household income activities are directly dependent on the climate.

Adger found that some changes in the macro-economic and institutional environments (e.g. liberalisation, increased income inequality and erosion of collective measures to protect against coastal storms) increased vulnerability. The rolling back of the state had had an ambivalent impact on vulnerability. It had reduced individual vulnerability thanks to higher incomes from commercial crops. It had, however, increased collective vulnerability because it had undermined existing institutional safety nets (Adger 1999: 266-267).

Adger's distinction between individual and collective vulnerability is valuable because it conceptually separates *internal*, household-related variables and *external*, area- or community-related variables (see also De Bruin & Van Dijk 1998: 1, and Dietz 1992: 39). The natural environment, the economic environment, the socio-cultural environment and the politico-institutional environment together determine the collective vulnerability or security of a certain area or community. In comparative vulnerability research between agro-ecological zones or between central and peripheral regions, it is useful to distinguish between individual and collective vulnerability. There are secure environments and risk-prone environments. People living in politically marginalized areas with infertile soils and virtual absence of alternative income opportunities are *collectively* vulnerable because these characteristics of the local environment affect everybody. This does not mean that all people in that area face equal vulnerability. The extent to which people are affected when a hazard strikes also depends on their individual vulnerability. Some people in a region or community may even benefit from the vulnerabilities of others in times of stress. There is a differential distribution of individual, household and livelihood system vulnerability *within* the area. This distinction between individual and collective vulnerability has its parallel in terms of risk. *Idiosyncratic* risks affect specific individuals or households (at the micro level). Examples are illness, divorce, cattle theft or loss of property and shelter in a fire. *Covariate* risks affect a whole village or region (at the meso-level). Examples are droughts, earthquakes and plagues (see Baas *et al*. 2001 and Nijzink 1999).

Chapter 3, 4 and 5 of this book deal with vulnerability and risk-proneness at the area level. Chapter 6, 7 and 8 address vulnerability and responses at the individual, household and family level.

Livelihood strategies

Linking vulnerability and responses

As I mentioned earlier, I have not found many empirical studies on vulnerability. There is an important exception, however: Davies' (1996) research in Sahelian Mali. Davies' study can be considered a detailed extension of the entitlement approach. It is an important work because it combines a very strong theoretical framework with extensive data gathering. It also pays attention to the historical processes that have caused present-day vulnerability. Davies links responses to food entitlement decline with different types and degrees of vulnerability and she traces changes in livelihoods over the past three decades, following the Sahelian droughts of the 1970s and 1980s.

According to Davies (1996: 22-23), the notion that disasters are not caused by hazards, but by the underlying causes of vulnerability can result in a static approach to vulnerability. This approach does not consider how the productive capacities of livelihood systems vary from

year to year and from season to season. In Davies' terminology: it looks at *structural* vulnerability (more or less permanent) while neglecting *proximate* vulnerability (changing from year to year and from season to season).[33]

Table 1.1 Nature and level of vulnerability

Vulnerability	
Nature	**Level**
Structural vulnerability	Differential vulnerability
Proximate vulnerability	Livelihood System vulnerability

Source: Davies 1996: 30.

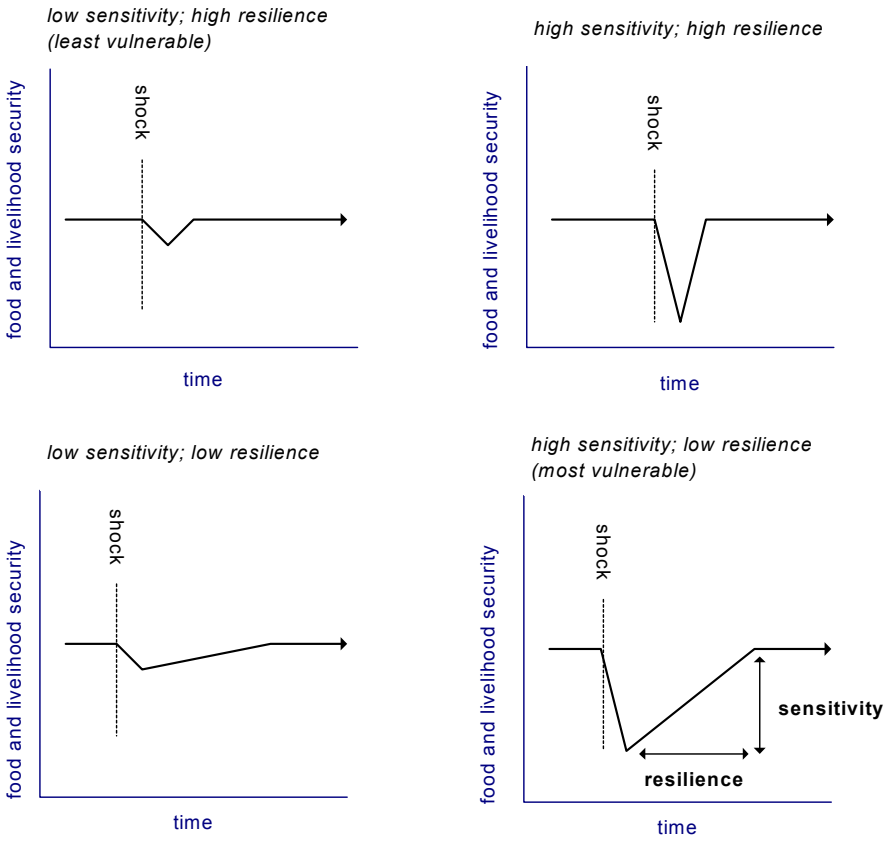
Davies further distinguishes *livelihood system* vulnerability and what Swift (1989) has called *differential* vulnerability. Both can be either proximate or structural. Differential vulnerability concerns differences in vulnerability between households within livelihood systems and between individuals within households. It results from physical characteristics (e.g. children under five, crippled people), type of household (female-headed, high dependency ratios), status in the community, wealth, etc. Livelihood system vulnerability results from the structural and proximate productive capacity of livelihood systems. Conventional early warning systems often monitor structural differential vulnerability (Davies 1996: 23). Davies' study, on the contrary, primarily focuses on livelihood system vulnerability. Secondarily, she analyses differential vulnerability to explain differences in vulnerability between individuals and households *within* livelihood systems. Table 1.1 shows the different types of vulnerability. An individual or household can fall into more than one of these categories: the more categories, the more intense the vulnerability. A sick child of poor Sahelian farmers in a drought year, for example, falls in all categories. Structural differential vulnerability arises from the fact that the individual is a child and that the household is poor; proximate differential vulnerability because the child is sick; structural livelihood system vulnerability because the household farms in the dry and resource-poor Sahelian zone where the margin around subsistence is small even in 'normal' years and proximate livelihood system vulnerability because in a drought year, the productive capacity of the livelihood system is even lower than usual.

By looking at people's vulnerability from the point of view of the livelihood systems they are part of and by studying how people in different livelihood systems gain access to food in different seasons of good years and bad years, one can identify why and how different groups of people face shortages on a particular moment. With this understanding, early warning systems against famine and policy interventions to reduce vulnerability become more viable.

To understand how livelihood systems become more vulnerable – or more secure – over time, we have to take account of two dimensions of vulnerability: *sensitivity* and *resilience*. Sensitivity concerns the intensity with which shocks are experienced. Resilience is the capacity to bounce back to a normal state after a crisis (see Figure 1.4). Secure livelihoods are characterised by low sensitivity and high resilience. Vulnerable livelihood systems are highly sensitive and not very resilient. In highly sensitive livelihood systems, negative shocks easily cause food insecurity. In livelihood systems that are characterised by low sensitivity, the impact of a negative shock can easily be absorbed by drawing on available buffers.

[33] Similar distinctions can be found elsewhere: Kates & Millman (1990) write about "underlying processes" and "immediate causes" and Bohle *et al*. (1994) talk of "long-term structural baseline" and "short-term conjuncttural condition".

Figure 1.4 Sensitivity and resilience



Source: Adapted from Davies (1996: 27-28)

Households in resilient livelihood systems are able to bounce back to the level of livelihood security before the shock, while in livelihood systems characterised by low resilience, it will take a long time before households recover from a shock. Some households will not fully recover and their livelihoods become more vulnerable. People will try to increase the resilience and reduce the sensitivity of their livelihoods. The livelihood systems that were analysed by Davies had experienced a reverse trend, however. In the past three decades, they became more sensitive, less resilient and thus more vulnerable (Davies 1996: 25-29).

In Davies' framework, households in secure livelihood systems are able to meet food needs in most years through their primary production. Secure crop cultivators, for example, will be able to harvest at least a year's food supply. Income from secondary activities can be used to accumulate assets and to meet non-food consumption needs. In an exceptionally bad year, when primary production does not meet food needs, secure households can cope with this transitory food shortage by shifting emphasis to secondary activities; by engaging in tertiary activities; by drawing on assets and/or by temporary changes in consumption patterns.

The following year, *if* conditions are better, secure households will be able to recover without a fundamental shift in their entitlement base.

In structurally vulnerable livelihood systems, in contrast, households are not able to meet food needs through primary production in most years. Their food insecurity is chronic. They face an annual food-gap that has to be filled by engaging in secondary and tertiary activities. They have a limited capacity to accumulate, even in good years. In an exceptionally bad year, the prospects for coping are limited because their asset base is small and they already depend on secondary and tertiary activities in normal years (Davies 1996: 43). The following example will illustrate this difference between secure and vulnerable households.

In secure livelihood systems, seasonal labour migration, as an *unusual* secondary activity, can be an effective strategy to cope with food stress in an exceptionally bad year. It can supplement subsistence food production, reduce household consumption needs and thus fill the – exceptional – food gap. In vulnerable livelihood systems, in contrast, young men already migrate seasonally each year to fill the food gap, so in an exceptionally bad year, seasonal labour migration alone cannot offset stress. Among vulnerable households, seasonal labour migration is no longer a *coping* strategy. It has become permanently integrated in the normal cycle of activities. This is what Davies calls *adaptation*: permanent changes in livelihoods. "Proximate security is the ability to cope, whereas proximate vulnerability is the necessity for constant adaptation" (Davies 1996: 29). In the face of a particularly adverse event, vulnerable households have to tap additional sources of entitlement and/or they have to reduce calls on entitlements. Such additional responses are often erosive, i.e. they endanger the future livelihood security. In such situations, vulnerable households do not *cope*. They become more vulnerable in the face of a new cycle of stress (Davies 1996: 55-59).

In this section, I have used some insights of Davies' study in an attempt to link the concept of vulnerability with the concepts of coping and adapting. These latter concepts will be further elaborated below. But first, a third concept of responses has to be introduced: *insurance* strategies. In the last section of this chapter, I will bring the concepts of vulnerability, insurance, coping and adapting together in a *conceptual framework* for studying 'farm household vulnerability and responses to normal constraints, unusual events and changing conditions'. The three concepts of responses (insurance, coping and adapting) together form the overall livelihood strategies of households.

Insurance strategies and coping strategies

Besides coping and adapting, a third concept of responses concerns what people do to *avoid* food and livelihood stress in the – nearby or distant – *future*, that is, before an adverse event hits them. This concept can be labelled 'insurance strategies'. In Davies' study, insurance strategies receive less attention than coping strategies and adaptation. Davies quotes Corbett's (1988: 1107) "sequential uptake of coping strategies" in which the first stage of coping is called insurance mechanisms. While for Corbett insurance *mechanisms* are an early stage in household coping strategies, Davies separates insurance *strategies* and coping strategies. She defines insurance strategies as "those activities undertaken to reduce the likelihood of failure of primary production" (Davies 1996: 47-48).[34] In the case of crop cultivators, this would

[34] When presenting her empirical findings of insurance, coping and adaptation, Davies (1996: 239-246) seems to have abandoned this narrow definition of insurance strategies. Insurance strategies are now adopted more

concern those activities undertaken to avoid – partial – crop failure. This typically includes farmers' risk avoidance in cropping strategies, but it can also include agricultural intensification and extensification.[35] When farmers are confronted with declining soil fertility and deteriorating climatic conditions, and the likelihood of not harvesting enough to meet consumption needs increases, they have to take countermeasures. The difference between insurance strategies on the one hand and insurance mechanisms on the other, is that insurance strategies are adopted *before* an adverse event occurs and insurance mechanisms 'start working' when people are confronted with the impact of such an event. The former are preventive and the latter are curative.[36]

Coping can be defined as "a short-term response to an immediate and unhabitual decline in access to food" (Davies & Hossain 1993: 60). "Coping strategies are employed once the principal source of production has failed to meet expected levels, when insurance strategies have failed or are failing and producers have to literally cope until the next harvest" (*ibid*: 65). Similar distinctions between insurance and coping are made by Ellis (1998: 13) who speaks of 'ex-ante risk management' and 'ex-post coping with crisis' and by Dietz & Van Haastrecht (1997: 53-54) who distinguish 'preventive' coping strategies and 'curative' coping strategies.

What Corbett (1988: 1107) considers insurance *mechanisms* are coping strategies that do not affect future sources of food and livelihood. Typical examples are the disposal of non-productive assets, the collection of wild foods, reliance on inter-household transfers and seasonal labour migration.[37] According to Corbett, insurance mechanisms are often employed to cope with *predictive* and non-severe risks. The difference between Davies and Corbett becomes clear here. For Davies, coping strategies are responses to *unhabitual* events, while in Corbett's terminology, people also cope with *predictive* and non-severe risks. The period over which these insurance mechanisms (as coping strategies) will be adequate depends on the extent to which the household has anticipated crisis during good years.

It is this *anticipation* or preparation of insurance mechanisms or coping strategies that I have added to Davies' (1996: 47-48) definition of insurance strategies ("those activities undertaken to reduce the likelihood of failure of primary production"). Insurance strategies[38] are thus defined as those activities undertaken to avoid future livelihood stress and food shortages. It should include those activities undertaken to reduce the likelihood of future

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generally to offset potential risk of entitlement failure in the different entitlement bases (production, assets, exchange).

35 "Agricultural intensification is increased average inputs of labour or capital on a smallholding (..) for the purpose of increasing the value of output per hectare." (Tiffen 1994: 29). Agricultural extensification is expansion of the acreage under cultivation (increased farm size per capita).

36 The distinction between preventive and curative was taken from Dietz & Van Haastrecht (1997: 53-54).

37 In fact, even these actions affect future income sources. If you sell a bicycle or your goats, you cannot sell them again. What is meant here is that these actions do not seriously affect the productive capacity of the household.

38 'Strategies' in general *could* be defined as "systematic or purposeful behaviour, using all available means to reach a long-term goal" (Dietz 1992: 37). In coping strategies research, however, the term 'strategy' is used to indicate that people have different *options*. They have to make choices in the pursuit of food and livelihood security. In other words, they have 'room to manoeuvre'. This seems logical, but in research, it has not always been acknowledged (*ibid*).

entitlement failure altogether, rather than a failure of primary production alone.[39] Investing in food stores, livestock, saleable assets, human resources and social networks are insurance strategies; livelihood diversification is an insurance strategy because it enhances a household's portfolio of options to deal with crises; 'playing the market' (buying and selling when prices are favourable) is an insurance strategy against exchange entitlement failures, etc. In this variety of insurance strategies, a division can be made between insurance strategies that are meant to:

1. Avoid the risk of primary production failure;
2. Diversify the sources of food and livelihood;
3. Create a buffer against future food and livelihood stress and
4. Offset seasonal shortages.

In the case of subsistence farmers, the first category of insurance strategies determines whether or not a household will be self-sufficient in its food production in a given year. The second category determines to what extent households are dependent on primary production. Well-prepared farm households can fall back on secondary and tertiary activities when primary production fails. The third category partly determines the success of coping strategies in times of crisis. When risk has not successfully been avoided and people are faced with food stress, people will start to depend on the buffer they have created in better years. Such a buffer does not only consist of tangible assets. It includes social networks or social support mechanisms. A strong social network is an important asset for people who have to cope with food stress. The construction of buffers in good years is an insurance strategy. The depletion of buffers in bad years is an insurance mechanism or a coping strategy. This system of investment in and exploitation of buffers is relatively straightforward in the case of food stores and livestock. The case of social networks, on the other hand, is more complicated. Investment in human resources, like education, is an insurance strategy that does not so much follow this pattern of accumulation and depletion. Investment in education is a long-term strategy that often – but not always – continues in bad years.[40]

In general, however, people try to increase their buffer capacity in good years. In crisis years, insurance mechanisms function as an early stage of coping behaviour. Some early coping strategies do not depend on insurance strategies and do not show the same pattern of accumulation and depletion, however.[41] It is confusing to equally call these early coping

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[39] Corbett herself (1988: 1100), while reviewing some case studies of famine in South Asia, states that "farmers living in a drought-prone area will develop *self-insurance strategies* to minimise risks to their food security and livelihoods." But she does not elaborate on the distinction between insurance mechanisms and insurance strategies, and sometimes she uses the two interchangeably.

[40] As a long-term insurance strategy, investing in formal education can be very rewarding, for example, when it enables a son or daughter to find a secure, formal sector income.

[41] Examples are seasonal labour migration, collection of wild foods and reduction of consumption. It could, however, be argued that these activities also require a certain anticipation, preparation and/or experience to be successful. Seasonal labour migrants use networks and contacts to find relatively rewarding employment and cheap accommodation. If parents do not transfer knowledge of wild plants, new generations will not be able to adopt wild food collection effectively as a coping strategy. Similarly, it could even be argued that people can only reduce consumption levels during peak agricultural labour when they have steeled their bodies and souls against hardships. This requires a certain preparation or training, too.

strategies insurance mechanisms, as Corbett (1988) does. It should also be noted that many households do not only insure against food shortages in bad years, but also against expected, normal food shortages in the lean season (the fourth category of insurance strategies). There is an intra-annual cycle of seasonal insurance strategies and seasonal coping strategies, especially in vulnerable households.

When people are confronted with a certain hazard, production and exchange failures can sometimes successfully be avoided through risk-avoidance in primary production and by relying on secondary productive activities. When these measures are not adequate, people will have to cope with the resultant food and livelihood stress. If it is not a very severe crisis, most people will be able to cope by drawing on the buffers that they have created; by finding additional sources of entitlement to food and/or by altering consumption patterns, without jeopardising future livelihood security. These coping strategies can be labelled 'non-erosive'. If the crisis is more severe, for example when an area is hit by drought over several consecutive years, or when several hazards strike simultaneously, the set of non-erosive coping strategies will soon be exhausted and people will have to take more drastic actions to combat the crisis. These actions can seriously affect people's future livelihood security and these 'coping strategies' can be labelled 'erosive' (De Waal 1989, in Davies 1996: 54). The label 'erosive coping strategy' contains a contradiction in terms, however. 'To cope' literally means: to deal successfully with something difficult: to manage.[42] When a certain response to entitlement decline jeopardises a household's future food and livelihood security, this household is not 'coping'.

Coping strategies and adaptation

In the 1960s and 1970s, poor people were often approached in social science as passive victims who were economically exploited and politically marginalized. In this view, they themselves could not do much to improve their lot or to protect themselves against disaster. In the 1980s, it was realised that even very poor people have different livelihood *options* (Dietz *et al.* 1992: 37). Research started to focus on how some people managed to overcome extreme difficulties associated with recurrent drought and other stresses, while other people did not. Answers to this difficult question were found both in differences in vulnerability and in coping strategies. Many questions remain unanswered, however. In the case of coping with drought, Webb & Reardon (1992: 230) argue that most studies have tried to identify *general patterns* of coping rather than differentiating between agro-ecological zones, villages and types of household. In the 1990s, scientists have endeavoured to fill this gap in our understanding of how different types of households deal with stress.

It was often assumed that coping strategies show a sequential uptake, and that increased knowledge about the sequence of uptake could alert early warning systems against famine. There are several caveats in the monitoring of coping strategies for early warning, however. Sequential uptake suggests that there are discrete stages of response to food deficits. Each response (or cluster of responses) is adopted and exhausted before the household moves on to the next response. In reality, this is not the case, as Devereux (1993: 54) argues, because different responses do not have the same 'time relevance'. Coping strategies can involve discrete, 'only once' events (e.g. distress migration); a series of discrete events (e.g. animal

[42] Oxford Advanced Learner's Dictionary, fifth edition, 1995.

sales); or continuous processes (e.g. rationing of consumption). Although there may be a certain order in people's responses to stress, it should be noted that different responses occur simultaneously, as parallel processes rather than sequential events. Besides this practical critique on the 'sequential uptake approach', Davies & Hossain (1993: 61) argue that coping strategies are too often seen as an "inherently good thing". Their concern centres on four points:

- 'Coping strategies' is often used as a catch-all term for anything people do over and above primary productive activities. (..)
- Focusing on coping strategies in situations of food stress can imply that people *do* cope and thus that food insecurity is a transitory phenomenon. (..)
- While coping strategies may be useful in the short-term (..), they may be bad for longer-term development. Implicit in coping strategies is that the entire working life of subsistence producers is taken up in acquiring food, enabling people to stand still, but preventing them from moving ahead. A focus on coping strategies also hides the (increasing) need of rural producers to develop livelihood strategies which will provide for greater numbers of people in the future.
- Coping strategies are not necessarily economically and environmentally sustainable. (Davies & Hossain 1993: 61).

Davies argues that people's coping strategies are not cast in stone: that they change over time. By focusing on coping strategies in the conventional way, structural changes in people's livelihoods and worsening conditions might be overlooked. To preserve the usefulness of the concept, both in monitoring proximate food insecurity and in strengthening people's capacity to avoid disaster, coping strategies have to be defined more narrowly and distinguished from adaptation. In Davies' definition, coping strategies concern people's short-term responses to *unhabitual* food decline. Genuine coping strategies are abandoned once the worst stress is over and households start to recover[43] (Davies & Hossain 1993: 62). Whether a certain response should be labelled 'coping' or 'adapting' depends on the intensity, timing, effectiveness and sustainability of the response, and most of all on the reason why the household adopts this particular response (the motivation). This differs per household, per livelihood system, per region and over time.

Many farm households in dryland West Africa are confronted with food shortages almost every year. This usually occurs in the lean season, prior to the new harvest, when grain stores are running low. As mentioned above, people also have insurance and 'coping' strategies to deal with these predictive, seasonal shortages. In Davies' view, these livelihood systems are structurally vulnerable and the strategies to fill the annual food gap are not coping strategies, but adaptive strategies because they have become permanent features of livelihoods. Adaptation concerns permanent changes in the mix of ways in which food is acquired, irrespective of the year in question (Davies & Hossain 1993: 60).[44] It is a bit confusing, however, to apply the label 'adaptive strategy' or 'adaptation' to responses that people have already been adopting for many years to fill the food gap. Adaptation implies change. If we compare two static periods (the 'present' and the 'past'), it is clear that permanent changes in livelihoods

[43] Although I have not found any studies on it, people must also have specific 'recovery strategies' which they adopt in the aftermath of a crisis.

[44] See below for a more detailed definition.

are adaptations. In an ongoing, dynamic analysis of the ways in which people gain access to food and livelihood, an adaptive strategy in one year becomes part of the overall livelihood strategy in the following years.

Longhurst (1986: 27-33) distinguishes *seasonal* coping strategies from *famine* coping strategies, and Campbell and Trechter (1982) distinguish between coping with expected and *un*expected food shortages. They acknowledge that the two are closely linked, and that it is sometimes difficult to draw a line between these two categories. For crop cultivators, there is a continuum between a bumper harvest and total crop failure. Given the same agro-climatological conditions, some households may face a non-severe seasonal shortage while other households in the same area may face real hunger conditions. Moreover, famine coping strategies are often an intensification of seasonal coping strategies. Similarly, Dietz (1991: 87) argues that "a normal hunger season during a year with average rainfall and a severe hunger season as a result of drought are not two distinct categories. In practice it is a difference between few and many households coping with a crisis situation". He further argues that when a crisis is very severe, it is confusing to speak of 'coping' strategies. 'Survival' strategies would be a more appropriate term (*ibid*: 88). Indeed, one can question whether we should speak of 'coping' when a household sells all its livestock at low prices to buy grains, while at the same time eating tree leaves, betrothing a daughter, going hungry and/or endangering next year's harvest with 'hunger trips' for temporary low-yielding wage work during the farming season. People lose, if not their lives, at least (part of) their means of livelihood, making them destitute. If coping means *successfully* dealing with difficulties, it is quite clear that people in these situations do not cope.

In Davies' study in Mali, vulnerable households are those that are not able to meet a year's food demand through primary production. Unlike most scholars, Davies does not regard livelihood diversification as a positive development *per se* because it is often a *forced* adaptation to deteriorated conditions. As Davies (1996) argues: "Diversification in the Sahel has followed a pattern of change that makes people more vulnerable. Activities that in the past were only carried out in periods of stress (as coping strategies) are now pursued every year, limiting the possibilities of coping in the next cycle of stress. They have become part of the normal livelihood strategies." In the Sahelian zone of Burkina Faso, Reardon *et al*. (1988: 1065) found that "almost all households rely to a certain extent on [food] purchases", and incomes are highly diversified in order to "insulate food consumption from broad swings in the local cereal sector", caused by climatic variability. They found that most households were production deficient. Nevertheless, the majority was food secure. They relied more than 75% on non-cropping income, and because income opportunities were multi-sectoral, they showed low levels of covariant risk. It seems that these households have quite *successfully* adapted to high levels of inter-annual rainfall variability, mostly through diversification.

In a review article about rural livelihood diversification, Ellis (1998: 2-3) summarises some of the conflicting findings in diversification research. Sometimes livelihood diversification is found to be a "deliberate household strategy" and sometimes it is an "involuntary response to crisis", depending on location and the economic status of households. Rural livelihood diversification is defined here as "the process by which rural households construct a diverse portfolio of activities and social support capabilities in their struggle for survival and in order to improve their standards of living" (*ibid*: 4).

To avoid confusion, it is necessary at this point to define adaptation or adaptive strategies. In Mortimore's (1989: 3) important study about adapting to drought in northern Nigeria, "adaptation is understood as a sequential process in which solutions to problems become in turn a part of the next problem." Mortimore does not use the concept of coping strategies because in the livelihood systems he studied, uncertainty was the norm rather than an aberration. Responses to drought in his study are short-term adaptations whereas in the theory outlined above, adaptation was a longer-term or even (semi-) permanent phenomenon. A definition of livelihood adaptation, provided by Davies & Hossain (1997: 5) takes into account that adaptation – like livelihood diversification – can be both positive and negative and distinguishes adaptation more explicitly from coping:

> ... livelihood adaptation [is] the dynamic process of constant changes to livelihoods which either enhance existing security and wealth or try to reduce vulnerability and poverty. Positive adaptation is by choice, can be reversed if fortunes change, and usually leads to increased security and sometimes wealth. It is concerned with risk reduction and is likely to involve an intensification of existing livelihood strategies or a diversification into neighbouring livelihood systems. (..) Negative adaptation is of necessity, tends to be irreversible, and frequently fails to contribute to a lasting reduction in vulnerability. It occurs when the poor are forced to adapt their livelihoods because they can no longer cope with short-term shocks and need to alter fundamentally the ways in which they subsist. (Davies & Hossain 1997: 5).

In Davies' research area, adaptation occurred when coping strategies became permanently incorporated in the normal cycle of activities (Davies 1996: 35). But, as becomes clear from her definition of adaptation, this is not the only way in which adaptation can occur. People can also structurally improve their livelihood security, for example by investing in draught animals and a plough, by starting a dry season garden, by buying a sewing machine to become a dry season tailor, through the geographic spread of social networks, etc. This type of adaptation can more generally be called 'livelihood strategies' (see Dietz *et al*. 1992: 38). Some – but not all – of these strategies are indeed intensifications of earlier coping strategies, but if they help people to accumulate and diversify more, it makes their livelihoods more secure. Even though these activities can no longer be used as genuine coping strategies, the need to cope with a crisis will arise less frequently. If these adaptive strategies result in or are accompanied by a drastic decline in own food production, household become less vulnerable to climatic stress, but more vulnerable to market perturbations. Research at household level should be able to identify how the balance between primary productive capacity and livelihood diversity evolves over time.

Many adaptive strategies involve a more efficient time and labour management, especially in areas with a marked seasonality in agricultural activities. Instead of 'idling'[45] between one year's harvest and next year's land preparation, farm households engage in other income generating activities. This is not necessarily an improvement in *quality of life* for everybody. An intensification of livelihood strategies will decrease leisure time and rest.

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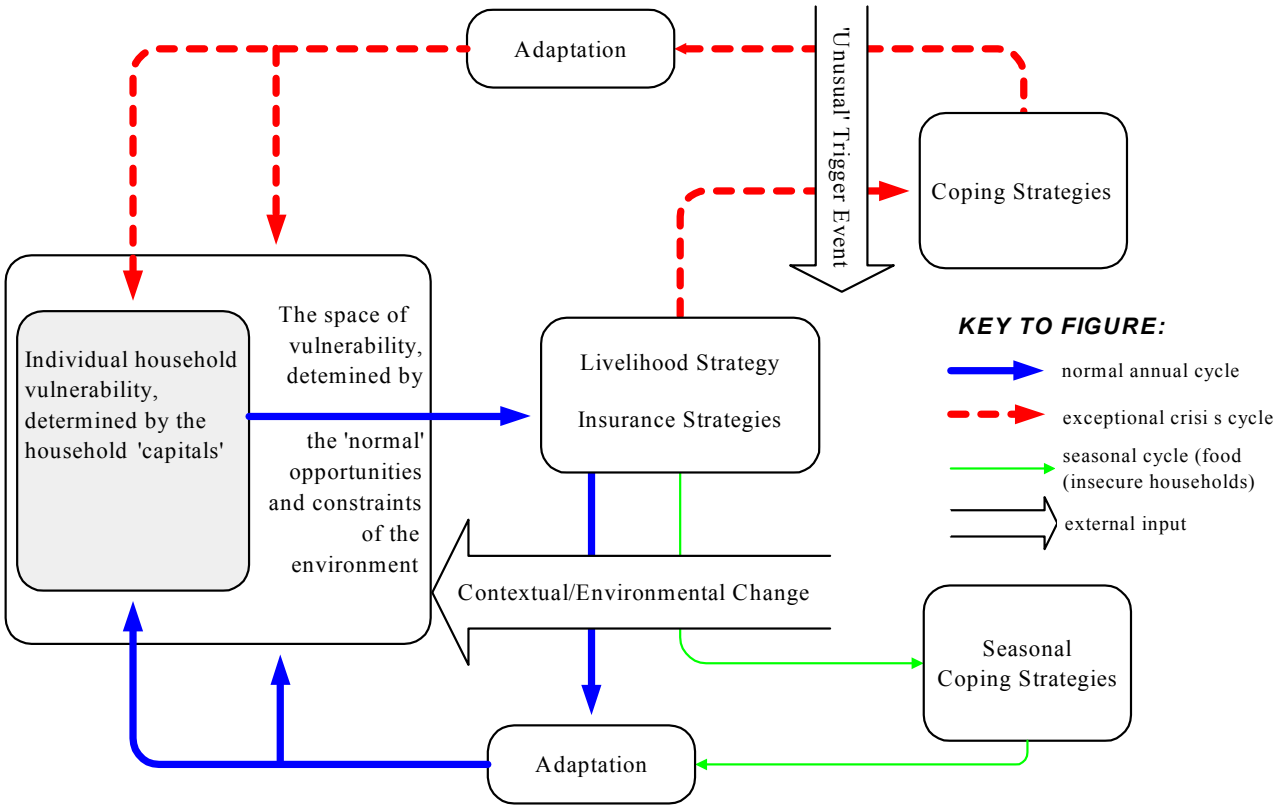
[45] In northern Ghana, traditionally, this period was used to build and especially repair the mud and brick houses that had been damaged in the rainy season. More and more people nowadays invest in 'zinc houses' that do not need that much maintenance. In 'the olden days', there were of course also other dry season activities, like hunting, basket weaving, pot making, etc.

Conceptual framework

In this section, I will present a conceptual framework (see Figure 1.5) that seeks to combine the theory on vulnerability and responses to stress as outlined in this chapter. I will use this framework in the empirical analysis of farm household vulnerability and responses to unreliable rainfall, drought and climate change in the northwest Ghana. The conceptual framework is an iterative model with an annual cycle. The units of analysis are individual farm households. For non-farm households and for farm households in areas with two growing seasons, similar conceptual models can be designed with shorter cycles of production and consumption. The model takes into account that many farm households in the research area have to deal with *seasonal* food shortages even in normal years: that a good number of farm households are not self-sufficient in their food production. Their entitlements to food through primary production are inadequate. To supplement their subsistence production, these farm households adopt *seasonal* coping strategies.

Figure 1.5 Conceptual framework: Farm household vulnerability and responses to normal opportunities and constraints, unusual events and changing conditions



In years of unusual stress (e.g. in drought years), the cycle is broadened to include 'genuine' coping strategies in the narrow definition of Davies. Some trigger events concern idiosyncratic risk while other events concern covariate risk. In a given year, some households may be confronted with an unhabitual idiosyncratic stress whereas other households will only have to deal with normal constraints. The model assumes that it is possible to distinguish between normal opportunities and constraints, unusual events and gradually changing conditions, and that it is possible to distinguish between seasonal coping strategies in 'normal' years and genuine coping strategies in 'exceptional' years. Davies' study shows that this is very difficult, but not impossible.

The conceptual framework is dynamic in the sense that the outcome of responses in one year determines the household's point of departure in the next year. In theory, it is possible to follow and quantify a household's livelihood situation throughout the household history and thus 'fill in' the model for a real-world situation. A more feasible possibility is to use the model to reconstruct a household's or an individual's livelihood history from the past to the present: to reconstruct its 'pathway' (see chapter eight). The conceptual framework also takes into account that the adopted strategies of the farmers in the research area have an impact on their environment. For an elaboration of the feedback of human activity to 'the environment', see Leach *et al.* (1999: 219).

Before we turn to the methodology chapter, I will briefly explain how the model works. The model has three cycles: a cycle for 'normal' years in which no unusual trigger events occur; a cycle for years in which the household has to cope with an unusual trigger event; and a cycle for households that have to cope with seasonal food shortages every year. The model is fed with external input in the form of gradual changes in the opportunity structure and more sudden shocks (trigger events) that occur in the area in which the household lives. A household's livelihood vulnerability is determined by internal variables (household capitals) and external variables (characteristics of the environment it lives in). Together, these variables determine how the household can make a living in normal years and insure against unusual trigger events. In the absence of a trigger event, the household will still adapt its livelihood strategies to more gradual changes in the opportunities and constraints of the environment. When a trigger event occurs, the household characteristics, the opportunities and constraints of the environment and the adopted insurance strategies together determine how a household can cope with the event.

So far, the model is suitable for analysing the livelihoods of relatively secure households in a risk-prone environment; people who have to cope only with unusual events ('genuine' coping strategies). As we will see in the empirical chapters in this book, however, an important segment of the society has to deal with seasonal stresses almost every year. Their 'normal' annual cycle includes a set of seasonal coping strategies.

In this framework, adaptation concerns both structural changes in livelihoods as a response to modified conditions, and short-term shifts in the entitlement base. In the latter sense, adaptation is not really an active strategy. It rather functions like a *balance* between a household's entitlements to food and livelihood (or resource base) at the beginning of an annual cycle and its performance in the rest of the year.

An extremely simplified example can illustrate the mechanism: A farm household with five household members owns six goats and two pigs and it has two bags of millet in store. In

the year under investigation, the rains are not very good and the household harvests seven bags of millet, which is not enough to feed the family until the next harvest. They need ten bags of millet to secure their food needs. To cope with the food gap, they eat the millet they have in store; they send a son on seasonal labour migration and they sell one pig and two goats. Five young goats are born. With the revenue of the animal sales, the household head buys four bags of millet. With the off-farm income of the son, they cover the non-food expenses. At the start of the following farming season, the household will have three bags of millet in store, nine goats and one pig, which is more than they had a year before. It is not a fundamental or permanent change in the household's livelihood, however. It merely concerns the balance of a year's production and consumption. If the balance is positive in several subsequent years, the household becomes more secure because they increase their buffer capacity. They may decide to invest the accumulated surplus in productive assets, like bullocks and a plough. This can be considered a fundamental change in their livelihood. If the balance is negative in one isolated year, the resource base decreases and the household will become slightly more vulnerable. No fundamental or permanent change in the household's livelihood occurs, however. If the balance is negative in several subsequent years, or if the balance is extremely negative in one year, the household's security endowment portfolio will substantially weaken and the household will become more vulnerable. If, in this state of vulnerability, the household is confronted with a particularly adverse event, the household may be forced to sell its land and migrate to an urban centre. This would be a fundamental and possibly permanent change in the household's livelihood.

2

Research methods

In this chapter, I will cast light on a side of the research that often remains too dark: the methodology. There will be some chronological order in my account. After two introductory sections, the research questions will be presented. In the following sections I will describe the methods I have used to answers these questions.

Before arrival

Before travelling to Ghana in September 1999, I worked on the research plan for about three months. A big task was to gather and study relevant literature. I assumed that it would be difficult to find international literature in Ghanaian libraries. Ghanaian reports, literature and policy papers, however, would be easier to find in Ghana than in the Netherlands. I had decided to do the writing in Ghana, and since my fieldwork touches on several scientific debates, I was compelled to gather broad international literature before departure. There were several reasons to do the writing in the research area, and there were several reasons why, in the end, I did only part of the writing there. These will be discussed in the final section of this chapter.

In September 1999, I left my home to travel to Ghana over land. The journey took me over the dry *Meseta*-plain of Spain, through the Sahara desert of Morocco and Mauritania and the semi-arid regions of Senegal, Mali and Burkina Faso, to arrive in Northern Ghana exactly one month later. Since it has been predicted that the climate in dryland West Africa will become drier, it was a good experience to travel over land through some areas that presently receive much less rainfall than my research area does. Unfortunately, travel time was limited and I was forced to travel from station to station and consequently from city to city. In the end I wasn't able to visit many rural areas to talk with farmers and other specialists. I did manage to see rural Senegal, Mali and Burkina Faso through the windows of buses, lorries, a train and from the back of open 'bush-taxis'. At times, my fellow passengers were able to answer some of my many questions.

After arrival

In October 1999, I arrived in Nandom where I met my friend Arjen Schijf who had just arrived a couple of days earlier. He was there to conduct fieldwork similar to mine among semi-urban households in Nandom Town. We took enough time to get to know the area and its people before starting any structural data gathering. We arranged to get bicycles, the most common means of transport in the relatively flat Nandom area. We were introduced to the people of the Nandom Agricultural Project (NAP) and the people of the Producer Enterprises Promotion Service Centre (PEPSC). Both NGOs have a Catholic background and are managed by Catholic brothers[1], one of whom is Dutch: Brother Wim Luyten. Another Reverend Brother (Dick), who was living in Wa, is my own uncle. This gave me a good entrance to their activities. Moreover, it was nice to have somebody to fall back on. We met many key informants in the place where we stayed during the first six weeks. This was the former residence of the Catholic Brothers, now a guesthouse and beer bar. Many white collar workers, local elite and other 'well-to-do' people frequent this place, and were always very willing to share their knowledge and ideas about the local economy, traditions, history and, of course, the climate with us. I also tried to meet the Paramount Chief of Nandom, but I gave up after four appointments had been cancelled. In the first six weeks, I dedicated most of my time to the following:

1. gathering information and maps in the district capital Lawra and the regional capital Wa;
2. exploring the research area by cycling through the savannah and talking to people;
3. watching the farmers harvest, dry and store their late crops;
4. learning some words and especially greetings in *Dagaare* language;
5. finding an interpreter; and
6. organising accommodation in one of the villages outside Nandom Town.

I wanted to live with a farm household in order to observe the lives of the people from within as much as possible. I wanted to learn from them. I was very fortunate to meet Mr. Constantio Nurudong, better known as Mr. Kontana or 'the local architect'. He was a retired civil servant who then lived with his wife, Stella Beauty[2], in one section of a beautiful 'mud castle' in the village of Kogle. Mr. Kontana worked as a revenue collector until 1986. After his retirement, he turned to farming again, a skill he always maintained while working as a civil servant. Mr. Kontana has helped me throughout my research to understand the things I saw and heard. His deep knowledge of the people, farming practices, traditions, history, etc. have been extremely helpful to me. Since there was no electricity in the compound, the only thing we could do in the long evenings was to sit down with a calabash of *pito* (local sorghum beer) and talk about my experiences of the day and other issues of mutual interest. The other house people, among whom the family head (Mr. Edmund Dery), his son (Mr. Rogation) and his grandson (Kwaku) also helped me, mainly just by living their daily lives. Even when they didn't have a single clue why I wanted to know certain things, they were always willing to answer my questions. They encouraged me to participate in their lives, though not always. One day, Mr. Kontana organised a communal labour party to build a new roof on his house. I decided to take a day

[1] The congregation they belong to is called "Fraters of the Immaculate Conception" (FIC).

[2] In April 2001, the sad news reached me that Stella Beauty had died.

off from my normal activities and participate in the labour party. Every time I carried a stick or took up a spade, someone rushed up to me to take over. They didn't accept the idea of a white man doing manual labour. Six months later, however, the people were already less surprised to see a white man with a hoe, struggling to raise some yam mounds and weed a stony groundnut field (see below).

Another important activity during the first six weeks was to adjust my research plan and research questions. The original plan had been written in the Netherlands, and at that stage I did not know much about the research area. My only sources of information were some anthropological and agronomic studies and an interview with the General Superior of the FIC Brothers, Albert Ketelaars, who has lived in Nandom for 12 years. The first impressions and subsequent rethinking resulted in some small changes in the approach and in the research questions.

In this initial period, both Arjen and I suffered from tropical diseases. Malaria, typhoid fever and amoebas took some of our time and strength. In these difficult moments, it was good to have each other's support. We also received much support from the people of Nandom and surroundings, especially from Mr. John Yirkuu, Brother Dick and 'Super Sister Mary' in Nandom Hospital.

Research questions

From the conceptual framework I presented in chapter one, several research questions can be derived. I have formulated the central question a bit casually. The three concepts of responses to climate variability and change (insurance, coping and adapting) are lumped together as "to deal with unreliable rainfall and climate change". In the research questions, each of the three concepts of responses is addressed separately (research question 5, 6 and 7). The objective of the first research question is to determine the (changes in) climatic risk in agriculture and to identify drought years. The second research question looks at trends in agricultural production and investigates the link between drought and crop failures. The third research question seeks to assess the (changes in) *collective* vulnerability of farm households at an 'area' level, while the fourth question focuses on (changes in) livelihood vulnerability of farm households *individually*. Question five concerns the way farm households organise their livelihoods to prevent food and livelihood stress in the near and distant future. Question six looks at farm household strategies to gain access to food and livelihood in periods of increased (climatic) stress. Question seven addresses the changes in livelihood vulnerability and responses over the years, including changes in insurance and coping strategies.

Central question:

Which strategies have rural households in the villages around Nandom Town adopted to deal with unreliable rainfall, drought and climate change (1960-2000)?

Research questions:

1. Which trends and fluctuations in rainfall and rainfall variability are discernible in the research area?
2. Which trends and fluctuations in land use and agricultural performance are discernible in the research area?
   - Deviations after dry years and after wet years;

- Predictability of low agricultural output in dry years.

3. To what extent can the research area be considered a 'risk-prone environment'?
   - Climatic risk vis-à-vis other sources of risk.
4. How do different types of rural households in the Nandom area gain entitlements to food and income in 'normal' years?
   - Overall livelihood strategy;
   - *Vulnerability* to food and livelihood stress.
5. Which *insurance* strategies do different types of farm households adopt to protect against future food and livelihood stress in the lean season and in bad years?
   - Avoidance of primary production failure;
   - Diversification;
   - Accumulation;
   - Social networks.
6. Which strategies do different types of farm households adopt to *cope* with food and livelihood stress in the lean season and in the face of an adverse (climatic) event?
   - Seasonal coping strategies;
   - 'Genuine' coping strategies.
7. How have different types of farm households *adapted* their livelihoods to changes in the climate and other changed conditions?
   - Agricultural change;
   - Local livelihood diversification;
   - Geographic dispersion of activities and networks (extra-local).

Secondary data

To answer the research questions, I have combined the use of secondary data with own data gathering. In the first three research questions, secondary data were most important and in the last four research questions, survey and in-depth interviews were dominant. In all research questions, a *combination* of primary and secondary sources is pursued, however. Secondary data were compared and contrasted with the views, memories and perceptions of the interviewees. Conversely, I linked the information from the questionnaires and in-depth interviews to secondary sources in order to verify certain information and in order to place certain events and tendencies in a larger regional picture.

To answer the first two research questions (see chapter four), secondary data on rainfall, temperature, acreage under cultivation, crop yields and livestock production had to be gathered. In addition, information on *inter alia* soil types, market prices of agricultural produce, population growth and population density, as well as maps were collected. Most of the data were found in the Regional Ministry of Food and Agriculture, the Meteorological Services Department, the Survey Department and Town and Country Planning (all stationed in the regional capital Wa). Some information was available through the Nandom Agricultural Project. In the district capital Lawra, my quest for data was rather fruitless. In Accra, the Meteorological Services Department provided me with some climate data of the Upper West Region that were not available in Wa.

Earlier studies by anthropologists, sociologists, geographers, agronomists and economists were used as a source of information about the research area. This information mainly served to answer the third research question (see chapter five). Compared to many other rural areas in Africa, the Upper West Region of Ghana has been described quite extensively. The variety

of books, articles, reports, policy papers and manuscripts about the research area, both from locals and outsiders, helped me study the people's livelihoods in a wider *geographical* context. Historical studies of the research area helped me see the changes in people's livelihoods in a *historical* context. Together, these secondary sources served as input for a historical-geographical analysis of the research area, as proposed in the methodology of the ICCD research project (see Dietz *et al.* 2001a: 11).

Units of analysis and questionnaire

> In most studies of coping strategies the household is taken as the unit of analysis because it is assumed that decisions about production, investment and consumption are primarily taken at the household level. This is true of coping strategies both in Africa and Asia. The definition of what constitutes the household, how decisions are reached within a household and by whom and the intra-household allocation of food and other resources are complex issues which may vary from community to community and which are often not explicitly examined. (Corbett 1988: 1101).

Among farm households in the Nandom area, most decisions about production, consumption and investment are indeed taken at the household level. This does not mean that the household members pool *all* their sources of food and income in *all* instances and that every member gets an equal share of the 'household cake'. Attention has to be given to the role of individuals within households and the pooling of resources between households.

Women are allowed and encouraged to engage in income generating activities like beer brewing, firewood selling, crafts, petty trade, shea-nut[3] or 'dawadawa'[4] processing, etc. The profit they make is customarily meant for the purchase of soup ingredients and for personal expenditures. In reality, it is often used to buy grains and pay school fees, especially in poorer households. In the dry season, grown-up sons or junior brothers of the household head often travel to southern Ghana to work as farm labourers. When they return, they are customarily expected to report to the household head how much money they have been able to earn, and to give him at least part of the money. The household head would then take the money and give part of it back to the migrant to cover personal expenses. Many household heads complained that their sons refuse to 'open their box' and say how much money they were able to bring home. The household heads have lost much authority over their sons. The seasonal migrants are usually expected to help meet some household expenses such as school fees for younger siblings, but the lion's share is to cover their personal expenses; to buy a bicycle or to accumulate for a big expenditure, like a bridewealth payment[5] in the future. Some seasonal migrants bring home a bag of maize.

Household heads realise that they alone cannot take care of their dependents' food and non-food needs. The other household members have to contribute, and not only on the farm. The household can be seen as a small enterprise of which the household head is the *manager*.

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[3] Butyrospermum parkii.

[4] Parkia oliveri (locust bean tree).

[5] Customarily, the household head pays the bridewealth for his 'sons' (either biological sons or classificatory sons) when they marry. When the household head is unable or unwilling to pay the bridewealth, and when the son feels it is time for him to marry, he will try to save and accumulate the money and/or livestock himself. Whether or not a household head is able and/or willing to pay the bridewealth also depends on how the son has shared his income with the household head.

He has to organise his people in order to meet short-term subsistence needs and to assure long-term survival and sustainability. The extent to which the household head is fully in charge varies, but in times of crisis, most household heads have the power to lay effective claims on the individual household members' income and assets.

In farming, most decisions about production, consumption and investment are made by the household head. There are a few exceptions, however. Women plant vegetables on the compound farm. These are used as soup ingredients and sometimes sold at the market. Some women also have their own groundnut or rice fields. Dry season gardens are sometimes individual enterprises of grown sons. Some garden produce is used in the family kitchen, but most is sold at the market. The revenue is usually controlled by the man who has done the work, not necessarily the household head. Sons and junior brothers of the household head may also have their own yam or rice fields for commercial purposes. Sons, wives and younger brothers of the household head can also own animals individually. Decisions about production and investment of the *staple* crops, however, are made by the household head. He or – in exceptional cases – she is also the one who has control over the granary. If there are several cooking units within the household, the household head takes care of the distribution. This brings us to a difficult, but very important point in the analysis. To choose the household as the research unit is one thing, to determine who belongs to the household is quite another.

Most households in the research area manoeuvre within a small margin around subsistence. Agriculture is still the main source of food for most people. Even though individual household members develop their own activities, the right unit of analysis for this study seems to be the group of people that works together on the land in an effort to fill the granaries for the year to come. It would not have been correct to interview only the household head about his/her economic activities and expenditures. Other household members were interviewed when possible in order to find out more about their food- or income generating activities. If they were absent, shy, incapable or unwilling to answer my questions, I had to ask the household head to answer the questions for them. It should be noted that the allocation of household labour, the pooling of resources and intra-household differences in consumption patterns vary greatly between households. There are no omni-valid 'rules of the game' anymore, if they ever did exist.

De Bruijn and Van Dijk (1998) propose to analyse the 'pathways' of *individuals* rather than households. For the moment, I define a 'pathway' as a life history with a focus on livelihood strategies. In this definition 'livelihood history' may be a more appropriate term. In the second series of interviews, I attempted to reconstruct such pathways of individuals, but always in relation to the household(s) they were part of at different points in time (for an elaboration of the concept of 'pathways', see below).

Household determination

Sometimes there was no doubt at all about whom to consider as part of the household. The most straightforward cases concerned houses or compounds inhabited by a man, his wife and his unmarried children, i.e. the nuclear family. They farm together; they have one granary; the wife cooks for her husband and children. This type of household does exist in the research area, but is not the norm. It is relatively common among Roman Catholic Dagara people. When several generations and households live together in one compound, it becomes more

complicated to determine household membership. Sons get married and bring their wives into the house.[6] When the father and his son(s) decide not to separate their farms, their wives still may cook separately. When the father dies, the sons may continue farming together or they may split. One son may take care of the mother, or she may be taken care of by several sons. If the brothers or cousins farm separately, they may live in separate sections within the compound, but not necessarily. Muslim and 'Traditionalist'[7] men can marry several wives. They might live together in one section or in separate sections within the compound. Some wives may cook together whilst others cook separately. Household members may not stay in the house permanently. They might travel to southern Ghana for farm labour, to visit relatives or to further their education. Some come back every year, in time for the farming season. Others stay away for much longer periods and are also part of a household somewhere else.

It was sometimes very difficult to determine whom to consider as part of the household. We consulted several people to find the best translation for 'household'. A direct translation was not available. The word 'yir' means house, referring either to a built structure or to kinship: the patrilineage. When somebody says: "He's from my house", it doesn't necessarily mean that they live in the same house. It usually means that they share a common ancestor that they can trace back (see also Goody 1967). The word 'davra', which literally means courtyard or entrance to a courtyard, came closest to our definition of a household. This is because of the custom of building one's own section (with a separate granary) in the family compound when one starts farming on one's own. The term became confusing whenever our definition of a household did not coincide with the group of people that actually inhabited a separate courtyard, which was sometimes the case. Two 'households' could live together in one 'davra', or one 'household' could be split into two 'davras'. In those cases, the use of the word was avoided.

We always took our time to unravel the household composition. Indeed, this sometimes took up to 45 minutes, which is too long considering the length of the questionnaire (see below). I used some standard questions for the household determination (see Box 2.1). After some interviews, I started to draw genealogical diagrams on the flip side of the questionnaire as a tool to determine the structure of the house(-hold) and to trace migrant relatives. This facilitated the reconstruction of family networks in the last section of the questionnaire.

As a general rule, I considered a group of people who farm together and share one granary as one household. I would like to repeat that within this 'farming group', sub-units or individuals can have their personal incomes and expenditures. In the livelihood analysis (see chapter six and seven), the different sources of non-farm and off-farm income were lumped together. There was one case where two brothers farmed separately, but shared one granary. More often, there were several cooking units within – what I called – a household. This was

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[6] The Dagara have a *virilocal* residence system, i.e. the wife will move to the husband's compound when they marry.

[7] People who have not converted to Islam or the Roman Catholic Church are usually referred to as 'Traditionalists'. Some of them still practice traditional rituals while others don't. The word 'pagan' is also used in the research area, but I don't use it because it sounds pejorative to me.

Box 2.1 Excerpt from questionnaire: household determination

1) How many people are living in this house/compound? .....
2) Do you farm together? ..... Yes / No
.....
3) Do you all use the same granary(-ies) or store room? ..... Yes / No
.....
4) Do you cook together? ..... Yes / No
.....
- Is the house/compound divided into several sections ('households')? ..... Yes / No
- If yes, how many? .....

5) Are there any absent household members? ..... Yes / No

(Determine whether or not to consider them part of the HH, using question 6, 7 and 8)

6) Why are they absent (seasonal labour migration, education, staying with family elsewhere, starting own household)?

.....
7) Will they be absent for a period longer than 6 months? ..... Yes / No
8) *(If 'yes')* Are they part of a household in the place where they stay? ..... Yes / No
(If 'yes': Do not consider as HH-member)
9) Do some present HH-members stay in the house for less than 6 months a year? ..... Yes / No
(Determine whether or not to consider them part of the household, using Question 10 and 11)
10) Why do they leave the house (seasonal labour migration, education, staying with family elsewhere, split up household)? .....
.....
11) Are they part of a household in the place where they usually go? ..... Yes / No
(If 'yes': Do not consider as HH-member)
(Make the decision about who to consider as part of the household)
12) How many people are part of this 'household'? .....
This will be the research unit for the rest of this questionnaire

the case when a man had more than one wife; when the wife of the household head and the wife of a son cooked separately, or when two married brothers farmed together while their wives cooked separately. In four households, sub-units within the household were living separately in different buildings, but close to each other.

Of the 60 households I interviewed, 26 were living in separate houses. The other households shared – sometimes very large – compounds with other households, always tied by kinship. Initially, I tried to interview at least two households per compound. Later, I realised that if I were to carry this through, I would either have to reduce the number of houses drastically or do many more interviews, which was not feasible because of time constraints. Whenever we encountered a house or compound that was divided into several sections, we first tried to get a good picture of the distribution of compound dwellers among the different households. After that, we would choose one or more households to carry out the questionnaire. The distribution of households and compounds in the survey sample is shown in Table 2.1.

Table 2.1 The distribution of households and compounds in the survey sample

Number of households per compound	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*13*	*Total*
Number of compounds interviewed	26	7	6	4	3	1	2	1	50
Number of households interviewed	26	10	9	5	4	1	3	2	60

Source: Livelihood Analysis Survey

Another difficult task was to find out whether the people currently staying in the house were actually part of the household or just visiting and, more common, whether there were any absent household members. It was important to distinguish between people who had left the house permanently to start or become part of a household elsewhere, and people who had left the house temporarily and still should be considered part of the household. People who were away in order to further their education were included in the household as long as they were supported by the household. Seasonal labour migrants were always included in the household, even if they stayed away for eight months, which was sometimes the case.

Sample framework

For the survey, I used a 'linear' sample framework. This sampling technique is more common in urban research. Respondents are sampled by taking, for example, every second or third house along a street. My sample framework functioned quite similarly. The first idea was to use the track leading from Nandom Town to the Black Volta River and count all the houses on the left and right within a certain distance (100 meters) from the line; to determine the number of interviews I would like to carry out, and finally to calculate the frequency with which I would have to select the houses on the left and right hand sides. I could, for example, interview every second house on the left and every third house on the right.

The idea of a linear sample appealed to me because in this way, I could increase the geographic spread of my respondents. From my first explorations in the research area, I had the impression that people's livelihoods are highly dependent on the specific location of their dwellings and farms. Different places present different opportunities[8] and constraints, and I tried to include a wide range of microenvironments. I also measured the distance between the respondents' dwellings and the Nandom Town market in order to assess whether livelihood strategies and vulnerabilities change with increasing or decreasing distance to the principal market town in the research area.

After some time, I found out that the livelihoods of the people living south and east of Nandom differed from the livelihoods of the people who live between Nandom and the river. Many of them used bullocks and ploughs to till the land and many young men engaged in dry season gardening. I decided that I had to include a southern and an eastern branch in my sample framework. If you have a western, eastern and southern branch, then it seems quite logical that you should also include a northern branch. My first impression was that the northern line looked like the western line. One difference between the two areas was very obvious, however. Unlike the relatively small compounds to the west, on the northern line one

[8] One of the villages, for example, is called "Taalipuo". This literally means place of the shea nut trees. Not surprisingly, many women in that village engage in shea-nut processing. Similarly, some places are suitable for irrigated dry season gardening, while others are not.

could find enormous compounds that looked like small villages in themselves. As one can see in Table 2.2, the compounds in the north accommodated more than twice as many people as in the west. The *households* were not larger, however. The four branches of the sample framework are all approximately ten kilometres in length (see Map 3).

Table 2.2 Selected demographic indicators of the four lines

Line	*West*	*South*	*North*	*East*	*Total*
Number of interviews	23	15	12	10	60
Villages	- Dabagteng - Naapali - Kogle - Gyengegangn	- Nandomle - Burutu - Nabugangn - Ko	- Segru - Nandomkpe - Dondometeng - Taalipuo	- Bilegangn - Lambusie	
Ethnic groups	- Dagara (23)	-Dagara (15)	- Dagara (10) - Sisala (1) - Fulani (1)	- Dagara (2) - Sisala (6) - Fulani (1) - Mossi (1)	
Average household-size	7.3	9.3	6.9	11.3	8.38
Average number of persons per compound*	11.8	21.1	25.6	24.2	19.46
Average number of households per compound*	1.6	2.7	3.9	2.1	2.44

* In compounds where several households were interviewed, the compound was counted only once in the calculation of the average.
Source: Livelihood Analysis Survey

The decision to expand my sample framework to the south, east and north was taken when I was already halfway down the western line. This has had its impact on the distribution of respondents over the four lines. The households are not equally spread over the lines. Table 2.2 shows some basic demographic information on the households sampled along the four lines. For the whole sample, the average number of persons per household was 8.38 and the average number of persons per compound was 19.46. The average number of households per compound was 2.44.

The questionnaire

I could write many pages about the questionnaire I have used. In fact, I did write many pages about it in my research diary, partly out of discontent with the sheer length of it. We were warned that an interview should not take much longer than one hour because the respondents, the interviewer and the interpreter could become tired and this could negatively influence the quality of the data. On average it took us (my interpreter and I) two and a half hours to finish one questionnaire, depending mainly on the size and complexity of the household and the diversity of the household's livelihood. Two and a half hour seems to be too long. The reason why I carried it through is twofold. First of all, although I tried, I could not manage to cut away parts of the questionnaire without seriously damaging the whole set-up. The different sections of the questionnaire are interrelated and together, they determine the *vulnerability rank* of individual households (see chapter six and seven), so it was not an option to skip

some sections. After having completed the first survey interviews, I made some changes that improved the questionnaire, but the time gains were minimal.

The second reason for carrying on with the long questionnaire was that the atmosphere of the interviews was usually very good, and signs of exhaustion were rare. I think I owe this mainly to my interpreters Festus (Dagara) and Victor (Sisala), who always managed to put the respondents at ease, win their confidence, and, very importantly, be jovial with them. I sometimes gave them a hard time when I wanted to know things that they found difficult or embarrassing to ask. I also owe very much to the respondents themselves who were extremely patient and willing to answer my many questions. In a way, the people seemed to feel 'honoured' to receive a foreign guest who showed interest in their lives and struggles. Perhaps they have the hope that this type of research and the work of external actors can improve their conditions in the future. I hope so, too, but I wanted to let them have some more direct benefit from the interview. To express my gratitude, I decided to give my respondents a small token of money right after the interview, just enough to buy two gallons of *pito* or to cover some other small expenses. Before I decided to give money to respondents, I consulted some people and I watched the first respondents' reactions. These were very positive. Only in a few cases, when respondents were relatively well to do, I decided not to give money. I did not want to offend them by giving a small amount. At the same time, it went against my own ideas of right and wrong to give more to people who need it less. In those cases, I invited them for a drink in Nandom Town. This enabled us to continue talking about the issues in a less formal way.

When one researcher gives money to respondents, the respondents might expect the same from other researchers. I don't think this is wrong, however. The people *should* expect something back, especially when they do not benefit from the research in any other way. In rural Africa, researchers are wealthier than their respondents. There is usually quite some money involved in research, while such research does not always improve the living conditions of the rural people. A drawback of giving money to respondents is that this might create an inequality between researchers. A Ghanaian student does not have the same financial possibilities as a senior researcher of a European university or NGO.

I have to admit that there was also some self-interest involved in giving money to my respondents. The initial plan was to re-visit every respondent for an open interview to assess household coping strategies. I hoped that my small reward would increase the people's eagerness to answer my questions the second time. I am very much aware that without the people's willingness to co-operate, this research would have been much more difficult to carry out. In general, people in Nandom *Town* were much harder to interview, as my colleague Arjen Schijf experienced. To put it positively, they were more 'empowered'. Time is money and one cannot make money while talking to a nosey white man for hours.

Why did the questionnaire have to be so long? We[9] designed the questionnaire to be a livelihood analysis. We wanted to trace all people's sources of food and income and the seasonality of these sources. We were convinced that to be able to investigate people's coping

[9] Arjen Schijf and I initially designed the questionnaire together. After the first trials, however, it became clear that the difference between semi-urban and rural households compelled us to make certain adjustments individually. The questionnaires are quite similar, however, and they still allow comparisons between semi-urban and rural households.

strategies in times of *unusual* hardships, it is necessary to understand how they pursue food and livelihood security in *normal* years. Besides the productive activities of households, other household-level variables like their human capital; household expenditure; possessions; migration behaviour and family networks were to be given special attention. To avoid having the survey become a mere 'snap-shot' of household vulnerability, trend-questions were included in every section of the questionnaire. To put any changes over time in the right perspective, it was necessary to know more about the household and family history. This was all very time-consuming. The original questionnaire can be found in Van der Geest (2002a: 316-324).

The questionnaire was not only meant to gather quantitative data. I used every occasion to ask additional questions about issues that arose as a result of answers given to my earlier questions. In this way, I got a better impression of the wider context in which households struggle for subsistence. Some features of the inheritance system and the relationship with one's in-laws, which are relevant in terms of labour allocation and access to wealth, came to the surface this way.

We designed the questionnaire in the field, after an exploratory period of about six weeks. The aim of the questionnaire was to find out more about people's sources of food and income in a normal year, while specific responses to *unusual* shocks – whether or not caused by climatic stress – were to be assessed afterwards, by way of open interviews. Unfortunately, the questionnaires took so much time[10] that it became impossible to revisit all the households. Fortunately, however, the questionnaires did reveal quite a lot of information about livelihood responses, especially about insurance strategies. Only the coping strategies, adopted to deal with *unusual* stress or events did not become clear. The trend questions, meant to assess changes in livelihoods, only produced a partial picture of adaptation. Initially, I did ask about stress situations and what households do to overcome them. The response to this question was not good. There were several explanations for the bad response. First of all, as I mentioned above, I myself did not yet know much about the people's livelihoods in normal years, so I was not to able to ask the right questions about responses to unusual stress. Secondly, wide-spread disasters triggered by climatic stress occurred more than a decade ago (in the early 1980s) and this is a long time when you want to know specific household responses. Thirdly, the question on coping strategies was situated at the very end of the questionnaire where I asked some open questions. These questions were more difficult to answer, especially after two or three hours of intensive interviewing. Lastly, people experience a certain threshold in talking about difficult times. There has to be some confidence and, moreover, one cannot expect of people that they can explain in some minutes what went wrong, why, and how they managed to make ends meet. One has to take time to let people tell their stories. So I decided to delete the questions about coping behaviour. At that stage, I still thought I was going to revisit all households for a single-visit open interview during which I could take the time that seemed necessary to find out more about responses to food insecurity. In the end, I decided to do multi-visit interviews with only five households, enabling a more *in-depth* analysis and a more historical approach to assess coping with adverse events and adaptation to changed or changing conditions.

[10] Three weeks to design it, eight weeks to carry out the interviews and approximately three weeks for analysing – part of – the data.

When I noticed that my Dagara interpreter (Festus Lankuu) knew the ins and outs of the questionnaire very well, and that he was a very intelligent and independent worker, I let him carry out some household questionnaires alone. This was usually the case when we encountered an English speaking household head whom I could interview by myself. This saved a bit of time. In the end, it took about two months to complete 60 questionnaires (December-February 2000).

In March 2000, I travelled to southern Ghana for a little holiday and to process the data from the questionnaire in a different environment. In early April 2000, I presented some preliminary findings of my fieldwork in an ICCD workshop in Bolgatanga (Upper East Region). In April, May and June 2000, I wrote two chapters of this book and further processed and elaborated the survey findings. I defined ten indices of vulnerability and calculated the indices for all households in the survey sample. The index scores were summed up for each household, resulting in a ranking of household vulnerability. I divided the sample in three vulnerability groups of twenty households each: a vulnerable group, a middle group and a secure group (see chapter six and seven). I selected two households from the vulnerable group, one household from the middle group and two households from the secure group for in-depth analysis. In this book, I present only three cases, but the other two can be found in Van der Geest (2002a).

The reconstruction of 'livelihood histories'

The selection of households for in-depth analysis was not random. A first condition concerned the age of the household-head. The in-depth analyses were to have an historical perspective. I was going to study the *changes* in livelihoods – including coping strategies – over time with an emphasis on the impact of extreme weather events and climate change. Therefore, the interviewees had to have actively experienced the gradual deterioration of climatic conditions in the 1970s that culminated in the droughts of the early 1980s (see chapter four). Another climatic trigger event occurred in 1963. Torrential rainfall and floods were reported to have destroyed people's houses, granaries and harvests that year. The potential interviewees had to have actively experienced these floods. The youngest person I selected for in-depth interviews did not meet this criterion. He was eight years old at the time of the floods. His 'senior father' (paternal uncle) assisted in reconstructing the early years of this respondent's life.

I knew that the interviews were going to be very intensive, especially for the respondents. For a successful reconstruction of someone's 'livelihood history', it is important that the person has a good memory. The survey findings obviously did not tell me much about the memories of the people I interviewed. In the selection of people for in-depth interviews, I did, however, take the ease and 'smoothness' of the first interview (questionnaire) into account. Very old people were not selected for in-depth analysis. Four out of five persons whose pathway I reconstructed were between 55 and 60 years of age. One was 45 years old.

In the selection of in-depth interviewees, my emphasis lay on *variety*. From the survey, I knew how certain socio-economic characteristics were distributed over the sample. I selected some features that had to be represented in the in-depth analysis. I wanted to interview (at

least) one seasonal migrant; one bullock farmer; one dry season gardener; one casual labourer; one pito brewer; one sheanut processor; one firewood seller; one petty trader; one Sisala; one Traditionalist; one Muslim; one return migrant; one female-headed household and one very large household. These characteristics were all represented in the five pathways I reconstructed.

I had also wanted to interview a person with a formal education and a salary income. Although I had somebody in mind, I decided not to reconstruct a sixth pathway due to time constraints. Moreover, most educated people move to town when they find a salaried job (usually as civil servants) and therefore, this group is of little numeric importance in the *villages* around Nandom Town. Arjen Schijf (2004), who conducted a similar research *in* Nandom Town, reconstructed the 'pathway' of a teacher. The most educated person whose pathway I reconstructed had attended primary school up to 6th grade.

The concept of "pathways" was developed for the ICCD-project by De Bruin & Van Dijk (1998). In an internal paper, they discussed "some of the methodological issues related to the study of risk-coping strategies [in high-risk environments] from an economic and an anthropological point of view." Box 2.2 highlights the most important assumptions and considerations for the study of pathways. To summarise, we have to study people's behaviour in the context of their (perceived) environment, in the context of their experiences in the past and in the context of their social networks. This clearly requires a qualitative approach. The aim is not statistical representativity.

In their paper, De Bruin & Van Dijk do not give a clear-cut prescription of *how* to study people's pathways. That is left for the researcher to decide. I interpreted 'pathways' as 'life histories focussed on livelihood strategies'. In this interpretation, I consider 'livelihood histories' a more appropriate term, especially because the term 'pathways' has become fashionable in recent years and is being used with different meanings. In this book, the terms 'pathways' and 'livelihood histories' are used interchangeably. Zoomers & de Haan (2003) use the term 'livelihood trajectories'.

I started each in-depth analysis by roughly reconstructing the person's life history and family structure. I soon found out that it was difficult for the interviewees to determine the years in which certain events occurred. There were two ways to deal with this problem. Firstly, I asked the interviewees whether they had any official documents, like baptismal cards, birth certificates of children, voter registration cards, receipts, etc. that could facilitate the timing of certain events. Secondly, my colleague Arjen Schijf had constructed a list of local and national historical events to which personal events could be linked. With these two techniques, the reconstruction of pathways became more reliable. To find out in which year a certain drought and crop failure occurred, for example, we could ask whether Ghana was already independent in those days; whether the interviewee's first son was already born; whether the Nandom Hospital was already built, etc. In some cases, it remained difficult to determine the exact years, however.

When I had a general idea of the course of the respondent's life, it was usually possible to make a division in periods, based on household membership, marriage, migration, etc. For each period, a livelihood analysis was carried out. Special attention was given to the way people had dealt with extreme weather events (coping strategies). In the description of livelihood histories (eight), about half the 'space' is occupied by livelihood analyses of different

periods in the past. The other half consists of a more detailed livelihood analysis of the present situation.

Box 2.2 The concept of 'pathways' as proposed by De Bruijn & Van Dijk (1998): some quotes

The concept of pathways implies that previous decisions of the decision-maker need to be taken into consideration when analysing present decisions. (...) Decision-making, especially in high-risk environments, is an iterative process (*ibid*: 1).

… decision-makers in high-risk environments follow (...) paths, which are determined (...) by the conditions of the environment they have to deal with and their own personal characteristics ensuing from their social and cultural background and personal assets. (*ibid*: 1).

A pathway is different from a strategy, because a pathway need not be a device to attain a pre-set goal which is set after a process of conscious and rational weighing of the actor's preferences. Rather it is arising out of an iterative process in which, in a step-by-step procedure, goals, preferences, resources and means are constantly reassessed in view of new (unstable) conditions with which the decision-maker(s) are confronted. Individuals decide on the basis of a wide range of past experiences, rather than on a vision of the future[11] (...).(*ibid*: 2).

It is proposed to start the analysis of pathways at the level of the individual. (...) However, pathways are not limited to the level of the individual. (...) In the process of decision-making, actors coordinate their actions. In the coordinative process regularities arise, which may be labelled institutions (...). Actors thus do not start from scratch. Their environment is pre-structured (...).(*ibid*: 2-3).

Getting access to natural resources is often dependent on (...) the rules and procedures to obtain access to resources. These rules and procedures are, however, rarely clearly defined. They are derived from different bodies of law, such as state law, customary law, Islamic law, etc. (...). People draw from these different bodies of law in a strategic manner as a negotiation strategy. (*ibid*: 4).

It will be important to give historical depth to all these case studies, in order to trace the genesis of the current situation. (...) Based on a careful analysis of the dynamics [of the development of pathways], 'rules of the game' can be abstracted and projections can be made of likely responses to climate variability under specific conditions, e.g. high versus low population density, mix of production systems, specific socio-cultural set-ups, etc. (*ibid*: 6).

Decisions are taken in multiple environments varying in space and time. People are often connected through circular migration and social networks with other environments. In this way they are able to draw on resources in various environments. So we should not only focus on groups which are fixed in space, but also analyse the connections of groups and individuals in space. Regions may function as complementary environments. Access to these environments again differs per individual. (*ibid*: 8).

The interviews were unstructured in the sense that I did not use an item list. Of course, there was a certain structure in my head. "I knew what I wanted to know," so to say. My research questions and conceptual framework were in the back of my head. The interviewees could, however, to a large extent determine the course of the interviews.

The reconstruction of pathways was quite labour intensive. I interviewed each person four to six times. Each interview lasted between three and four hours.[12] In July and early August 2000, I interviewed each of the five selected persons twice. After that, I took a break from the open interviews and wrote the third chapter of this book. When it was time to complete the series of open interviews, I evaluated what I knew about the five persons whose pathway I

[11] The theory presented in chapter one suggests that people's expectations of the future *do* to a large extent determine decision-making in the present. Insurance strategies and investments in future livelihood security are based on this principle. One could even argue that *a vision of the future is a condition for survival*, especially in risk-prone environments.

[12] The reconstruction of Osman Ali's pathway is based on almost 24 hours of interview.

was reconstructing. After these reflections, I planned the rest of the interviews. I still had about one month to finish the data gathering.

I recorded each interview on tape and transcribed it the following day. After finishing the transcription, I would read the document critically and wonder which information was still lacking and which information was incomplete, unclear, inconsistent or unreliable. I would insert my new questions in the document and print it. In the next interview, I would ask these questions. In a few cases, I also interviewed relatives of the people whose life history I reconstructed. Information from the previous interview often appeared to be incorrect. This was frustrating. Moreover, it raises questions about the reliability of single-visit interviews. There are so many sources of distortion and confusion. On the positive side, after each interview I felt that the picture became sharper.

Before I started the open interviews, my Dagaare interpreter (Festus Lankuu) accepted a job in southern Ghana. The people whose pathway I reconstructed did not speak much English. For each person, I had to use the services of a different interpreter. For Osman's pathway, I needed a Sisala interpreter (Victor B. Damian); for Francisca's pathway, I needed a female interpreter (Ernestina Bagson) and for Egidius' pathway, I needed a Dagara interpreter. None of the interpreters whose services I used was a professional. They were just people who spoke English and Dagaare or Sisala.

Participation and engagement: The hoe and the pen[13]

In May 2000, at the start of the rainy season, it became clear that I would stay in the research area until October. That had indeed been my intention from the beginning because I wanted to experience all the seasons in the research area. In fact, I had hoped that I could finish the entire book in the research area. In the end, I wrote early versions of three chapters and the 'livelihood histories' in the research area. When I realised that I was going to be around during the farming season, I decided to ask permission from my 'father' (Mr. Kontana) to cultivate a stretch of his land. I wanted to 'bend down' myself in order to learn about farming in this environment in a more participatory way. I prepared a small plot (approximately half an acre) on which I sowed all the crops that are common in the research area: late millet, early millet, guinea-corn, maize, rice, yams, sweet potatoes, groundnuts, bambara beans, black beans, soy beans and vegetables.

I divided my field in 12 plots of exactly 10 by 10 metres (0.01 hectare) and one larger plot. For the small plots, I could easily calculate the yield per hectare after harvesting. I have to admit that I did only a small part of the labour myself; I had to carry out my interviews. After 'bending down' for a couple of hours, I was always exhausted. More important than the manual labour and techniques was the *decision-making*. My neighbours and my 'relatives', especially Mr. Kontana, coached me. Their advice was my main source of knowledge about farming in this environment. I also learned a lot about labour arrangements because I had to find people to come and work on my farm and I had to treat them according to the rules and traditions that prevail in the area. I had to make sure that there was pito (sorghum beer) for them to drink and food for them to eat.

[13] In local English, to 'bend down' means to farm.

There were several reasons to do the writing in Ghana. I arrived in the research area by the end of October 1999, when the last rains were falling and the dry season was about to start. I needed seven to eight months for gathering data so I would have been ready to leave the area at the beginning of the rainy season. There are several advantages to doing fieldwork in the dry season. People are not busy with their farm work and have more time to answer questions; roads and tracks are accessible; the researcher is less exposed to tropical diseases associated with the humidity of the wet season and the climate is more pleasant in general, though less so in the hot months of March and April. On the other hand, the dry season is also the time after the harvest, when most people have enough food to eat. As an outsider, I might have got the impression that "the situation wasn't all that bad". In the wet season – or *hungry* season – there is less food; people have to work hard on their farms, and diseases make life even more difficult. Livelihood strategies and vulnerability vary greatly from season to season. A field-work that focuses on these issues should not have a *dry season bias* (see Chambers 1983: 20).

Another reason to write this report in the research area was that I would always be able to verify data and, if necessary, even gather new or supplementary data. I would also avoid the psychological difficulties one can experience after returning from a long fieldwork, which can easily result in a so-called 'writer's block'. Last but not least is the issue of engagement. It is quite different to write a report while surrounded by people who struggle to overcome a hunger-gap than to write a report in a comfortable office or house in the prosperous Nether-lands.

Disadvantages of writing in Ghana were more practical. Writing and communication facilities were not very good; there was no electricity in the compound where I lived so it was difficult to work in evening or night hours, which are usually my moments of inspiration. The heat can be paralysing, too. Before I started writing the first chapters of this book, I found a place in Nandom Town that I could use as my office. The house had electricity so I could plug in my laptop computer. Power cuts were daily practice, however. Moreover, my 'stone age' laptop slowly lost its vital functions and was about to collapse. Sometimes it would take a day or two for the electricity to return. Initially, this just complicated the planning. With a flexible working method, this did not cause insurmountable problems. It became more difficult when power-cuts started to last more than two weeks. This happened twice in two months. I could have moved to a bigger Ghanaian town or city, but I decided to write the last chapters in the Netherlands. I had been in Africa for almost 14 months and I felt that it would be good to go home.

3

Historical background

The historical background, as described in the present chapter, serves three objectives. Firstly, it is meant as an introduction to the people and the area. The second objective is to place some more recent demographic, economic, socio-cultural and politico-institutional changes – described in chapter five – in an ongoing, dynamic story. Thirdly, it serves as a collective introduction to the livelihood histories presented in chapter eight.[1] The present version of this chapter is a summary of a more detailed account of the history of the research area (see Van der Geest 2002a) in which more attention was given to social organisation and the introduction of chieftaincy in the early 20th century.

The origins of the Dagara people

In a geographical typology of traditional West African societies in the 19th century, Keith Hart (1982: 29) distinguishes five separate zones along the north-south axis: the desert margins, the savannah, the transition from savannah to forest, the rainforest and the seacoast. In this classification, my research area is included in the 'transition from savannah to forest'. Hart describes this zone as:

> …a middle belt straddling the ecological divide between forest and savannah, an interstitial zone in several ways. Being farthest removed from both northern and southern centres of state formation this area contained large pockets of acephalous peoples, societies that managed to avoid incorporation into larger estates, if not involvement in slaving (often as the unwilling victims of marauding armies). They were aided in their resistance by the existence here of (...) a terrain of orchard bushland frequently broken by hills and nonnavigable streams. Entrepôts and petty kingdoms rose and fell in a subregion marked by chronic political instability and continuous population movements,

[1] The life histories and pathways that I describe in chapter eight are all of people who are born between 1941 and 1954. Without drawing a very sharp line, the present chapter will treat the historical background of the research area until Ghana's path to Independence in the 1950s.

> and one frequent result was dense concentrations of refugees in areas sometimes self-consciously maintained by neighboring states as reservoirs for slave raiding. The area is best known for [its] stateless peoples [with] highly corporate social structures, based on segmentary lineage organization and animist religion (...). These ancient people are fighting cultivators who have refused rulers and whose society, although poor, is self-consciously organized on an egalitarian basis to maintain its freedom when geography offers a relatively secure refuge. (Hart 1982: 31).

This description, although of a large ecological zone, seems to provide quite a good outline of the situation one would have encountered in the research area on the eve of 'pacification' and colonisation of the Northern Territories by the British.[2] It depicts some important characteristics of pre-colonial Dagara society.[3] A picture is drawn of decentralised groups of people who were quite mobile. The Dagara were cultivators for whom it was not unusual to migrate perhaps once or twice in a lifetime, either forced and *en masse* to escape from external pressure, or voluntarily and piecemeal in search of fertile farmland.[4] The latter type of migration was the more common of the two. Possibly, forced and *en masse* migration to escape external pressure has never occurred in the case of Dagara.[5] It is uncertain whether the Dagara ever had to fight to resist incorporation into centralised kingdoms.

Was the area north of Wa inhabited by "dense concentrations of refugees" and "self-consciously maintained by neighbouring states as reservoirs for slave raiding"? Although this description is rather dramatic, there have most likely been episodes in the past when the research area was indeed not quite a 'safe environment' for sedentary agriculture.

According to most Dagara authors[6], the oral traditions of the Dagara have it that they migrated from western Dagbon (around Tamale in the present Northern Region) or Yendi (same latitude, approximately 100 kilometres east of Tamale) to escape the tyranny of Dagomba chiefs and succession disputes. This secession is supposed to have taken place during the reign of Dagomba chief Na Nyagse in the late 15th century. This so-called 'Dagomba thesis of Dagara origin' is mainly propagated by Dagara intellectuals who, by alluding to an *en masse* rebellion against Dagomba rulers and a subsequent exodus, suggest that there is a historical *ethnic unity* among Dagara or Dagaaba people[7] (Lentz 1994b: 458).

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2 Strictly speaking, the status of the Northern Territories was not that of a British colony (like the Gold Coast and Ashanti) but a British protectorate. In practice, the administration of the Northern Territories was under the authority of the Governor of the Gold Coast who appointed the colonial officers in the north (see Ladouceur 1979: 40).

3 … and to a lesser extent of Sisala society. The Sisala people seem to have had a more centralised socio-political organisation with village chiefs.

4 See Goody (1967: 16) and Lentz (1994a: 69), according to whom there is a "quite radical difference" between the historical accounts of local people and those of colonial historians and officers. The former accounts emphasize "individual piecemeal agrarian expansion", and the latter emphasise forced migration or "mass exodus of weaker peoples".

5 Personal communication with Carola Lentz (Wassenaar, the Netherlands, 28th June 2001).

6 For example Tengan (2000: 133-134), G. Tuurey (1982), quoted in Lentz (1994b: 458); Der (1998: 7) and Archbishop Dery in an interview with Lentz (1994b: 458).

7 It has become common practice among native and 'western' authors to distinguish the Dagara and the Dagaaba. Although in reality the spatial boundaries are rather blurred, it is argued that the Dagara predominantly live in and around Nandom and Lawra and in the adjacent areas across the Black Volta in Burkina Faso. The Dagaaba live more to the south, around Jirapa, Nadawli and Wa. Although there are linguistic differences, the main difference between the two is that the former have or had (the system is in transition) a double descent system with matrilineal inheritance of movable properties, and the latter have a patrilineal descent and inheritance system. 'Dagaaba' is alternatively spelled with one 'a' in the second

Although by no means impossible, the evidence for the 'Dagomba thesis' is weak because most Dagara villagers are not aware of this 'oral tradition'. Moreover, in the oral and written history of the Dagomba, no exodus of subjects from their kingdom to the northwest is reported (Lentz 1994b: 484). Most migration histories of Dagara patri-clans do not go far back in distance and time. Perhaps even more importantly, their migration histories concern just their own patrilineal kin groups, supporting the thesis of a piecemeal migration in search of farmland. Lentz (1994a: 68) vividly describes the settlement histories of Dagara people:

> In many accounts, particularly those of the *tengansob* clan which is usually the one claiming to be the 'first-comers' to a village, a hunter discovers promising game and sometimes farming grounds on one of his expeditions, erects a temporary shack, and later fetches his wives, children, and some brothers, who all settle at the new abode and start farming. Often, the new land turns out to be already inhabited, and the account narrates how the new immigrants met the original settlers and reached agreement about sacrifices to the land god and about the distribution of game and lost animals. All in all the stories convey the image of a piecemeal agricultural migration of small kin groups.[8] (Lentz 1994a: 68).

According to Goody (1967: 15), the first Dagara settled in what is presently the Lawra district sometime in the late 18th century. Before that, the Sisala, whose territory is east of the present Dagara area, were using the land around Nandom as hunting territory and for 'bush farms'. Some Dagara villages around Nandom still bear Sisala names. Whatever the exact history, it is clear that the Nandom area can be considered an 'old settlement' area. After about eight to ten generations, the population density has increased to 83 inhabitants per square kilometre at the end of the 20th century (Ghana Statistical Service 2002).

The slave trade

In a recent publication about the history of the slave trade in northern Ghana, Benedict G. Der (1998) opposes the general impression that in the pre-colonial past, northern Ghana has *always* been involved in the Trans-Saharan and Trans-Atlantic slave trades. He maintains that slave raiding and slave trading were not common in the north of Ghana before the 18th century. Among the Dagara and Dagaaba, domestic slaves did exist but they were not raided or traded. Slaves could only be acquired through a game ('gbang'), through inheritance of distant relatives ('gbandiru') and through debts. In times of hunger, a household head could barter his children for food with households that still had grain in store.[9] Der does not mention warfare as a source of slaves. Der's evidence for the absence of slave raids in northern Ghana before the 18th century mainly rests on the fact that there are old, historic documents (written

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syllable (Dagaba). The language of the Dagaaba as well as the Dagara is called 'Dagare', 'Dagaare' or 'Dagara'.

8 "In other stories, the newcomers meet not human beings, but dwarfs or *kontome* ('beings of the wild', 'spirits') which have to be outwitted or pacified before the immigrants can settle there in peace" (Lentz 1994b: 465).

9 See also Lentz (1993: 212) and Goody (1967: 27). These 'transactions' could take place between households within settlements, but also between relatively distant settlements. Goody (1967: 7) reports stories of Dagara from the densely populated left bank of the Black Volta selling relatives as slaves to the "Lobi" on the sparsely populated right bank of the Volta.

by Islamic missionaries) that would have mentioned slave raiding and trading if it had been a common characteristic in the area.

According to Der (1998), the first slave raids in northern Ghana only occurred after 1732, the year that the Asante (Ashanti) of southern Ghana attacked the kingdom of Gonja and demanded an annual tribute paid in slaves. This initiated the Gonja slave raids on neighbouring groups. Later, the Dagomba, Mamprusi and to a lesser extent the Wala also engaged in slave raiding. It would take more than 150 years, however, for slave raids to become rampant in the far northwest where my research area is located. In the last two decades of the 19th century, the slave raids reached their peak and in that era the Dagaaba and Dagara were attacked by bands of the two most notorious slave raiders in the history of northern Ghana: Babatu and Samori.

Der (1998: 32) writes that Samori's slave raiders never reached the north of what is now the Upper West Region. They never went beyond Sankana, approximately 15 kilometres north of Wa. In the oral tradition of the Dagara in the Nandom area, however, Samori is known as a very cruel slave raider. People refer to the late 19th century as "the time of Samori and Babatu". According to Wilks (1989: 125) Samori's son, Sarankye Mori, did reach the Lawra district. According to Goody (1967: 13) "the inhabitants of the right bank of the Volta [i.e. in Burkina Faso] suffered considerably from Samori's forces, while the Lawra District was visited by Babatu and by other raiders. In the last years of the 19th century, the slave raids came to an end, partly because of the intervention of the European powers.

Although we of course know less about earlier episodes, the period of most rampant slave raids most probably occurred between 1884 and 1898. But what actually happened during such a raid, and what can we say about the impact of these raids? When the raiders approached a village, the inhabitants usually sought refuge in the bush or, where available, in caves or hills. The raiders would steal the people's properties, like animals and grains, to eat and to sell. The healthy people who were captured were sold as slaves. After the raiders left, the survivors would return to their villages. If people's food and property had been stolen, they had to find a way to survive until the next harvest. For my research, it would have been interesting to find out more about how people used to *cope* with and recover from such crises. In those days, coping strategies must have been very different from present-day coping strategies because of changes in the opportunities and constraints of the natural and, especially, the socio-economic environments. Unfortunately, I have not read anything about this aspect of slave raiding, and my interviewees couldn't tell me much about it, either.

By the time slave raiding reached its peak in the north of Ghana, the Trans-Atlantic slave trade had already been abolished, and the bulk of slaves were sent to the coast and the forest zone. There, slaves were in great demand for agricultural work and domestic services (Der 1998: 32). In the 20th century, this pattern of northerners working in southern agriculture has been consolidated and intensified, the difference being that migration became voluntary and often seasonal.[10]

About the impact of the slave raids, Der (1998: 30) writes: "it bred insecurity (...) no one was certain of his life (...). The raiders often destroyed villages and carried away cattle, sheep,

[10] Note that in the early decades of the 20th century, the colonial rulers recruited *forced* labour in northern Ghana for the private mine companies and road, railway and harbour construction. Seasonal work in agriculture (especially in the cocoa sector), on the other hand, was voluntary (see below).

goats, poultry (...), millet, yams, groundnuts, beans, rice." For the region as a whole, slave raiding and trading resulted in depopulation: negative population growth. The people who were captured and sold in slave markets were usually adolescents and people of middle age: "the cream of the population" (*ibid*. 30). The slave trade was detrimental to agricultural activity in the region, but it stimulated economic activity through increased trade. Besides slaves, the Mossi, Hausa, Yarse, Mande and, to a lesser extent, indigenous north Ghanaian traders exchanged grains, salt, sheabutter, horses, kola nuts and other goods, including European manufactured goods. Cowries were the main exchange medium. Some market centres, including Wa, benefited *in certain periods*, but this effect of the slave trade doesn't render the balance positive, especially since most of the people engaged in the trade were 'strangers', many of whom later left the area (Sutton 1989: 638). Between 1885 and 1900, the population of Wa town declined from 8,000 to 2,000 due to the battles and unrest of the era (Wilks 1989: 13). Der concludes:

> The long term and overall effect of the slave trade on Northern Ghana was that it retarded development in the area. Local arts and crafts and local technology suffered a setback. The insecure conditions of life did not favour development of local skills and many people with such skills were captured in raids and sold as slaves. The slave trade partly led to the intervention of the European powers in the affairs of Northern Ghana. Colonial rule followed the heels of the slave trade and Northern Ghana was further neglected in terms of development. (Der 1998: 31).

On a regional level, it seems that the Sisala were affected by slave raids just as much or even more than the Dagara and Dagaaba. Some slave-raiders made alliances with Sisala chiefs, but they mainly raided other Sisala settlements, especially along the Wa-Tumu trade route, going to Ouagadougou. Among the Dagara, there were also local freebooters who raided other Dagara villages.[11] Goody (1967: 13) writes: "Slave-raiding in the Lawra District[12] was more severe where it adjoins [Sisala] territory. (...) The [Sisala] were the real prey both of the Zaberima and the Mossi slave-raiders. The south of the Lawra District lay on the periphery of their sphere of action and incursions were consequently infrequent." The east of the Upper West Region was probably harder hit than the west. This may partly explain why the east is less densely populated. Other explanatory factors are the quality of the soils[13] and the incidence of diseases like sleeping sickness and river blindness in the sparsely populated areas.

A side effect of the slave trade was the conversion to Islam of some northern peoples. The Zabarima and Samorian slave raiders were Muslims. Many Sisala who joined the raiding bands and other Sisala who were captured (and apparently not sold into slavery) converted to Islam (Der 1998: 31).

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[11] Personal communication with Carola Lentz (28th June 2001).

[12] Note that the old Lawra District stretched farther east because it included the present Jirapa-Lambusie District. The old Lawra district was divided into the new Lawra District and the Jirapa-Lambusie District in 1988.

[13] See chapter five.

Colonial economic policy in the 'Northern Territories' of the Gold Coast

On the eve of political independence in 1957, Ghana was one of the richest and most developed countries in Africa, but the 'Northern Territories' structurally lagged behind their southern counterpart in virtually every aspect of development.[14] Some explanations of relative underdevelopment in the north (as compared to the south) go back to the pre-colonial era when European powers had their trading posts along the coast. First, there was more external demand for the crops grown in the south than for northern crops. Second, agricultural productivity was higher in the south. Third, the south was richer in minerals. Fourth, the distance to seaports was shorter in the south. Fifth, capital and labour had accumulated in the south, not in the least through the trade and domestic use of northern slaves (Sutton 1989: 641). When the British colonised the coastal areas and the forest zone, they were not really interested in the north. After the Northern Territories had been included in the Gold Coast colony as a protectorate in 1902, this lack of interest transformed into neglect. Investment in the social and economic infrastructure was concentrated in the south, and inequalities increased during the colonial era.

According to Plange (1979), high climatic variability and low soil fertility cannot adequately explain underdevelopment in northern Ghana. Economic underdevelopment, he argues, is rather a consequence of the expansion of European capitalism in Ghana. Northern Ghana was not bereft of natural resources, but the colonial rulers regarded the *population* (i.e. labour power) as northern Ghana's most suitable resource for exploitation. Labour was needed in the southern part of the Gold Coast colony, where an export economy had developed that provided Europe with raw materials like cocoa, palm oil and gold, and that served as a market for British exports. The role of the Northern Territories within the Gold Coast colony was largely that of a *labour reservoir* (including forced labour).

In this section, I will explore the structural-historical explanations of underdevelopment and poverty in northern Ghana by looking at the impact of colonial rule and economic policy. The question to be answered is whether colonial policy in the Northern Territories contributed to the structural vulnerability of livelihood systems in the research area. It should be borne in mind that the impact of policy varies between livelihood systems. In regulated economies, for instance, artificially low food prices reduce urban consumers' vulnerability to food insecurity while rural producers face increased vulnerability, at least if they are net sellers of foodstuffs. In my analysis, some emphasis will fall on the impact of colonial policy on the most prevalent livelihood system in the research area: subsistence farmers.

My interviewees rarely ever alluded to colonial policy or state politics[15] to explain the relative underdevelopment of the local economy or their own poverty. This, I assume, results from the low level of education and information[16], and from the fact that in the extreme north,

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[14] 'The south' is actually comprised of three broad ecological zones. From north to south: the transition from savanna to forest, the forest and the coast. The transition from savanna to forest is also referred to as Ghana's middle belt. Each zone has its own comparative advantages and economic specialisation.

[15] An exception is the removal of subsidies on inorganic fertiliser between 1988 and 1990. Fertilisers had been subsidised since the mid-1960s (Tripp & Marfo 1997: 100-101).

[16] Although the average educational level in the Nandom area is relatively high compared to other parts of northern Ghana, people with formal education are concentrated in the semi-urban towns, like Nandom and Lawra, and in the regional capital Wa. In addition, many have migrated out of the region. My in-depth interviewees and my survey respondents lived in the villages around Nandom, and their level of education

colonial policy *in situ* was characterised by absence and neglect rather than active exploitation. It would be wrong, however, to conclude that colonial policy had little influence on local livelihoods. Several authors, some of them testing 'dependency' and 'world system' theory[17], have studied the "non-development"[18] of northern Ghana by the colonial rulers:

> …as well as a centre-periphery relationship between metropole and colony, there developed in many colonies a similar relationship between more and less developed parts of the colony. This model, while not as stark as in, for instance, Latin America, is useful in describing the economic pattern in Ghana of a growing export-oriented money economy in the south, and stagnation, or much slower change in the north. (...) The development of the southern part of the Gold Coast depended on there not being a similar development in the north. (...) Large-scale supply of migrant labor has precluded development in the areas supplying it[19] and in many areas this has been deliberate policy. (Sutton 1989: 637-8).

The influence of colonial economic policy in the Northern Territories of the Gold Coast was felt both directly, through different forms of 'taxation', and indirectly, through an economic policy characterised by non-investment. This policy aimed at developing the southern export economy by exploiting cheap labour from the Northern Territories.

Taxation and forced labour

The British justified levying taxes by stating that, thanks to the 'Pax Britanica'[20], people no longer had to spend time and energy defending themselves. People could now use their energy to produce more, either locally or in the southern part of the colony (Chief Commissioner Watherston, in Wilks 1989: 151). Whether or not the pacification of the area was a merit of the British, the importance of peace and stability to people's livelihoods is paramount. In the entire 20th century, no wars were fought in the research area.[21] Up to the present there have been only minor, often local, outbreaks of violence following chieftaincy disputes, military coups and religious conflicts. In this sense, the region distinguishes itself from many areas in Africa where famines have often been caused by a combination of drought and warfare.[22] The relative peace and stability of the last century have certainly had a positive impact on food security and the relative infrequency of famines in the region.

Table 3.1 shows the different systems of taxation and forced labour in the Northern Territories that I encountered in regional literature. The colonial powers realised that the north was generally a poor area, but they hoped that the revenues generated could at least cover the

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was not very high. In informal interviews with more educated Dagara, more emphasis was placed on the influence of government policy. The level of information in the area is also low. No newspapers are sold in Nandom town. The most widespread provider of information is radio.

17 Cleveland 1991; Der 1979; Sutton 1989; Plange 1979; Songsore 1985. All refer to Frank's metropole-satelite or centre-periphery model. Frank, G.A. (1969). *Capitalism and Underdevelopment in Latin America.* London.

18 Sutton (1989: 637).

19 Refers to Amin (1974).

20 The Pax Britannica here refers to the 'pacification' of the Northern Territories at the turn of the century.

21 Elsewhere in Northern Ghana, this has been different. In 1994, an ethnic conflict (partly over access to natural resources) between the Nanumba, the Dagomba and the Konkomba escalated in the Northern Region, causing several thousand deaths (Moerkamp 1997: 39; Bogner 2000). Another conflict area is centred around Bawku in the Upper East Region.

22 See for example de Waal (1989: 71-72), in Mortimore (1998: 108).

maintenance costs of the colonial administration. This was the case only for a few years. The first tax (1900-1901) levied in the north was never imposed on the Nandom area, simply because *de facto* the area was not yet under colonial rule. Elsewhere in northern Ghana, this tax was not very 'successful' either because it was imposed on subsistence farmers who could not contribute much. The colonial administrators decided to change their tactic and impose caravan tolls on the more wealthy traders. Most of these traders used donkeys to convey products between the coast, the forest zone, the interior savannah zone and the desert margins. In addition, there was a canoe-trade over the Volta River. Although this tax generated more revenues, the British realised that the caravan tax seriously hampered trade in the area, and therefore they decided to abolish it. In the 1910s and 1920s, very little revenue was generated *directly* by the colonial administration in the Northern Territories. "Expenditure in the north usually vastly outweighed revenue" (Sutton 1989: 639-641).

Table 3.1 Different types of taxes levied by the colonial rulers in the Northern Territories*

Period	Type of tax / revenue	Imposed on:
1900-1901	Maintenance tax	Citizens through chiefs
1902-1908	Caravan tax especially on kola and livestock	Traders
1906-1927	Compulsory labour in the mines	Adult men through chiefs
1906-1934	Compulsory labour for government works[23]	Adult men through chiefs
1912-	Gun licences	Gun owners
1926-	Cattle tax	Cattle owners
?	Tax on imported cattle	Cattle traders
1936-	Direct tax / head tax	Citizens through 'Native Authority'
1944-	Income tax (Income Tax Ordinance)	Traders, employees and professionals.

* List is not inclusive.
Sources: Sutton (1989); Wilks (1989); Cleveland (1991); Atingdui 1988; Thomas (1973); Ladouceur (1979); Economist (1958)

Total annual revenues in the 1900s ranged from £2,000 to £15,852. To compare, in those days a cow cost about four pounds. Expenditure in those years ranged from £10,000 to £100,000. This money was not invested in 'development', however. It was spent on the colonial machinery. This 'investment policy' can be illustrated by the advice of Governor Frederick Hodgson, who wrote:

> I would not at present spend upon the Northern Territories – upon in fact the hinterland of the Colony – a single penny more than is absolutely necessary for their suitable administration and the encouragement of the transit trade. (in Ladouceur 1979: 45).

Nevertheless, in the 1930s, even after the introduction of direct taxes, expenditures were still twice as large as revenues. These figures suggest that the colonial rulers did not exploit northern Ghana through direct appropriation. Instead, they exploited northern Ghana indirectly by draining its human resources (Sutton 1989).

[23] Forced labour for the government mainly involved the construction of roads and railways. This type of forced labour was abolished in 1934 after the Geneva Convention.

Economic development in the south depended partly on cheap northern labour. In the view of many colonial officers, especially those stationed in the south[24], 'manpower' was the sole economic resource of the north (see Plange 1979: 6). However, there is debate over the impact of labour migration on the migrants' areas of origin. It would be wrong to assume blindly that this impact was only negative (see below).

Much more public money was invested in the south, but revenues were also much more substantial there. Export taxes on raw materials were the most important source of revenue in the south (Atingdui 1988: 100-101). Cheap labour from northern Ghana and surrounding countries contributed to the comparative strength of the Gold Coast's export economy. The balance between revenues and expenditure in the coastal and forest zones was usually positive. The southerners felt that they were subsidizing the north. The colonial rulers realised that to increase revenues in the north, a more commercial agricultural system had to be established (Sutton 1989: 641). This never happened, however.

In the surrounding French colonies, the tax regime was harsher than in the British territories. In the first two decades of the 20th century, many 'Lobi' from southwest Upper Volta and Cote d'Ivoire crossed the border and settled in the sparsely populated Bole[25] area to escape the high poll tax on the French side of the border (Weiss 1997: 7-8). The Bole area and West Gonja have also been important destinations for Dagara migrants originating from the densely populated Lawra district. On their way to the south, seasonal migrants saw these sparsely populated and relatively fertile lands, and considerable numbers decided to start a new life there (Goody 1969: 160).

In the 1910s and 1920s, forced labour recruitment was an *indirect* source of income for the colonial rulers, and a burden on the northern people. Northerners were needed for work in the privately-owned mines, and for the construction of roads, railways and harbours in the south where the cocoa boom had caused labour shortages. There was competition for labour between the public sector, the private mines and the cocoa sector. One would expect that scarcity labour would make it more lucrative for northerners to migrate to the south. The labour market was not free, however, and none of the big players was prepared to pay higher wages (Thomas 1973: 91). In certain periods, the treatment, freedom of movement and working conditions of forced labourers in the mines did not differ much from that of slaves (Thomas 1973: 88). While the government and mining companies were struggling to recruit forced labourers, increasing numbers of northerners travelled down south *voluntarily* to work on the cocoa farms. Labour in the cocoa sector was small-scale, less physically demanding, more compatible with the migrants' obligations at home and, so it seems, more rewarding (Thomas 1973: *passim.*).

In 1927, the system of forced labour recruitment was abandoned. Forced recruitment was no longer needed because alternative income opportunities in the south had decreased. The cocoa sector had entered a slack period and consequently the labour shortage, also in other sectors of the economy, became less acute. Moreover, labour migration had conquered a central position in northern livelihoods:

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[24] Some colonial officers stationed in the north, especially F. G. Gugisberg, who was the Governor between 1919 and 1927, were very dedicated to development of the Northern Territories. Their enthusiasm was, however, met with reluctance to provide funds by southern officers (Sutton 1989).

[25] Bole lies in the west of the Northern Region, approximately 150 kilometres south of Wa.

> At first, forced labour recruitment was necessary to create a flow of labour from north to south.[26] But the flow of voluntary migrants from the north and from Upper Volta to the mines and cocoa fields was big enough by the 1920s to dispense with the unpleasantness of forced labour. (Shepherd 1981: 169)

Patterns of migration were established; lorry transport became available; the temptations of the money economy had penetrated northern Ghana; and certain fears of the first generation of labour migrants were no longer a hindrance to new generations. Direct taxation also had an impact on the migratory behaviour of northern farmers. Approximately ten years after the abolishment of forced labour recruitment, the policy of indirect rule and direct taxation was introduced in the Northern Territories (Thomas 1973: 103). This new tax encouraged (or forced) northern people to raise their cash income (cf. Weiss 1997: 7). Northern Ghanaian subsistence farmers had to increase their participation in the money economy. Seasonal labour migration was the easiest way to meet tax obligations. It was less risky than cultivating cash crops in the north (Sutton 1989: 642). It could be argued that there was a shift from direct force to an indirect force on northerners to engage in seasonal labour migration. The main alternative back north was the sale of livestock.

Still, it would be wrong to depict northern labourers as passive victims of labour exploitation. Only a small portion of the return on their labour was expropriated through colonial taxes. The direct tax was generally low.[27] Labour migrants returned to their villages with possessions that were beyond the reach of those who stayed behind. These possessions gave them status. The seasonal absence of labour migrants also reduced pressure on household food stores. Moreover, adventure and curiosity were important incentives for northern men to travel south. Upon their return, 'they had seen the world'. This further increased their status.

Long before the advent of colonial rule, there was already an exchange economy. White cowry shells from the Indian Ocean were used as an exchange medium. The first steps toward a money economy were taken in the early decades of the 20th century. The integration into such an economy was relatively slow, however. Cowries were still the preferred exchange medium as late as the 1930s, and even beyond. In his memoirs, Father McCoy (1988: 313), a Canadian missionary stationed in Jirapa (approximately 35 kilometres south of Nandom), writes that he had to ship a truckload full of cowries to pay his workers. This was in the 1930s. The 'exchange rate' in those days was 1,200 to 1,500 cowries per pound sterling (£). To date, cowries have retained their value in some transactions, especially in the more remote areas of the Upper West Region. One important positive effect of contact with Europeans can easily be overlooked but should not be underestimated:

> The introduction of cheap European-made hoe blades has made an important contribution to increased productivity. Previously, a blade, manufactured from locally smelted iron, would cost 5,000 cowries, equivalent to the price of a cow; poor men could not always afford to buy a hoe for each of their sons and these might have to take turns at using their father's. (Goody 1967: 28).

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[26] Refers to Thomas (1973).

[27] According to Lentz (personal communication, 28th June 2001) migrant income was rarely used to meet tax obligations.

Colonial agricultural policy

After the 'pacification' of the Northern Territories of the Gold Coast at the turn of the 20th century, it took another decade for colonial authority and rule to be well established over the north. When the area was deemed safe, some rapid rural appraisals (called 'explorations' in those days) were carried out to assess the economic possibilities of the north. It was concluded that the production of local food crops like sorghum, millet and sheanut could be increased and that commercial cotton, tobacco and indigo production could be developed (Sutton 1989: 638).

Two periods of colonial agricultural policy in the north can be distinguished. In early colonial days, until the 1930s, some scattered, localised efforts were made to develop cash cropping. First, attention was given to cotton production. The natural conditions looked favourable for cotton production, and the people were enthusiastic, not in the least because cotton was an indigenous crop. Yields and quality remained low, however. Attempts by the British Cotton Growing Organisation to improve cotton cultivation were not very successful. This was due mainly to the government's reluctance to provide infrastructure and extension services. Besides cotton, other potential cash crops, like sheanuts and groundnuts, and to a lesser extent, rice, dawadawa and tobacco received some attention (Sutton 1989: 655-6).

Attempts to increase the production of shea butter, processed from the indigenous sheanut tree, proved unsuccessful due to many different constraints such as high transport costs, low extracted fat contents, variable yields, limited demand outside the Gold Coast and the fact that harvesting of the trees coincided with the beginning of the farming season (Sutton: 1989: 658-9). An effort to introduce large-scale mechanised groundnut production for export proved to be an "expensive failure" (Shepherd 1981: 170).[28] In the eyes of colonial administrators, the prospect for commercial cultivation of other crops was not much better. Little was done to increase the productivity of these crops:

> …experimental agricultural and livestock schemes were initiated, dropped and revived several times in the course of the colonial period (and even after). (...) each new venture seems to have been treated as a complete innovation, with scant reference to earlier efforts (...). The major effects of this were expenditure of time, effort and money, with little benefit from past mistakes and successes. (Sutton 1989: 640)

The second period of colonial agricultural policy followed some more detailed studies on northern agriculture that were carried out in the 1930s. It was concluded that, given present conditions, cash crops were not viable in the north. "Problems of food shortfalls or bare self-sufficiency were frequent, and consequently the production of cash crops often unlikely." (Sutton 1989: 640). Policy, it was argued, should centre on upgrading subsistence agriculture by integrating crop cultivation and animal husbandry (mixed farming). If successful, this would improve the opportunities for cash cropping. The idea was sound and supported by well-intentioned colonial officers *in the north*. However, in the centre of political decision-making and allocation of public resources (in the south) there was reluctance to provide the necessary funds for extension and infrastructure (Sutton 1989: 652).

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[28] The best-known groundnut scheme (Gonja Development Corporation) was at the same time an attempt to redistribute people to sparsely populated areas in the north.

The colonial government never truly supported the development of a cash crop economy in the north. A balanced supply of agricultural extension, improved infrastructure, credit schemes and so on would have facilitated the development of a cash crop economy. This could have lead to a less skewed distribution of economic activity on a national scale. In terms of food security and vulnerability to climate variability and change, however, I doubt whether northern Ghana would have been so blessed with a cash crop economy. A heavy reliance on cash crops without adequate subsistence food production would have exposed people to the volatility of input and output markets in addition to the existing production risks. This would have made livelihood systems more vulnerable to food stress. A process of rural stratification and proletarianisation often accompanies the development of a cash crop economy. This would put increasing numbers of small farmers at risk. Moreover, most cash crops require relatively favourable climatic conditions as compared to the local staples millet and sorghum. Even in extreme drought years, farmers in the research area were still able to harvest some grains. If farmers in the research area had shifted to less drought-resistant cash crops in the course of the relatively wet 1930s, 1940, 1950s and 1960s, the impact of the droughts of the 1970s and 1980s would probably have been much more dramatic. On the other hand, in good years, high yielding cash crops have the potential to generate substantial assets and wealth. Although cash crop farmers are more *exposed* to risk, they may at the same time be more able to *cope* with these risks because of an increased buffer capacity (improved assets).[29] This is all hypothetical, however. The northern Ghanaian reality is that the colonial rulers were never willing to substantially invest in agriculture, be it subsistence or cash crop production.

In the early decades of the 20th century, the southern part of the colony had specialised in cash crops to such an extent that the region had become a net importer of food. When colonial officers concluded that no export crops could be produced viably in the north, they envisioned that the north would produce food for the south. The existing food crop production had to be upgraded to create a surplus. No substantial investments in northern food production followed, however, and although some amounts of guinea corn, millet, maize, yams, sheabutter and groundnuts left the area by the 1940s, this was never substantial. Yams were probably the most successful commercial food crop due to relatively high yields (but also high labour input). Stable demand in the south was guaranteed because yams are a preferred ingredient of 'fufu', a popular dish in southern Ghana. Yam 'export' to the south increased with the advent of motorised transport (Goody 1969: 161). Smaller quantities had been exported in earlier days as part of the canoe-trade over the Volta.

Within the Northern Territories, food surplus areas that exported produce to the south were mainly the low population density areas where relatively little labour migration took place. The high population areas were often food deficit areas with little scope for agricultural growth, at least in the eyes of colonial policy-makers who encouraged migration to less densely populated areas (Sutton 1989: 653-4). According to Sutton (1989: 641), many households in the high population density areas already combined subsistence farming with food purchases through migrant wages as early as in the 1930s. This clearly contrasts with the perception of my respondents, according to whom 'in the olden days', virtually all households were self-sufficient in their food production (see chapter eight). Still, it is questionable whether the densely populated Lawra District ever exported substantial amounts of food crops

[29] For a discussion on 'safety-first' versus 'risk-taking', see Scott (1976) and Popkin (1979).

to the south. Farmers did sell some crops at local markets, especially groundnuts, rice and yams and women processed agricultural produce for barter or sale at local markets, thereby increasing the return to their surplus produce. Sheabutter, dawadawa (a local seasoning used as a soup ingredient) and sorghum beer were and still are the most common products.

Colonial livestock policy

Throughout the colonial era, cattle from neighbouring countries sold in southern Ghanaian markets vastly outnumbered cattle from the Northern Territories. Most cattle came from the Upper Volta and Niger. In 1920, the cattle population in the Northern Territories was estimated at 68,500 heads. In the same year, annual demand for consumption in the south was estimated at 40,000 heads. It was impossible for domestic supply to meet demand, especially because only a fraction, e.g. 2,000 heads in 1918, was 'exported' to the south (Sutton 1989: 647-8). In 1918, £650,000 worth of 'French' cattle was sold at the Kumasi market. In subsequent decades, the cattle populations in the Northern Territories increased considerably (see table 3.2) and commercial off-take rates (percentage of herd size sold) increased, too. At least three quarters of the cattle population of the Gold Coast came from the Northern Territories. By the end of colonial rule, meat was the only important 'export' product in the north (Sutton 1989: 650).

Table 3.2 Heads of cattle in the Northern Territories (1921-1957)

Year	Heads of cattle
1921	70,000
1935	190,000
1946	250,000
1951	390,000
1957	324,000

Source: Gold Coast Annual Reports, in Sutton (1989: 648, 650)

The increase in livestock production during the colonial era was partly facilitated by government policy. After several fruitless attempts to interbreed local species with European bulls, interbreeding of local species with Zebu and Moshi cattle (combining large size with high disease-resistance) proved more successful. Other veterinary extension work consisted of quarantine and rest stations, vaccination, immunization and the promotion of mixed farming and improved fodder. Due to increased wealth in the south, there was always a market for meat. Colonial veterinary services were financed by taxes on imported cattle. Even though cattle production in the Northern Territories increased, imports were still needed to meet demand in the south. Import from the French countries occurred on foot and seasonally. In the dry season, there was not sufficient water for animals to survive the trip. Due to the relative proximity to the Kumasi market, cattle from the Northern Territories could also make the trip in the dry season, thereby filling the gaps in the meat supply left by imported cattle from more northern origins (Sutton 1989: 651). Since the 1960s, cattle have been mainly transported by lorry. The condition of the roads puts a constraint on transport in the wet season rather than the dry season. Since there were no cattle markets in the north, traders used to go to the villages to buy cattle directly from farmers. In the Upper West Region, this is still the procedure. Poultry, goats and sheep are sold at markets; cattle, donkeys and pigs are traded outside markets.

The introduction of mixed farming was not very successful in the colonial era. Mixed farming involves the integration of livestock and food crop production by using draught power, improved fodder and by applying manure to the fields. In the densely populated Upper

East Region, small numbers of farmers adopted mixed farming, but the overall result was poor (Shepherd 1981: 170; Der 1979: *passim.*). In the Nandom area, bullock farming was not adopted until long after Independence. In the past 15 years, increasing numbers of farmers in the Nandom and Lambusie areas have started to plough their fields with bullocks or donkeys. This is mainly due to the joint efforts of the (non-governmental) Nandom Agricultural Project (NAP) and the Ministry of Food and Agriculture.[30]

Contrasting views on the motivation and impact of labour migration

A reoccurring issue in the analysis of colonial policy is the exploitation of northern Ghanaian labour. When analysing the impact of labour migration, it is important to make explicit *whom* labour migration impacts on: the migrant, the household of the migrant in the home area, the home community or northern Ghana as a whole. By focusing on the migrant, the analysis engages an active perspective and the impact of migration is relatively positive. When considering the impact of labour migration on those who stay behind or on the area of origin in general, the picture is usually less positive (see also Cleveland 1991: 222).

Some valuable studies of the impact of labour migration at the *area* level have been carried out in northern Ghana. Most of these studies use dependency and world system theory. When analysing the impact of and motivations for labour migration at the *individual* or household level, a more actor-oriented approach is desirable. In the 'livelihood histories' in chapter eight, labour migration (seasonal, circular and permanent) is omnipresent, and the motivations and impact will be analysed from the point of view of the migrant and the relatives who stay behind.

According to Plange (1979: 11), labour migration of northerners to southern Ghana cannot be satisfactorily explained as an adaptation to the conditions of the savannah environment, such as low soil productivity and regional differences in climatic variability.[31] It ignores the historical and politico-economical conditions of migration. Before colonization, he argues, people did not travel to southern Ghana, at least not as labourers. In the early decades of the 20th century, migratory patterns in northern Ghana changed from "local migration by many and long-distance migration by a minority of warriors and traders" to long-distance migration by many (Cleveland 1991: 222). Cleveland uses national census data to analyse the extent of labour migration from the Upper Region[32] of Ghana. Sex ratios of the working age population were found to have decreased substantially in the course of this century, and especially since the 1950s. Labour migration was found to be increasingly *'unseasonal'*. Of males born in the Upper Region, 38 percent were living outside the region at the time of the census (1970). The figure for females was 18 percent. These people stay in the south year-round. They do not contribute their labour to northern farming (Cleveland 1991: 234-5). Besides these long-term migrants, there are also seasonal migrants. In his analysis of the impact of migration on the

[30] In the first years after the establishment of the NAP, only small numbers of farmers adopted bullock farming. In the past few years, adoption rates have increased markedly.

[31] This concerns not only production risk due to unreliable rainfall, but also farming calendars, especially the fact that the slack season in the north corresponds with the peak of labour demand along the coast and in the cocoa producing regions in the forest zone (Plange 1979: 11).

[32] Until 1983, the Nandom area was part of the Upper Region with Bolgatanga as its capital. In that year, the region was separated into the Upper East Region (capital: Bolgatanga) and the Upper West Region (capital: Wa).

area of origin, Cleveland focuses on long-term migrants who stay away for at least a year and who do not return to their villages in the farming season.

Cleveland tried to measure the impact of migration on the home community by comparing remittances of long-term migrants with the effect of their absence on the production *and consumption* of food in the village. Remittances were found to be low and "only a few migrants appeared to be remitting at a rate that would begin to replace the production lost because of their absence." (Cleveland 1991: 236). Labour migration increases dependency ratios because migrants are predominantly productive adults. For the Upper Region, Cleveland (1991: 237) calculated that dependency ratios were 0.21 (or 12 percent)[33] higher than they would have been if no out-migration had taken place. To compensate for the increased dependency ratios, average remittances should at least amount to the monetary equivalent of approximately 40 kilograms of grain equivalent per migrant. In Cleveland's survey, only a small fraction of this amount was found to be remitted annually.

Cleveland does acknowledge that the real impact of migration on the home community is difficult to assess. Transfers of money and goods are not always traceable, and non-material transfers, such as knowledge, skills and new ideas, are hard to measure (Cleveland 1991: 235). Another important issue is population pressure and soil fertility. In high population density areas, migration can provide some relief of pressure on the land. At the household or farm-unit level, it is a well-established strategy to keep one son on the farm whilst his brothers migrate to the south, either temporarily or permanently (see Lentz 1994: 63 and pathway of Egidius Dugyi in chapter eight). In some families, brothers take turns. They alternate a stay at home with labour down south. This way, the scarce land is not divided among brothers. In the Lawra district, this 'system' has resulted in a virtual stagnation of population growth (Ghana Statistical Services 2002). Whether this is a positive development is debatable. Tiffen (1995) argues that increasing population pressure, given certain conditions, can lead to intensification of local agriculture, development *in situ* and higher incomes. Increased out-migration reduces the need for agricultural change. This way, unsustainable farm practices are not challenged, and food security may worsen.

Sutton (1989: 638) argues that the loss of labour through migration *per se* did not have much negative impact on northern Ghana. The detrimental effect on the northern economy came from the colonial rulers' perception of the north as a labour reservoir. The role that the north had to play precluded the necessary investments in agriculture, infrastructure and social services. It was against the interest of the colonial rulers to develop the north and thereby reduce the push factor for labour migration. The southern, revenue-generating economy needed that labour to expand. Non-investment and neglect have exacerbated underdevelopment in northern Ghana (see also Ladouceur 1979: 60-61).

If we shift to a more actor-oriented perspective, the picture changes. Given the limited income opportunities in the north, labour migration – and especially *seasonal* labour migration – is an additional income option that brings money into the local economy. In the dry season, the men in the Nandom area can either try to make some money locally or migrate to the south. When they go south, they reduce the pressure on their home granaries and they

[33] Total population / men and women aged 15-64 = 1.96; Adding those born in the Upper Region who were living in other parts of Ghana (also reported in the Census), the ratio decreases to 1.75. Percentage change: (1.96-1.75) / 1.75 = 0.12 * 100% = 12%.

bring money into the local economy. This money sustains local income generating activities, such as beer brewing, food preparation, house construction, etc. The money is spent several times before it leaves the area again. When looked at from that angle, the impact of labour migration is quite positive.

With a structural and policy-oriented perspective, the impact of migration on northern Ghana is negative. The central government did not invest in the northern Ghanaian economy because northern labour was needed in the south. Such a perspective might *expect too much* from a central government, however. In colonial days, before the advent of a more altruistic development corporation, the British rulers were not interested in developing their colonies, at least not if it wasn't to their own benefit.[34] In southern Ghana, the development of an export economy benefited the colonial rulers because it raised their revenues. In the north, the colonial rulers saw little opportunity and the region remained subsistence oriented.

The Catholic mission

An analysis of the 20th century history of the research area would be incomplete without mentioning the influence of the Catholic mission. The 'Society of Missionaries of Africa' (the 'White Fathers') established a mission in Nandom in 1933. Four years earlier, the first mission in Northwest Ghana had been opened in Jirapa, about 35 km south of Nandom. It is generally agreed that the speed with which the Dagara converted to Christianity was unique in Africa.[35] Explanations for this massive conversion vary. Some authors emphasize theological explanations such as the alleged commensurability between the indigenous and the Catholic worldview. Some of these authors also give an important role to God Himself who produced a 'miracle' by favouring the converts with rain and punishing the 'pagans' with drought or locust plagues (see McCoy 1989: 121). Other authors emphasize socio-political factors that explain conversion to Christianity as a rational choice on the part of the convert. When the missionaries appeared on the stage, the chiefs, supported by the colonial rulers, were structurally abusing their power. By siding with the missionaries, the converts hoped to stand stronger against the chiefs' demands (Hawkins 1997: 57 and Mr. Guribie, in Tengan 2000: 136). Indeed, there has been quite some tension between the missionaries and local authorities. In some aspects of social life, including the position of women (Hawkins 1997: 56-57), Christianity was quite liberating and empowering[36] (see also Tengan 2000: 135-137). Whether or not it was the missionaries' and their first followers' intention, Christianity constituted a challenge to the existing authorities (Hawkins 1997: 65). McCoy interviewed a local catechist and asked him to explain what attracted the Dagara to Christianity. The catechist answered that the people "believed and hoped that the white men of God would (...) free them from their

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[34] This changed in the late 1950s, but by then Ghana was already independent (personal communication with Prof. Ton Dietz, Amsterdam, 15 February 2002).

[35] Within fifteen years after the arrival of the first missionaries, about one quarter of the population of the old Lawra District had converted to Christianity (Hawkins 1997: 51). According to McCoy (1988: 314), in the late 1980s, seventy percent of the inhabitants of the Nandom area were Catholics. In my random sample of sixty rural households in the Nandom area, sixty-nine percent were Catholics.

[36] The 'liberating' and 'empowering' force of Christianity is not universal. In my own country, the Netherlands, for example, a Christian political party (the SGP) still does not admit female membership and representation. Christianity can be progressive and liberating in one context and conservative and discriminating in another.

slavery and misery." He continues: "… many drew back when they realized that despite the religion of the white men, children were still dying, the rain didn't always come, and the (...) forced labour was still on." (Robert Bongvlaa, in McCoy 1988: 302). Another reason for early converts to abandon their new religion was that Catholic men were not allowed to marry more than one wife (Hawkins 1997: 87).

The success of the Catholic mission can also be attributed to the fact that the missionaries brought effective medicines against diseases like yaws, conjunctivitis, pneumonia, malaria, dysentery and bilharzias. In fact, the first missionaries spent more time on medical work than on pastoral work (Hawkins 1997: 64, 70). The people were impressed by the missionaries' medical successes ('miracles') and they saw the missionaries as powerful but friendly men who had come with good intentions. Unlike the missionaries, the colonial rulers had shown very little interest in improving the healthcare in the area (Hawkins 1997: 66). Another reason for some converts to abandon the old ways was that Christianity was less demanding or 'cheaper' than their traditional beliefs. They no longer had to buy chickens to sacrifice (Tengan 2000: 137). The missionaries were also smart enough to make certain compromises and allow a certain degree of syncretism, especially where it came to the most important social events in Dagara culture: funerals (Hawkins 1997: 74).

In terms of development, the impact of mission activities was probably greatest in the field of education. Just as in the field of healthcare, the colonial rulers had not invested in education in Northwest Ghana. Up to the 1930s, more than thirty years after Northern Territories had become a protectorate of the British, not even one school had been established in the present Upper West Region. Moreover, the 'White Fathers' were initially not granted permission to establish schools because the British, who were predominantly Anglicans, did not want the "future leaders of the Northwest to be Catholics" (McCoy 1988: 145). Social and educational development in the Northern Territories was retarded by the colonial rulers' initial exclusion of missionaries. Only the White Fathers were admitted to open a few missions. In the areas where the White Fathers were active (especially Navrongo, Jirapa and Nandom), the level of education was much higher than in the rest of northern Ghana (Ladouceur 1979: 58-59).

In 1937, a few years after their arrival, the missionaries opened the first primary school for boys in Nandom. After primary school, the most promising boys were sent to Navrongo to further their education. In 1940, shortly after the arrival of the Franciscan Missionaries of Mary, the first primary school for girls was opened (McCoy 1988: 147). In 1959, a secondary school for girls was established by the Franciscan Sisters in Jirapa (McCoy 1998: 164). This is interesting because, according to McCoy, the Dagara men in those days opposed the idea that girls and women were capable of learning anything that was more complicated than farming, housekeeping and brewing beer. The bishop had gone round to the villages to encourage the parents to send their daughters to school, but still only twelve girls enrolled in the first year. In a few years' time, however, many more people accepted the idea of sending their daughters to school. In 1963, the Missionary Sisters of Our Lady of Africa (MSOLA, more popularly the 'White Sisters') opened St. Anne's Vocational Institute for girls in Nandom (McCoy 1988: 258). The boys from Nandom still had to go elsewhere to further their education after primary school. This situation would change for the better with the arrival of the Brothers FIC in the mid 1960s. In 1968, the Catholic Brothers opened Nandom Secondary

School, which, without irony, was popularly called "the University of the North" in its best years. 'Nandom Sec' even attracted students from outside the region. Perhaps equally important for local development, was the establishment of the Nandom Practical Vocational Centre, a technical school, in 1972 (McCoy 1988: 204). Some years after the first students had graduated from the vocational school, the FIC Brothers started a centre that helped former students to set up small-scale enterprises. This centre presently operates under the name Producer Enterprise Promotion Service Centre (PEPSC) and moved to the regional capital Wa in 2001 (see Van der Geest 2002b).

In 1973, the Diocese of Wa started the Nandom Agricultural Project (NAP) that sought to increase food production in the area. In 1981, the project was entrusted to the FIC brothers (Stanneveld *et al.* 1994: 121). Besides the livestock vaccination program, I have not heard nor read about any agricultural extension services in Nandom in the colonial era and in the first decades after Ghana's independence.

As I indicated above, the first missionaries in the area dedicated a great deal of their time to medical work. In the 1950s, this task was taken over by the White Sisters who set up a dispensary and a maternity clinic in Nandom. In 1961, following a similar initiative in Jirapa, the independent Ghanaian government agreed to finance the construction of a hospital in Nandom (completed in 1965) that was to be managed by the mission: first by the White Sisters, and since 1975 by the Sisters of Mary Immaculate (SMI). This partnership between the government and the mission was quite unique in those days (McCoy 1988: 189-190).

In 1955, the first official credit union on the African continent was established by a Scottish priest (John McNulty) in Jirapa. A few months later, a credit union was started in Nandom, too. According to McCoy (1988: 208-216) – who does not shed a light on the difficulties involved in such an enterprise – the credit unions were a great success.

The above description of some development efforts of the Catholic mission is mostly based on an uncritical source (McCoy 1988). A more critical analysis of mission activities would probably reveal more negative aspects. Whatever the exact impact, the missionaries did fill the void caused by the structural neglect of the north by the colonial rulers and, to a lesser extent, the independent Ghanaian governments. From the early start, missionaries were engaged in improving the lot of the people. In McCoy's (1988: 216) words: "… until people's stomachs are filled, their bodies clothed, their troubles listened to sympathetically, their tears shared, it is often useless and even disrespectful to try to fill and clothe their souls."

With their expanding influence, the Catholic mission became an important actor in local and regional power structures. Besides the chiefs, the tengandɛm (the clan of the Earth-priests), the political parties and the local government, a whole array of Catholic organisations have entered the political arena and have a voice in the allocation of resources. It should be noted that over the years, the religious clergy has been Africanised. Nowadays, all priests, brothers and sisters in Nandom are Ghanaians. The Catholic Dagara have organised themselves in all sorts of groups, for example the Knights of St. John, St. Monica's Widow Group, a local Society of St. Vincent de Paul and the Catholic Youth Association. All these groups have regular meetings and activities, and have an important network function. Many NGOs that currently operate in the Upper West Region have a Catholic background. Their interventions are coordinated by the Diocesan Development Office (DDO) in Wa.

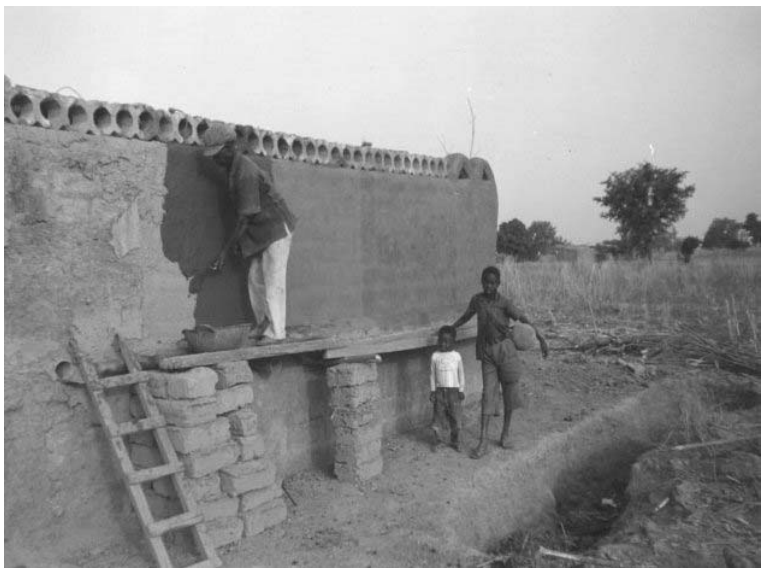

Photo 1
Mr. Kontana plastering the wall of his compound with sand and cow dung

4

Climate change and crop cultivation

When you ask farmers in the Nandom area to compare the harvests they have nowadays with the harvests of the past, nine out of ten will say that currently they are smaller (see chapter 6). A typical answer is: “Those days, we only weeded a small area around the house but the harvest was always plenty.” Farmers attribute this decline in crop yields mainly to a decline in soil fertility and a worsening of climatic conditions. When asked to explain in what sense the climatic conditions have deteriorated, some people will say that rainfall is *less* nowadays, but many people will add that the rains have become *erratic* or *unreliable*. Moreover, it is often said that in ‘the olden days’, the rains came much earlier. Sowing was already possible in April, they say. Are people romanticising the past or has there really been a deterioration of climatic conditions? I will try to answer this question by analysing rainfall data for Nandom and Lawra (25 km south of Nandom). I will try to reconstruct the history (1926-1999) of the weather in the research area by looking at trends in annual amounts, trends in inter-annual variability of annual rainfall and trends in the distribution of rainfall over the year.

In the last section of this chapter, I will link rainfall data of four weather stations in the Upper West Region to agricultural production data at a regional level (1986-1998). The aim of this analysis is to test whether there is actually a positive correlation between annual amounts of rainfall and harvest levels. But I will start this chapter with a classification of the climate in the research area and the distribution of rainfall during the growing season. Table 4.1 shows the data that I use in the present chapter.

Table 4.1 Data on which the analyses in this chapter are based

Locality/region	*Distance to Nandom (km)*	*Monthly rainfall data*	*Daily rainfall data*	*Temperature data*	*Agricultural production data*
Nandom	0	1980-1999	1989-1999	-	-
Lawra	25 south	1926-1982	-	1989-1998	-
Wa	110 south	1986-1999	-	-	-
Tumu	100 east	1989-1999	-	-	-
Babile	35 south	1986-1999	-	-	-
Upper West Region	-	-	-	-	1986-1998

Classifying the climate of the research area

The average amount of annual rainfall in Nandom (1985-1999) was 928.8 mm. This average excludes the droughts of the late 1970s and early 1980s (see below). The average of 1980-1999 is 892.8 mm. The potential evapotranspiration can be calculated at 2232 mm.[1] Thus, the aridity index, calculated as precipitation (mm) divided by potential evapotranspiration (mm) for 1985-1999 is 0.416. For 1980-1999, the index is exactly 0.4. In UNESCO's classification of climates, an area is semi-arid when P/ETP is less than 0.5 (Dietz *et al.* 2001a: 12).[2] The research area has thus been semi-arid in the past 20 years. On UNESCO's world map of arid regions, the area has been classified as sub-humid because this map is based on the relatively wet period between 1930 and 1960. Average rainfall in Lawra (25 km south of Nandom) in that period was 1156.8 mm. Assuming the same temperature and potential evapotranspiration, the aridity index was 0.517, which means that on average[3], the area was sub-humid between 1930 and 1960. After the 1960s, the area has become considerably drier (see below). It can be concluded that the research area lies in the transition zone between semi-arid and sub-humid regions.

Rainfall characteristics

Distribution of rainfall

Most of the rain falls from April to October with a peak in August. November to March is generally dry. Graph 4.1 shows the average 10-day amounts of rainfall for Nandom (1989-1999). For a better interpretation, I have plotted these data against the critical values for dry, wet and very wet periods as established by the Food and Agricultural Organisation (FAO)

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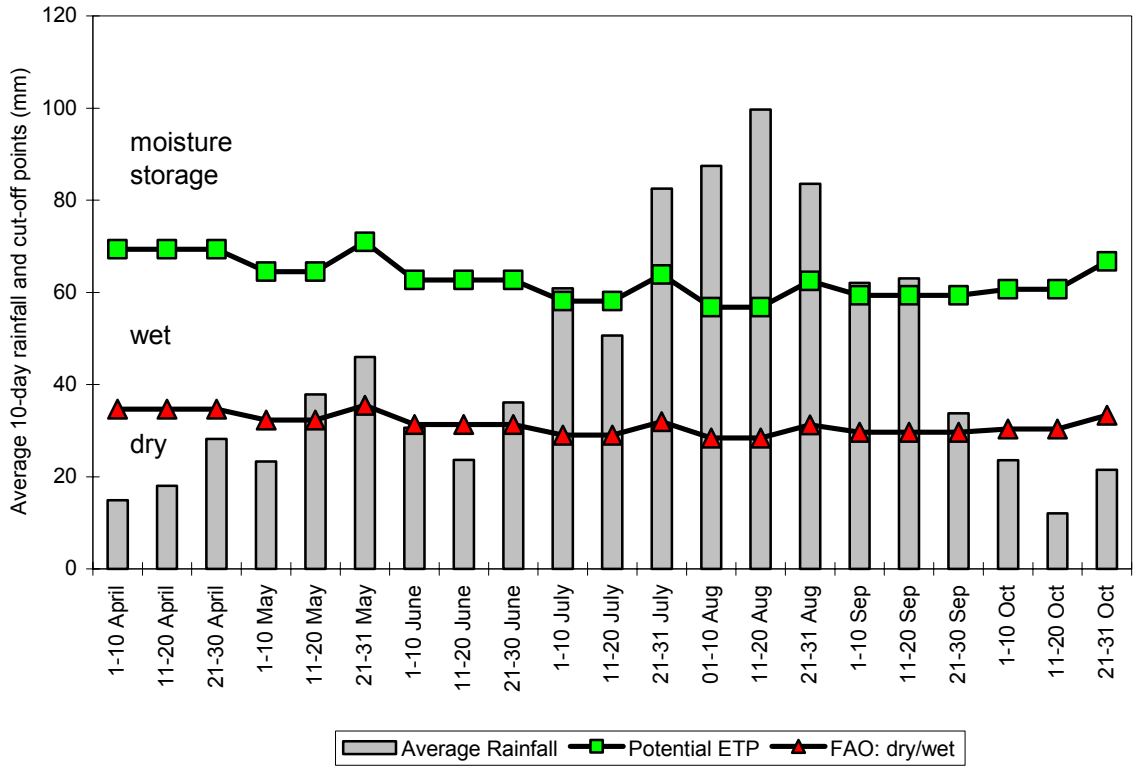
1 The average annual temperature was 27.9 °C. The annual potential evapotranspiration is estimated at 80 * 27.9 = 2232 mm (personal communication with Prof. Ton Dietz, Bolgatanga, 6th April 2000).

2 Alternatively, the limit between semi-arid and sub-humid is set at P/ETP = 0.45 (see Dietz *et al.* 2001a: 73). One could also regard 0.4<P/ETP<0.5 as the transition zone between semi-arid and sub-humid (personal communication with Prof. Dietz, Amsterdam, November 2000).

3 When we talk of climate, we talk of *average* weather. Due to the vicinity to the cut-off point for semi-arid and sub-humid areas (P/ETP = 0.5), in some *years,* conditions are semi-arid and in other years conditions are sub-humid.

who consider a period sufficiently wet for a crop that is adapted to dry conditions when the rainfall is more than half the potential evapotranspiration. The bulges in the lines that show the 'cut-off points' at the end of May, July, August, and October are caused by the fact that these points represent 11-day, rather than 10-day periods. The differences in cut-off points between months are caused by the fact that some months are warmer than others, and in these months the potential evapotranspiration is higher. One can see that *on average,* rain was adequate between mid-May and late September, with a dry spell in June.[4] Most crops that are common in the research area have a growing period of at least three months. Farmers use the early rains in April to start preparing the land and start sowing a few fields in May. Most sowing takes place in June and July.

Graph 4.1 Average rainfall in 10-day periods for Nandom (1989) set against the critical amounts for dry, wet and very wet 10-day periods



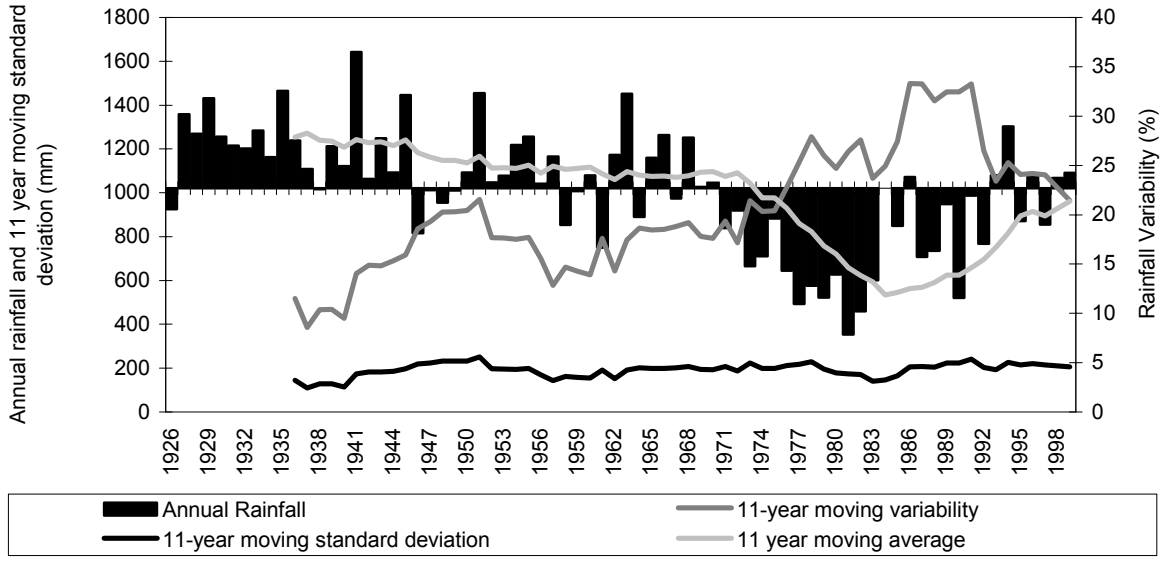
Source: Adapted from Nandom Agricultural Project and Meteorological Services Dept. Accra

[4] Note that the relatively dry period in June is not necessarily a general characteristic of the climate in the research area. Graph 4.1 is based on only 11 years. To describe the *climate* of an area, averages for a period of 30 years are generally calculated. Moreover, data from different weather stations are used for that purpose.

Climatic trends: Annual rainfall and inter-annual variability

Now let us turn to the rainfall trends to find out which changes have occurred in the local climate since the early decades of the 20th century. In Lawra, virtually all the years between 1926 and 1945 experienced above average rainfall (see Graph 4.2). In all these years, annual rainfall was above 1000 mm. In these two decades (1926-1945), the average annual rainfall was 1238 mm. The 11-year moving inter-annual variability in this period was between 8 and 16 percent.[5] Between 1946 and 1969, rainfall was still quite good, but not like the previous two decades. The average annual amount of rainfall decreased to 1080 mm and the 11-year moving inter-annual variability oscillated between 12 and 22 percent. Nine out of 24 years received below average rainfall. In the 1970s and early 1980s, the research area experienced a dramatic deterioration of climatic conditions. All the years received below average rainfall. In the first seven years of this period (1970-1976), the decreased annual rainfall did not result in severe or extreme drought risk. 1973, 1974, and 1976 all received less than 700 mm, which had never happened before (or at least not since 1926). The distribution of rainfall over the year was quite good, however. The average annual rainfall for these seven years dropped to 795 mm.

Graph 4.2 Total annual rainfall; standard deviation of annual rainfall and inter-annual variability of annual rainfall in Lawra (1926-1982) and Nandom (1983-1999)[6]



Sources: Adapted from Nandom Agricultural Project and Meteorological Services Dept., Accra

[5] For each year in the series, the 11-year moving inter-annual variability is calculated as the standard deviation of the previous eleven years divided by the average of these eleven years.

[6] Missing value: 1984

In Lawra, a disastrous period started in 1977. In seven subsequent years, drought risks were 'extreme'.[7] The average of these 7 years is as low as 501 mm, with only 387 mm in 1981. Looking at the distribution of rainfall in these years (see Van der Geest, 2002a), one would assume that 1977, 1981 and 1982 were years of complete crop failure. In 1978, 1979, 1980 and 1983, farmers were probably able to harvest some drought resistant crops, especially in the low-lying fields. This prolonged drought period is extreme, especially compared to previous decades.

There are rough monthly rainfall data for Nandom in the period 1980-1983. The average annual rainfall in these years was 776 mm. Only 1981 and 1983 received less than 600 mm and had an 'extreme drought risk'. 1980 and 1982 received above 900 mm and only had a 'very light' and a 'light drought risk'.

After 1983 or 1984[8], the annual amounts of rainfall partly recovered in Nandom. In 1990, however, an 'extreme drought' hit the Nandom area, again. The total amount of rainfall that year was 520.4 mm.

In most studies of the impact of climate change, scientists state that a major problem is the increasing *variability* of rainfall. When we think of rainfall variability, what does it mean to farmers? It means that they cannot *count* on adequate rainfall every year, while in some years, rainfall is abundant. In their cropping strategies, farmers have to gamble whether this year will be dry or wet. In case of a dry year, it would be good to sow drought resistant crops in the low areas. These crops will fail if the year turns out to be wet. In case of a wet year, the farmers would do well to sow his maize, millet, groundnuts and guinea corn a bit higher, and only rice and yams in the low areas. The upland crops would then fail if the year turned out to be dry. In reality, the farmers spread the risk. It can be argued, however, that the less variation between years, the better. In a hypothetical case where every year is the same, the farmer would know exactly which crop mix would give the best results.

Besides the annual rainfall, Graph 4.2 also shows the 11-year moving average, standard deviation and (inter-annual) variability of annual rainfall. The inter-annual variability of total annual amounts of rainfall is calculated as the standard deviation divided by the average, multiplied by 100 percent. This results in a figure of 26.6 percent for the whole period (1926-1999). As I already indicated in the section on climate variability in the theory chapter, a low average is often accompanied by high variability for the simple reason that the divider in the quotient is smaller. It is therefore not surprising that there is a strong negative correlation between the 11-year moving variability and the 11-year moving average (see Graph 4.2). Until the 1970s, the inter-annual variability oscillated between 8 and 23 percent. Starting in the late 1970s it began to increase steeply. This continued until 1990 when it was almost 35 percent, but in the 1990s it came down to around 25 percent, which is still more than before the 1970s. Graph 4.2 also shows that the 11-year moving standard deviation increased much less than the 11-year moving inter-annual variability.

We can conclude that the increase in inter-annual variability of total annual rainfall results mainly from a decline in the average. The 11-year moving standard deviation of annual rain-

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[7] For the ICCD Project, we used a 'Drought Risk Index' that looked at the distribution of rainfall over the year. The index had six categories: 'no drought risk', 'very light drought risk', 'light drought risk', 'moderate drought risk', 'severe drought risk' and 'extreme drought risk' (see Dietz et al. 2001a).

[8] There are no data for Nandom in 1984, but in Babile and Wa the drought risk was very light.

fall has been more stable over time. Inter-annual variability has become a more serious problem not because the absolute differences between years have increased, but because an equal absolute variation has a more severe impact when annual amounts are lower. Indeed, receiving 500 or 800 mm might constitute the difference between a crop failure and a good harvest, while receiving 900 or 1200 mm does not make much difference in terms of *drought* risk.

To summarize, the history of the weather in Lawra/Nandom since 1926 shows a gradual worsening of climatic conditions until 1970. In the 1970s and early 1980s, the deterioration accelerated and culminated in an extreme and prolonged drought period. In the late 1980s and 1990s, rainfall was much better than in the previous decade, but it did not fully recover its pre-crisis level.[9] Annual rainfall is still under the long-term average and the annual amounts of rainfall have become more variable than before the crisis.

Climatic trends: Intra-annual variability

Intra-annual variability concerns the distribution of rainfall *within* years. For a farmer, intra-annual variability is more important than annual amounts. In this section, I will study the trends in intra-annual variability by analysing the 11-year moving averages of *monthly* rainfall in Lawra/Nandom.

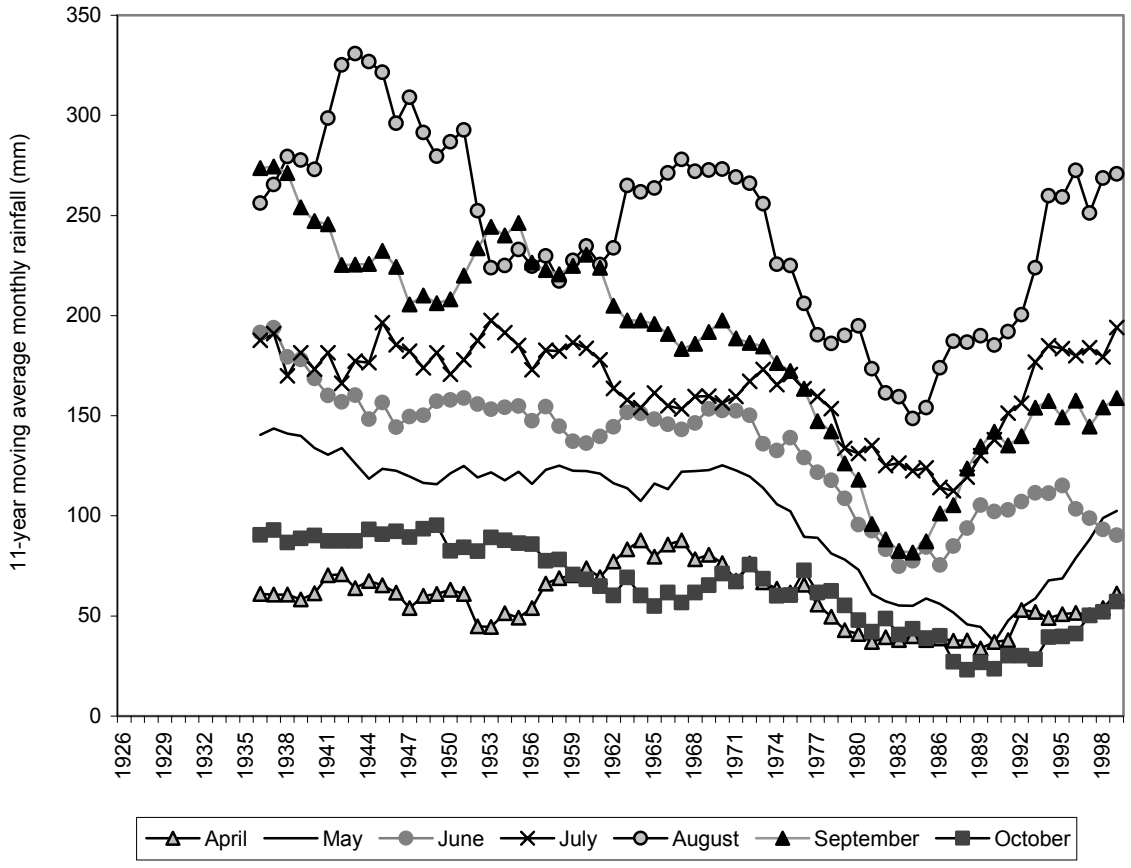
Graph 4.3 shows the 11-year moving averages of monthly rainfall in Lawra (1926-1982) and Nandom (1983-1999). The rough picture shows that until 1970, rainfall in the different months oscillated with an overall slightly downward trend. In the 1970s, we see a decline that is especially strong in May, June, August, and September. The decrease in April, July, and October is less pronounced. For most months, the lowest 11-year averages were recorded around 1985, after which all months but June show partial or total recovery. In the late 1990s, rainfall figures for April, July, August, October and to a lesser extent May returned to pre-crisis levels. The troublesome months are June and September. June's average for the 1990s was about 90 mm while it used to fluctuate around 150 mm before the 1970s. September's average for the 1990s was 158 mm. It used to fluctuate around 240 mm until the 1960s, and around 200 mm in the 1960s. September has lost its position of second wettest month to July. The main conclusion of this analysis has to be that rainfall in May, and especially June and September is increasingly erratic. Farmers can no longer count on adequate rainfall in the beginning and end of the rainy season. July rains are just as reliable as they used to be. Rainfall in April and October has not fully recovered, but these two months are of less importance than the other months. August rains decreased dramatically in the 1980s, but during the last decade, they were back at the pre-crisis level.

Drought risk and crop production

At the Upper West Regional level, agricultural production data (area, output and yield of different crops) are available for the period 1986-1999. The Ministry of Food and Agriculture calculates the 'total output figures' of different crops by multiplying the estimated acreage

[9] Note that in 1983, there is a switch from Lawra data to Nandom data.

Graph 4.3 Eleven year moving averages of monthly rainfall in Lawra (1926-1982) and Nandom (1983-1999)[10]



Sources: Adapted from Nandom Agricultural Project and Meteorological Services Dept., Accra

harvested with a crop by its average yield levels, as measured in crop cuts of 4 by 4 meters. Agricultural production data for five food crops have been recorded: maize, millet, guinea corn, yams and groundnuts.

In Table 4.2, one can see the average annual rainfall figures (in descending order) and the harvested area, the agricultural production and the average yields for different crops (1986-1998). Before moving on to the correlation between rainfall and crop production, I want to highlight some figures from Table 4.2 that are informative about crop cultivation in the Upper West Region. In terms of acreage, guinea corn (sorghum) is the most important crop, followed by millet, maize, groundnuts and yams. Yields for grains and legumes fluctuate around 1000 kg/ha though farmers in my research area report much lower yields. Yams yielded around 9,000 kg/ha on average. For all crops, the inter-annual variability of total output is between forty and fifty percent. Looking at grain output alone, the average annual production was 192 million kilograms. With a population size of around half a million

[10] Missing value: 1984.

inhabitants[11], the region was more than self-sufficient in the period under investigation (378 kg/cap).

Table 4.2 Average annual rainfall (in descending order); harvested area; agricultural production and yields for different crops in the Upper West Region (1986-1998)

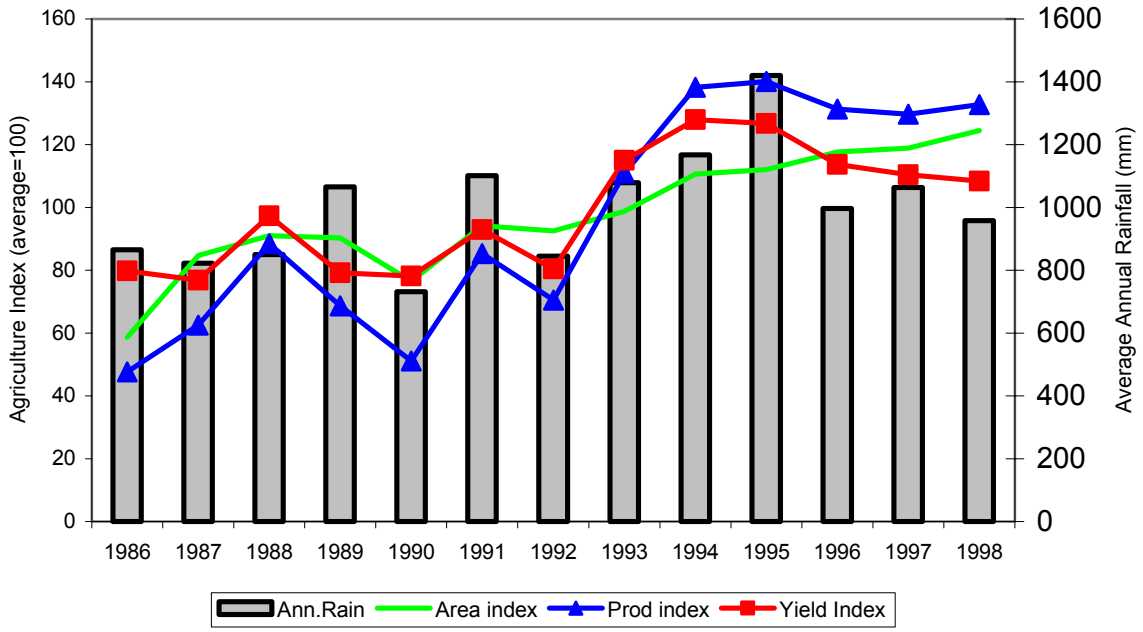
Year	*'95*	*'94*	*'91*	*'93*	'89	*'97*	*'96*	*'98*	*'86*	*'88*	*'92*	*'87*	*'90*	*avg.*	*var. (%)*
P (mm):	1420	1167	1101	1078	1065	1064	997	958	865	850	845	822	731	**997**	18.2
Maize															
Area*	376	368	260	341	388	376	398	376	200	399	363	331	231	**339**	19.4
Prod.*	55	53	35	17	32	38	43	41	18	58	8	23	23	**34**	46.1
Yield*	1.4	1.4	1.3	0.5	0.8	1.0	1.1	1.1	0.9	1.5	0.2	0.7	1.0	**1.0**	37.9
Millet															
Area	624	622	630	630	410	609	650	594	208	508	586	387	308	**526**	27.9
Prod.	68	66	37	63	27	67	72	59	14	41	41	26	24	**47**	43.2
Yield	1.1	1.1	0.6	1.0	0.6	1.1	1.1	1.0	0.7	0.8	0.7	0.7	0.8	**0.9**	23.0
Gcorn															
Area	842	781	741	735	757	892	880	944	392	795	738	693	542	**749**	19.7
Prod.	110	109	54	10	49	98	110	116	26	52	66	46	54	**76**	41.3
Yield	1.3	1.4	0.7	1.4	0.6	1.1	1.3	1.2	0.7	0.7	0.9	0.7	1.0	**1.0**	30.2
Gnuts															
Area	348	248	207	207	197	390	370	416	227	180	193	200	411	**277**	33.9
Prod.	52	40	17	33	31	55	45	57	30	31	16	30	14	**35**	41.6
Yield	1.5	1.6	0.8	1.6	1.6	1.4	1.2	1.4	1.3	1.7	0.8	1.5	0.3	**1.3**	30.9
Yams															
Area	154	212	162	162	141	178	160	201	100	115	124	141	66	**147**	27.1
Prod.	169	222	194	220	70	180	174	171	60	59	167	72	47	**138**	47.7
Yield	11.0	10.5	12	13.6	5.0	10.1	10.8	8.5	6.0	5.1	13.5	5.1	7.2	**9.1**	34.8
5crops															
Area**	115	113	96	101	92	122	120	128	60	93	95	87	79	**100**	19.2
Prod. **	145	143	88	115	71	134	136	137	49	91	73	65	53	**100**	36.2
Yield**	128	129	94	116	80	112	115	110	81	98	81	78	79	**100**	19.3

* Area in square kilometres; production in 1000 Metric tonnes; yield in 1000 kg/ha
** Index scores of the five crops together. 100 = average (1986-1998)
Sources: Ministry of Food and Agriculture, Wa and Meteorological Services Dept., Wa.

In this section, I will link the agricultural production data with climate data from the four weather stations for which data were available in the same period (Nandom, Babile, Tumu and Wa). Low rainfall years were 1986, 1987, 1988, 1990, 1992. These years were not characterised by severe drought *in all places*, however. In that sense, the situation was different from the *area-wide* droughts of the early 1980s.

[11] According to the Ghana Census 2000, the population of the Upper West Region increased from 438,008 inhabitants in 1984 to 576,583 inhabitants in 2000 (Ghana Statistical Services 2002).

Graph 4.4 Annual rainfall, harvested area, production and yields for five crops in the Upper West Region (1986-1989)



Sources: Adapted from Meteorological Services dept., Wa and Ministry of Food and Agriculture, Wa

Graph 4.4 shows the annual rainfall figures plotted against the regional acreage, yield and output for the five crops together (for graphs of individual crops, see Van der Geest 2002a; 2003). To be able to show these latter variables in one figure per crop, annual scores are expressed as percentage of the average (index scores). The hypothesis is that yields and total output are relatively high in years with relatively high annual rainfall. Years with low annual rainfall are expected to be years with lower yields and smaller harvests. Initially, I planned to look only at crop *yield* data, assuming that the area sown and harvested per crop would not vary much. When one looks at the figures per crop (Table 4.2) however, it can be seen that the acreages vary almost as much as the yields. In the case of a *total* failure for a certain crop, yields may not show a sharp decline because yield data are measured in plots that *are* harvested. It can thus happen that in a particular year, crop yields are quite high while in fact harvests were not good at all. In 1990, for example, four out of five crops yielded better than in the previous year, but the acreage declined considerably (see Table 4.2). If one had only looked at yield data, 1990 would have entered the archives as quite a good year, which it was not.

Graph 4.4 shows that indeed, years with low annual rainfall are characterised by low agricultural output and vice versa. A more thorough analysis of the correlation between annual rainfall on the one hand and acreage, output and yield-per-crop is shown in Table 4.3. For all crops, there is a significant positive correlation between annual rainfall and production levels: the higher the rainfall the greater the harvest. This link is especially strong for the two most important crops (guinea corn and millet).

Table 4.3 Correlation between annual rainfall figures and agricultural production in the Upper West Region (1986-1998)

	Area	*Prod*	*Yield*
Maize	0.367	0.516	0.435
Millet	0.597	0.638	0.523
Guinea-corn	0.470	0.583	0.518
Groundnuts	0.098	0.540	0.420
Yam	0.610	0.622	0.440
5 crop index	0.549	0.704	0.754

Note: Correlations in shaded cells indicate a significance at the 0.05 level (1-tailed).[12]
Sources: Adapted from Meteorological Services dept., Wa and Ministry of Food and Agriculture, Wa

The rising trend in acreage, yields and thus total output, shown in Graph 4.4, is promising. Food crop production has increased much faster than the population.[13] This contrasts sharply with the perception of the farmers who I interviewed, however. Many farmers told me that in the past, they only rarely had to buy food because food needs could usually be met with the harvest from their own fields. It is only in the last years (and in the early 1980s) that they have been forced to buy food because their own production was deficient. In the past, they said, they only had to buy food in exceptional years. It is possible that the densely populated Lawra District is exceptional in the region. The Lawra District data show a decrease in agricultural production (both in acreage and yield) in the last five years (1995-1999). Unfortunately, only data for the period 1992-1999 are available at the district level. Another remaining question is whether we have to perceive the alleged increase in agricultural output in the 1990s within a context of *growth* or within a context of *recovery* from the droughts in the 1980s.

Photo 2
A new variety of millet (Dorado) growing on the compound farm

[12] Correlations between annual rainfall and agricultural performance were calculated with Pearson's r.
[13] According to the Ghana Census 2000, the population of the Upper West Region has increased with 31 percent between 1984 and 2000. The production of food crops more than doubled between 1986 and 1999.

5

The environment: The space of vulnerability

All over the world – whether we live in the Netherlands, Nicaragua, the Philippines or Ghana – the changes in our lives are intimately linked with the changes in the wider *structures* of which we are part. Individuals are not autonomous *actors* in the pursuit of a livelihood.

Changes in the environment influence the "portfolios of options"[1] that decision-making units have (see Dietz *et al.* 2001a: 5). This does not mean that people wait passively to see what comes their way. The environment provides opportunities and constraints, and people with different histories, economic backgrounds, qualities, skills, positions, assets and expectations seek to make the most of it, both materially and spiritually. The opportunities and constraints of the environment change over time and these changes have a strong impact on people's livelihoods (De Bruin & Van Dijk 1998: 1).

A household's vulnerability to drought, floods and non-climatic trigger events is determined by both internal/individual variables and external/collective variables (see conceptual framework in chapter one and De Bruijn & Van Dijk 1998: 1). Individual household characteristics generate the differences in vulnerability between households within the area. The external variables that determine *collective* vulnerability are characteristics of the environment, and taken together they can be labelled 'the space of vulnerability' (taken from Watts & Bohle 1993). In the conceptual framework, I further assume that changes in people's livelihood strategies are fuelled by changes in their environment. These changes can be gradual and long-term or sudden and short-term. I have distinguished different types of environments: the natural, economic, socio-cultural and politico-institutional environments. It should be noted

[1] Dietz *et al.* (2001a: 5) distinguish portfolios of theoretical, relevant and chosen or experienced options. Theoretical options for a certain area are the sum of chosen options by all individuals or decision-making units in that area. Whether a theoretical option is or becomes a relevant option open to a particular decision-making unit depends on individual (household) characteristics.

that this is not an exclusive list, but merely a categorisation. All environmental factors can potentially influence human behaviour and trigger change. To understand people's coping and adaptive behaviour, one first has to study their living spaces, their environments. This chapter seeks to answer the following question:

"To what extent is the research area situated in a risk-prone environment?"

In this book, emphasis lies on one environmental factor: the climate (elaborated in chapter four). But the climate acts together with other context variables to constitute *the environment* that shapes the conditions within which the people in my research area have to eke out a living. In this chapter, I will present some of the main characteristics of the environment in the research area with an emphasis on dynamics; I will attempt to indicate the main *changes* in the environment. This chapter thus serves both as an introduction to the research area, and as an attempt to fill in a part of the conceptual framework that is interchangeably labelled 'the environment', 'the external variables', 'collective vulnerability', 'the context' or 'the space of vulnerability'.

As one can read in the methodology chapter, I have sampled the respondents to my survey along four transects of approximately 10 kilometres each that come together at one point: Nandom Town. The research area can thus be defined as the rural area within a radius of 10 kilometres from Nandom Town.[2] This is not an administrative unit or an otherwise united entity. It encompasses a good part of the Nandom area[3] in Lawra District and a small part of the Lambusie area in Jirapa-Lambusie District. The information presented in this chapter has been derived from secondary literature, statistical data, personal observations and interviews. The secondary 'area' data apply to different territorial units, like the Nandom area, Lawra District, 'Dagarateng'[4], the Upper West Region or Northern Ghana. In most cases, it is obvious to which unit the information applies. Where necessary, I will indicate territorial relevance.

The survey findings in chapters six and seven and the 'pathways' or 'livelihood histories' in chapter eight contain additional information on the environment in the research area. In chapter eight, a more direct link between different environmental factors and people's livelihoods and decision-making is established from an emic perspective. The present chapter constitutes a more systematic description of the environment and society in the research area from an etic perspective.

The categorisation of 'the environment' in natural, economic, sociocultural and politico-institutional environments will only partly be followed in this chapter. In the first section, I will briefly present the regional and district level data on population density. The second section describes the major characteristics of the *natural* environment with an emphasis on soil fertility. The third section will focus on the major changes in the *economic* and market environment. I will only briefly describe the sociocultural environment. Most aspects of the

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2 This excludes the semi-urban centre of Nandom Town where Arjen Schijf has carried out his research.

3 Lawra District is divided in two paramountcies or 'traditional areas': Nandom and Lawra. In this study, I refer to the Nandom Paramountcy as the Nandom area. The same holds for the Lambusie area in Jirapa-Lambusie District.

4 Dagarateng is the name of the area inhabited by Dagara people (see Bodomo 1998, internet sources). Dagarateng is not a clear-cut territorial unit.

sociocultural environment that have an impact on the livelihood strategies and vulnerabilities of farm households in the research area are described elsewhere in this book (especially in chapter eight). This concerns issues like social organisation at the family and village levels, identity, gender roles, inheritance, bridewealth payments, land tenure, family ties, moral codes, taboos, etc. In the present chapter, I will briefly reflect on some socio-cultural issues that have received less attention in the rest of the study. In my analysis, the politico-institutional environment has not received all the attention it deserves. This results from the division of labour between me and my colleague (Schijf 2004). In the historical background (chapter three), some aspects of the politico-institutional and policy environment have been discussed. Some more recent changes in the policy environment, such as increased extension services, price policy, education, healthcare and food aid will be mentioned in chapter six, seven and eight when these changes affect farmers in the research area.

It is beyond the scope of this study to analyse *all* the changes in the environment in detail, but in this chapter I will try to outline some broad changes in the environment through what can be called a historical-geographical analysis of the area (see Dietz *et al.* 2001a: 11). By doing so, I will try to embed the individual 'livelihood histories' (see chapter eight) in a wider context of change.

Population density

One very important contextual variable does not really fit in any of the four types of environment that I consider. It concerns population density. The issue of population density will be touched upon and elaborated in the sections on the natural and economic environment. In the present section, I will introduce the census data on population growth and population density (see Tables 5.1 and 5.2). These data also give us a rough idea about migration from the Upper West Region. The last census was held in the year 2000.

The Upper West Region is the smallest region of Ghana in terms of population size (573,860 inhabitants). With 31 inhabitants per km^2, the Upper West Region is the second most sparsely populated region in Ghana (national average: 79 inhabitants per km^2). Only the Northern Region has a lower population density. The most densely populated and fastest growing region in the country is Greater Accra. Its population more than doubled between 1984 and 2000. The population growth in the Upper Regions, especially the Upper East Region, has been far below the national average. These data confirm that many inhabitants of the Upper East and Upper West Regions are moving to southern Ghana and to some parts of the Northern Region.

Within the Upper West Region, Lawra is by far the most densely populated district. With 83 inhabitants per km^2 in the year 2000, its population density is above the national average even though there are no large urban centres in its territory. When calculated over the 'usual resident population'[5] the population density in the year 2000 amounted to 90 and 34 inhabitants per km^2 for Lawra District and Upper West Region respectively. The Lawra District is

[5] This figure includes residents who had travelled outside the area and excludes non-residents who were present in the area at census night. The census was taken during the dry season when many northerners travel to southern Ghana for seasonal farm labour. The usual resident population for Lawra District and the Upper West Region were 95,080 and 622,162 inhabitants respectively.

clearly an island of high population density in a region with low population density. The two most densely populated districts in the region (Lawra and Jirapa-Lambusie) have the lowest growth figures. Especially considering Lawra District, one can say that population growth is very low due to out-migration. The sex ratios[6] of the Upper West Region (92.1) and of the Lawra District (87.3) fall considerably below the national average (97.9). This is a common characteristic of areas that supply large numbers of labour migrants who are predominantly male.

Table 5.1 Population density and population growth in the ten administrative regions of Ghana (1984-2000)

		1984		2000		1984-2000	
Region	*Area (km^2)*	*Inhabitants*	*Pop. density*	*Inhabitants*	*Pop. density*	*% change*	*Annual growth (%)*
Upper West	18,476	438,008	24	576,583	31	31.6	1.7
Western	23,921	1,157,807	48	1,924,577	81	66.2	3.2
Central	9.826	1,142,335	116	1,593,823	162	39.5	2.1
Gt. Accra	3,245	1,431,099	441	2,905,726	895	103.0	4.4
Volta	20,570	1,211,907	59	1,635,421	80	34.9	1.9
Eastern	19,323	1,680,890	87	2,106,696	109	25.3	1.4
Ashanti	24,389	2,090,100	86	3,612,950	148	72.9	3.4
Brong Ahafo	39,557	1,206,608	31	1,815,408	46	50.4	2.5
Northern	70,384	1,164,583	17	1,820,806	26	56.3	2.8
Upper East	8,842	772,744	87	920,089	104	19.0	1.1
All regions	**238,533**	**12,296,081**	**52**	**18,912,079**	**79.3**	**53.8**	**2.7**

Source: Ghana Statistical Service 2002

Table 5.2 Population density and population growth in the five administrative districts of the Upper West Region (1984-2000)

		1984		2000		1984-2000	
District	*Area (km^2)*	*Inhabitants*	*Pop. density*	*Inhabitants*	*Pop. density*	*% change*	*Annual growth (%)*
Lawra	1051.2	80,971	77	87,525	83	8.1	0.49
Wa	5899.3	151,994	26	224,066	38	47.4	2.46
Nadowli	2742.5	65,529	24	82,716	30	26.2	1.47
Sisala	7115.4	59,012	8	85,442	12	44.8	2.34
Jirapa-Lambusie	1667.6	80,502	48	96,834	58	17.3	1.16
All districts	**18,476.0**	**438,008**	**24**	**576,583**	**31**	**31.6**	**1.73**

Source: Ghana Statistical Service 2002

[6] The sex ratio is the number of males divided by the number of females.

The natural environment

The ecological zone to which my research area belongs is generally referred to as 'Guinea savannah woodland'. Other labels used are 'orchard bushland', 'tree savannah', 'Sudanese parkland', 'savannah woodland' and 'interior savannah zone'. From these labels, it can be inferred that the area is covered with savannah grasses, shrubs and scattered trees, which is indeed the case. Generally the density of trees decreases where population density increases (Nsiah-Gyabaah 1994: 135-136). Within the Upper West Region, my research area is among the most densely populated areas, and, except along the Black Volta River and in some protected areas, tree densities have decreased. According to the detailed "Ghana Land cover Map" of the Remote Sensing Department (University of Ghana), tree densities in the Nandom area range from zero to twenty trees per hectare and the landscape type is called "cultivated savannah woodland".

According to the old people's recollections, the area was covered with 'thick forest' in the early 20th century. That is probably a bit exaggerated, but it is generally agreed that much vegetation disappeared over the course of the 20th century. It is likely that in the past most of the area looked like 'orchard bushland' rather than 'thick forest'. That is the kind of vegetation cover one still finds in the more sparsely populated areas of northern Ghana. Between Burutu and Lambusie there is a forest plantation ('Karkar'), and in the hills east of Nandom one can find the Bangwon-Barwo Forest Reserve. Some imported trees like the pawpaw, mango, lemon, neem, teak and cashew were introduced to the region in the 20th century. These trees are exclusively found in the domesticated environment.

The area is relatively flat or very gently undulating. Nandom Town is built on a hill. A few kilometres north and south of Nandom, two small, east-west running rivers receive water from smaller streams before they flow into the Black Volta ten kilometres west of Nandom. The fine maze of streams that cuts through the gently rolling land gives rise to a great variety of soil types. As we shall see later, farmers make use of this characteristic of the land to minimise agricultural production risks.

In the course of the dry season, most small rivers and streams dry up. Old people say that this was different in the past. In those days, the soil could absorb more water and release it in a more balanced way. The water-holding capacity of the land has declined due to the removal of vegetation, and this has resulted in a faster water run-off and a lowering of the groundwater table. Although it is generally agreed that the combination of population growth and inadequate conservation measures has caused the disappearance of much vegetation, some people mention the activities of a certain Dr. Morris as a *turning point*. Dr. Morris came to the region in the late 1940s or early 1950s to eradicate sleeping sickness. Certain trees along riverbanks had to be removed to combat the tsetse fly. A negative side effect of this otherwise quite successful operation was that rainwater would run off faster than before.[7] Nowadays, only the Black Volta River and its main tributaries contain water at the height of the dry season.

To gain access to water for use in and around the compound, some households have dug private wells near their dwellings. Depending on the location, these wells usually dry up in the course of the dry season. The water in these wells is of poor quality and not safe for

[7] Interview on 27th December 1999 with my landlord Mr. Constantio Nurudong (Mr. Kontana), who worked with Dr. Morris as a 'fly boy' in the eradication program.

human consumption. Every village in the survey sample has at least one communal borehole that provides clean drinking water throughout the year. Most boreholes are the products of joint efforts between communities and NGOs or state agencies.[8] Repair of broken boreholes is reported to be slow. People usually fetch clean cooking and drinking water from boreholes, whereas water for bathing, construction and livestock is usually drawn from hand-dug wells. When wells run dry, women have to walk longer distances to a borehole to fetch water for all domestic uses. Although every village has a borehole, distances can be considerable due to the dispersed settlement pattern of the Dagara villages (east of Nandom Town, the Sisala villages have a nuclear settlement pattern).

In the past, a large variety of wild animals, like monkeys, squirrels, antelopes, leopards, zebras, hippopotamuses, crocodiles and elephants inhabited the area. In the densely populated areas of the Upper West Region, these animals have become rare or extinct. Some are still common in the sparsely populated parts of the Upper West Region, but most are now confined to the Mole Game Reserve, a large national park in the Northern Region. In terms of *livelihood*, the gradual disappearance of wild animals has had both a negative and a positive effect. The negative effect is that hunting has lost much importance as a source of livelihood. Small animals like rabbits, partridges, field mice and bats have now become the most common prey of hunters. The ban on bush burning has further limited hunting activities. On the positive side, certain wild animals used to be a great nuisance to farmers because they could destroy farms. With the gradual disappearance of big animals, people nowadays have one less livelihood stress to deal with. It used to be a child's task to protect the fields against animal disturbance (as living scarecrows). Nowadays, it would be more difficult to find children for this task because many children go to school. Birds and domesticated animals still occasionally disturb crops and so do monkeys in the Lambusie area.

Soil fertility and land degradation

Most farmers in the research area complain that their land is not fertile. People predominantly attribute their poor crop yields to low soil fertility in conjunction with erratic rainfall. The latter constraint has been elaborated in chapter four. In the present section, I will go into more detail about the former constraint: low soil fertility.

Low soil fertility can result from low *inherent* soil fertility, but it can also be caused by land degradation when relatively good soil becomes less fertile due to intensive land use combined with inadequate soil conservation measures. This practice is sometimes referred to as 'mining the land'. In this section, I will try to find out whether low soil fertility in the research area is predominantly caused by low inherent soil fertility or land degradation.

Most of my interviewees claimed that 'in the olden days', when they were children, the farmlands were 'very fertile'. The land, it is maintained, could easily feed the people even though the acreage their fathers and grandfathers cultivated was smaller than the acreage they nowadays farm themselves. Yields were higher in those days, people say. If the soil was so

[8] See also the 'pathway' of Egidius Dugyi, who was a Community Water Organiser, for some years (chapter 8).

fertile in the past, this suggests that present low soil fertility in the research area results from land degradation rather than low inherent fertility.[9] There are counter indications, however.

Jack Goody (1967), an anthropologist who conducted several researches in the area[10] from the 1940s onwards, noted that although no great famines seemed to have occurred (*ibid*. 27), the farmers in the region had difficulties producing a sufficiency of food, quite apart from a surplus (*ibid*. 9). This is confirmed by colonial reports, cited by Sutton (1989):

> Problems of food shortfall or bare self-sufficiency were frequent [in the north of Ghana] (.....) Soil was poor in places, and availability of water variable. Overgrazing and erosion also contributed to the precarious nature of agriculture in many places. (...) By the 1930s subsistence farming was, in many cases, supplemented by migrant wage labour and by the purchase of foodstuffs. (Sutton 1989: 641). Some parts of the north had a more favourable environment, and these were densely populated, leading to overuse of land, with the same results.[11] (...) yields were said to be low in the 1930s and 1940s. Grain shortages were common, and grain was often moved around the north, as farmers bought it to supplement what was grown. (Sutton 1989: 652).

The two positions seem contradictory: my interviewees say that the soil was fertile in the past and that the harvest was always plentiful; Goody (in the 1950s) and colonial reports (in the 1930s and 1940s), on the contrary, say that the yields were low and that the land could hardly feed the people. The traditional migratory pattern of Dagara hoe-farming also suggests that the soil was not as fertile as some people claim. Goody (1967: 6) writes: "The inhabitants constantly give as a reason for migration the lack of farmland. (...) loss of yield due to continuous farming is undoubtedly a factor in present movements from the Lawra District."

To explain low soil fertility, Goody and colonial officers emphasized low *inherent* fertility as a causal factor because they compared the soil in northwest Ghana with soil in other, more fertile places. The people, on the contrary, emphasize land degradation as a causal factor because they compare the present situation with the past rather than with other places.[12] A preliminary conclusion could be: 'soil fertility in the research area has declined, but in the past the soil was not all that fertile either.' Let us see what the natural scientists have written about the geology and soil of northern Ghana.

On geological maps of northern Ghana, most of the Upper East and Upper West Regions and the far west of the Northern Region have "granite" parent material. The central and eastern parts of the Northern Region lie on the "Voltaian" formation. According to Runge-Metzger & Diehl:

> … the Voltaian Basin mainly consists of sandstones with a low inherent availability of nutrients while the granitic soils have naturally higher contents of nutrients. Furthermore, the groundwater

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[9] Note that 'in those days' rainfall patterns were more favourable, too. In my interviews, I noticed that many farmers in the research area do not regard – what we call – soil fertility as necessarily a characteristic of the soil. In their vision, the land is fertile when it gives good yields.

[10] Goody did most of his fieldwork near Lawra, 25 kilometres south of Nandom, and in a village called Tom, 10 kilometres south of Nandom.

[11] As we will see below, the present Lawra District was such an area with a more favourable environment and consequently with a more dense population (KvdG).

[12] Migrant farm labourers do know the soil of southern Ghana and realise that in general it is richer.

> table is much higher in the granitic soils, so that boreholes and tube wells are mainly found in the [Upper East and Upper West] regions.[13] (Runge-Metzger & Diehl 1993: 41).

The granitic areas in the Upper West and Upper East regions thus seem to be more suitable for human habitation than the Voltaian areas in the Northern Region. Admittedly, this division of northern Ghanaian geology is very broad and unspecific. To analyse the suitability for agriculture one has to study the *soil* that has developed on top of these parent materials. Moreover, unlike most of the Upper West Region, my research area lies on a stretch of 'Upper Birrimian' matrix, alternating only with patches of granite.

In the Upper Regions of Ghana, there is a strong correlation between parent material and soil. Savanna ochrosols have developed on 'Birrimian' parent material and groundwater laterites have developed on granite. Boateng describes the two soil types as follows:

> The *savanna ochrosols* (...) consist of well-drained, friable, porous loams and are mostly red or reddish brown in colour. Most of the area covered by these soils has a gently undulating topography. Soils in the depressions are quite thick but upland soils have a zone of ironstone concretions from one to three feet below the surface. Despite their deficiency in nutrients, notably phosphorus and nitrogen, these soils are among the best soils in the northern savanna zone and are extensively farmed. (...)
> The *groundwater laterites* consist of a pale-coloured, sandy or silty loam with a depth of up to two feet underlain by an ironpan or a mottled clayey layer so rich in iron that it hardens to form an ironpan on exposure. Drainage of these soils is poor; they tend to get waterlogged during the rains and to dry out during the long dry season. These soils, especially those developed on the Voltaian shales, are considered among the poorest soils in Ghana, and little cultivation takes place on them. Their principle use is, and is likely to remain, the provision of rather poor pastures for livestock. (Boateng 1966: 60).

This description suggests that the Nandom area – mainly covered with savannah ochrosols – is relatively well off with its soil. It is not surprising that the more densely populated areas in the Upper West Region lie in areas with savannah ochrosols. The dense population on these soils confirms the higher suitability for agriculture. In the course of time, however, increased population pressure and land degradation seem to have neutralised the initial advantage of this soil type.

To test this hypothesis, I have compared crop yields of the sparsely populated Sisala District (12 persons/km^2) with crop yields in the densely populated Lawra District (83 persons/km^2).[14] Lawra District is mainly covered with savannah ochrosols, and Sisala District represents the area covered with groundwater laterites. If the savannah ochrosols were more fertile, one would expect higher yields in Lawra District. If the initial advantage of savannah ochrosols has been nullified through population pressure and overexploitation, yields should be similar or better in Sisala District.

As one can see in Table 5.3, crop yields have on average been slightly higher in Sisala District (1193 kg/ha) than in Lawra District (1138 kg/ha). Maize and guinea corn – crops that need relatively fertile soils – yielded better in Sisala District. Groundnuts and millet – crops

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[13] The provision of clean water is indeed much better established in the Upper Regions than in the Northern Region where most people still rely on surface water.

[14] Source: Ghana Statistical Service (2002).

Table 5.3 Comparison of yields (kg/ha) and acreage per capita of four major food crops in Lawra District and Sisala District (1992-1998).

	Maize		*Millet*		*G-corn*		*G-nuts*		*Four crops*[15]	
Year	*Lawra*	*Sisala*	*Lawra*	*Sisala*	*Lawra*	*Sisala*	*Lawra*	*Sisala*	*Lawra*	*Sisala*
1992	329	330	700	700	254	900	829	830	*528*	*690*
1993	1300	1300	1000	1000	1400	1400	1600	1590	*1325*	*1322*
1994	1410	1210	1200	732	1400	1250	1720	1340	*1433*	*1133*
1995	1100	1161	1168	1300	1000	1400	1654	1449	*1231*	*1328*
1996	1100	1200	1100	1300	1200	1300	1500	1500	*1225*	*1325*
1997	900	1200	1100	1200	1100	1200	1400	1500	*1125*	*1275*
1998	699	1700	1100	700	1200	1100	1400	1600	*1100*	*1275*
Average yield	977	1157	1053	990	1079	1221	1443	1401	*1138*	*1193*
Average acreage	2294	7893	6123	14,580	6881	7990	1241	5261	*16,538*	*35,725*
Population (‘92-‘98)	84,248	72,227	84,248	72,227	84,248	72,227	84,248	72,227	84,248	72,227
Acreage per capita	0.03	0.11	0.07	0.20	0.08	0.11	0.01	0.07	*0.20*	*0.49*

Source: Adapted from the regional Ministry of Food and Agriculture (MoFA, Wa) & Ghana Statistical Service (2002)

that can do relatively well on poor soil – yielded slightly better in Lawra District. Average crop yields in Sisala District were slightly higher despite the fact that the per capita area cultivated was much higher there (0.49 hectares versus 0.20 hectare in Lawra), indicating a lower level of labour input per hectare. Assuming that there are no significant differences in capital input[16] (e.g. chemical fertiliser use) and that there are no *structural* climatic differences, these data suggest that the initial advantage of the soils in the research area has indeed been neutralised. Low population pressure on ‘inferior’ soil (Sisala District) allows for longer fallow periods and soil fertility is therefore better sustained.

It can be concluded that the savannah ochrosols in the Lawra District were once *relatively* fertile as compared to the dominant soils in northern Ghana: the groundwater laterites. The northern soils in general are, however, less fertile than the soils in the south of Ghana (Boateng 1966; 56-60). Moreover, due to increased population density and shortened fallows, the savannah ochrosols in the Nandom area have lost at least part of their initial advantage over the sparsely populated groundwater laterites in the central and eastern parts of the region.

In earlier times, the relatively fertile soil attracted the ancestors of the present inhabitants to settle in the research area. Since the early decades of the 20th century and possibly before, soil has degraded due to intensive crop cultivation without adequate soil and water management. Bush burning, overgrazing and felling of trees for firewood and building purposes further exacerbated the soil condition. What Okai (1997: 14) observed for West Africa in general also seems to hold for the Nandom area:

[15] Unweighted average of the four crops.

[16] I do not have much information on district level variety in farm inputs. In a table with data from the Upper Region Agricultural Development Programme (URADEP), presented by Nsiah Gyabaah (1994: 92) it is calculated that in 1989 over 50% of the trained bullocks in the region were concentrated in Lawra District.

> As agriculture is the principle link between population and the environment, and in the absence of alternative appropriate resource-conserving and/or regenerative technologies, traditional land use and conservation practices had not been able to adapt quickly enough to cope with increasing population (both human and animal) pressure on the resources. Consequently, the sub-region had not been able to sustain agricultural production and ecological stability. (Okai 1997: 14).

Although the soil was more fertile in the past, previous generations of hoe-farmers in the research area already had to deal with low inherent soil fertility. They responded to this constraint by practicing a bush fallow system and a migratory pattern of farming. In the first decades of the 20th century, mortality rates dropped because of the pacification of the region and – since the 1930s – because of improved health care (Hawkins 1997). Natural population growth increased. Increased population pressure has resulted in shorter fallows. Another consequence of population growth is increased pressure on vegetation. When trees and bushes are removed, the soil becomes more exposed to erosion. A dense vegetation cover would protect the soil. In the rainy season, the main types of soil erosion are sheet erosion in the uplands and gully erosion in the lowlands. In the dry 'Harmattan' season, it is wind erosion.

Although to date, soil and water conservation techniques have not been sufficient to counter land degradation, such measures are not non-existent. Millar *et al.* (1996) identified several traditional soil and water conservation techniques among the Frafra in the Upper East Region. The techniques that are common there, like stone lines, contour tillage, ridging and border grasses are also practiced in the Nandom area.[17]

An important question arises here: Under what conditions do people decide to invest in soil and water conservation and fertility enhancing measures? Population density is an important driving force, but other variables, like distance to urban markets and prices for agricultural produce may be even more important (see Zaal & Ostendorp: 2002). The findings from my survey and in-depth analyses (chapter six, seven and eight) show that most people in the research area consider investment in soil quality less profitable than seasonal labour migration and non-farm activities.

It is generally agreed that soil fertility in the research area has declined, but the degree of degradation is a point of debate. To me, it seems that most of the elderly people I interviewed were unconsciously 'romanticising the past' when they said that, in their childhoods, the land was *very* fertile and that there was always "plenty food" for them. Moreover, when they were growing up in the 1950s and 1960s, *climatic* conditions were quite favourable for crop cultivation, so declining or stagnating yields in the following decades, if they indeed occurred at all[18], are no conclusive evidence for decreasing *soil* fertility. There are other factors that

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[17] The only technique mentioned by Millar *et al* (1996: 122) that I did not encounter was 'terracing'. This is due to the virtual absence of steep slopes.

[18] Note that I have no tangible evidence of declining crop yields in northern Ghana. In late colonial times (1940s and 1950s), yields of grains in the north were generally around 500-700 pounds per acre (Sutton 1989: 653), i.e. 561 to 785 kilograms per hectare (multiply by 2.471 and 0.454). FAO data, based on estimates of the Ministry of Food and Agriculture (compiled by Plomp and Snel 1999), suggest that in the 1960s, 1970s and 1980s, yields of the main 'northern crops' oscillated around 650 kilograms (sorghum), 600 kilograms (millet) and 1000 kilograms (maize and groundnuts) per hectare. In the 1990s, yields for all crops except groundnuts increased sharply (by around 50%). This suggests that the yield levels in those days were in fact lower than they are nowadays. The yield data apply to the whole of Northern Ghana, however. For the Nandom area, the Lawra District or the Upper West Region, no long term series of agricultural performance

explain why my interviewees have the impression that the soil was very fertile in the past and that there was always enough food them. As small children, they would not automatically notice when crop yields were poor. A farmer from Lambusie (Osman Ali) explains why:

> Even if there had been hunger, I had not known because I was a child and a mother will always make sure that her children get their food two or three times a day. It is only when you are a grown-up that you have to feel and know the hunger. (Osman Ali, September 2000).[19]

Another factor that may explain many people's impression that their soil was very fertile in the past concerns the issue of 'wants and needs' (see Sahlins 1974). The point can be summarised in one sentence: "Wants may be easily satisfied either by producing much or desiring little." (*ibid*. 2). Over the course of the 20th century, consumption patterns changed. Material wants have increased due to the availability of new products on local markets, western education and the integration of the research area in the national economy, mainly through labour migration. Furthermore, people nowadays also need money to pay school and hospital fees. In many households, increased cash needs have not been adequately met by increased production, and thus a sense of dissatisfaction is born that might explain why many people have the impression that things were better in the past. Several surveys in the region argue that nowadays it is more common for people to sell part of their farm produce to meet certain cash needs, while in fact one year's harvest is often not enough to feed the family throughout the year.[20] This means that they have to 'buy back' part of their harvest at higher 'hunger season' prices. People may feel that the land produces less, while in fact they desire more.[21] I asked an eighty-year-old farmer from Napaale whether the likelihood of going hungry had increased or decreased. His answer is illustrative:

> When I was a child, we were never hungry. We always had enough to eat. But since 20 years, we don't get it like that anymore. There is food in the market to buy, but... (silence). When I was young, people didn't sell food. When somebody who is in need of food comes to your house, you give it to him. We didn't know how to sell food in the market. There were not many people hungry that time. This time, there are plenty reasons to sell the food… so many things. This time, the land is less fertile. You will weed a large farm, but what you harvest is not enough. Those days, you weed a very little area and you get good harvest. The rain is the main problem. The people start sowing, the plants die and they re-plant. What they harvest is little. The rains were much better in the past. The problem is that people get less, but at the same time they need more. (Christoph Dugyi[22]).

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are available. It remains unclear how crop yield levels in the Nandom area have developed over the past decades. I sincerely doubt that crops yields in the Nandom area have followed the same (upward) trend as presented above.

[19] The same principle, that it is more important to fill a child's stomach than it is to fill than an adult's (or mother's) stomach, is voiced by a popular singer from Nigeria who sang: "If I no chop, my mother no go chop." (Prince Nico Mbarga and Rockafil Jazz, in their song "Sweet mother").

[20] See for example Songsore (1985) and Adolph *et al.* (1993: 90-107).

[21] As we will see later, the picture that emerges from my own findings is that few people sell farm produce (see also Al-Hassan *et al.* 1997: 140-141). Most cash needs are met through non-agricultural income generating activities.

[22] Christoph Dugyi is the senior father of Egidius Dugyi whose 'pathway' is described in chapter eight.

Soil catena

All soil studies conducted in the region emphasize the high microvariability of soils, i.e. the large variety of soil types in relatively small areas. Despite the relatively flat topography of the research area,[23] important differences in soil structure and fertility between micro-environments exist:

> Although the landscape is only slightly undulating differences in soil hydrological conditions along the slopes are considerable. This leads to the development of different soils from the upland to the lowland. Farmers know these differences very well.[24] (...) Upland soils are generally very sandy and easy to till. The clay content increases downslope. Valley bottom soils have a high clay content so that they are difficult to till. Depending on the actual precipitation these soils are temporarily flooded during the rainy season. (Runge-Metzger & Diehl 1993: 41).

The alluvial soils along streams, in old flood plains and in waterlogged valley bottoms are usually heavy and moderately deep. They are the most fertile soils because they receive nutrients drained from upland soils. These soils are suitable for crops that can 'stand in water', like rice. Yams are cultivated on lowland soils because in these micro-environments the soils are deep enough to raise mounds of an adequate size. Other crops, like maize, guinea corn, early millet and certain vegetables can be sown in the lowlands on small mounds. As we will see in the in-depth livelihood analyses (chapter eight), farmers in the research area use the variety of soil types in the micro-environment to spread the risk of crop failures (insurance strategy) and, perhaps more importantly, nowadays they seem to do this more than in the past. Lowland soils are increasingly important and this can be considered a response to declining soil fertility and more unreliable rainfall (adaptive strategy).

Wild natural resources

Between 2,500 and 2,300 B.C., the desiccation of the Sahara pushed the former Sahara dwellers in different directions, including present-day Ghana. A few centuries before, millet and sorghum had been domesticated in the Sahelian region (Curtin *et al.* 1978: 9-10). The southward migration of Saharans brought crop cultivation and animal husbandry (originating in the Middle East) to present-day Ghana. The livelihood systems of Southwest Africans slowly evolved from a pure reliance on hunting and gathering to more sedentary agriculture. According to Posnansky (1984: 149-151), hunting and gathering have survived as an important source of livelihood due to the nutritional and material value of what can be found and trapped in the wild environment. The collection of wild natural resources, including seeds, leaves, roots, bark and animals serves a wide range of purposes (as soup ingredients, famine food, medicine, building materials, craft materials).

As I noted in the introduction of the section on the natural environment, hunting seems to have lost much importance as a source of livelihood in the Nandom area, but gathering is still very important. Posnansky states that the knowledge about 'bush products' has declined very rapidly in the course of the 20th century (*ibid*: 151). In modern times, formal education, notwithstanding its merits, is the enemy of such traditional knowledge. In the Nandom area, most males learned about the fruits and animals of the bush as small boys when they used to

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[23] Most slopes are less than 5 percent and many are less than one percent (Nsiah-Gyabaah 1994: 41).

[24] Quotes Benneh (1973b) and Benneh (1974).

tend domesticated animals in the wet season. Most females learned about the leaves and wild vegetables from elder female relatives. This transfer of knowledge partially continues because many children do not attend school. Those rural children who *do* go to school still have various household chores and other tasks in which they learn about 'the old ways', but they learn less than their age-mates who do not attend school.

In many households, traditional knowledge about wild natural resources is conserved due to continued necessity and consumption preferences. In the lean season, some households bridge part of the food gap they face by relying more heavily on wild foods. Moreover, tree leaves and wild vegetables are used as soup ingredients to accompany staple foods year-round. The poorer the household, the more it will rely on wild soup ingredients. Richer households buy more soup ingredients, like 'Maggi cubes' and cultivated vegetables. Wild soup ingredients are also traded in the Nandom market.

Sheanut and dawadawa (locust bean) trees are of great importance. Both bear edible fruits at the end of the dry season. The seeds of the former are used to extract oil, and the seeds of the latter are processed into a nutritious condiment. As we shall see later, the gathering and processing of these wild natural resources into consumable or marketable products is a labour-intensive job. Most adult women know the technique and procedure. Some do it purely for home consumption, but it is also one of the main income-generating activities of women in the area. Sheanut and dawadawa trees are not 'common property resources'. In most localities, access to trees in the domesticated environment is restricted to the owners of the farmland. 'Bush trees' can be harvested by everybody. Officially, all land in the Nandom area has been claimed, but there are still places that are considered 'bush'. Women can enter these areas to harvest 'economic trees' and to gather firewood. Sometimes they have to ask permission of landowners with whom they have to make an arrangement (see Francisca Mweyang's 'pathway' in chapter eight).

The economic environment

> In economic terms, the Dagaare-speaking population[25] is heavily agrarian. Practically each family deals in at least some sort of subsistence farming. (...) More and more people migrate southwards in search of better lands. It is fashionable for adolescent Dagaaba to move down south in the dry season to farm for money (...). But present day trends show a diversification away from a heavily agricultural preoccupation to other fields of economic activity. Non-literate adolescents going down south to work can opt for the mining industry and go to towns like Obuasi, Tarkwa and Prestea or to other industrial urban centres like Accra and Kumasi to work in the factories and other business establishments as labourers, watchmen and in other low income jobs. Further, more and more Dagaaba, especially the women, are beginning to emulate their Waala brethren (who are successful traders and businessmen) and going into the distributive sector. But more important, with the advent of Western education, Dagaaba, who consider their ethnic group to be one of the most highly educated in the country, can be found in the tertiary sector as teachers, nurses, administrators and other officers in the Civil Service and business corporations. (Bodomo 1998).

This short description depicts the main characteristics of economic life in the research area, but it neglects the importance of *local* non-farm activities in the building, textile, leather and

[25] This includes the Dagaaba who live further south around Jirapa, Nadowli, Kaleo and Wa (KvdG).

repair sectors. Key words are agriculture, labour migration, livelihood diversification and education. The growing importance of trade is concentrated in the rural *towns*. Of the people I interviewed in the villages around Nandom, only a few women retailed goods (charcoal, groundnuts and pepper). Labour migration is either seasonal or (semi-)permanent and either blue-collar or white-collar. Education enables an increasing number of Dagara to find white-collar jobs, both locally and outside the region.

An agricultural economy?

Most studies that have been conducted in the Upper West Region mention, as a general, apparently static characteristic of the area, that around 90 percent of the economically active members of the population are farmers.[26] It is not clear how this figure has been arrived at, especially because those studies that are based on a more empirical analysis give quite different figures. In a survey of 540 households in the Upper West Region, Nsiah-Gyabaah (1992), for example, found that only 61 percent of the households 'have farming as their major occupation'. Other major occupations in this classification were trading/business (7 percent), pito brewing (11 percent), public service (9 percent), teaching (7 percent) and others (5 percent). It should be noted that the sample framework of the quoted study had a bias towards small semi-urban settlements (*ibid*. 15-18). The figure of 61% consequently seems rather low. The high percentage of households with pito brewing as the main activity indicates a high percentage of female-headed households.

Al-Hassan *et al.* (1997: 134) use data of the Ghana Population Census of 1984. They conclude: "… although agricultural productivity is very low on account of very poor soils, low rainfall and general environmental degradation, between 63 and 75 percent of the economically active population of northern Ghana are engaged in agriculture." On a national level, the fourth round of the Ghana Living Standard Survey (1998-1999), showed that in only seven years, the population share of food crop farmers had decreased with 5.0 percent (from 43.6 to 38.6). In the same period, the population share of the 'non-farm self employed' had increased from 27.6 to 33.8 percent (Ghana Statistical Service 2000b: 37). No data are specified for the Upper West Region, but a process of de-agrarianisation is certainly taking place in the area.

Most of the people in the Upper West Region who do *not* farm (as their major occupation) live in semi-urban and urban centres like Jirapa, Tumu, Lawra, Nadowli, Nandom, Kaleo and Wa, while some non-farmers can also be found in the villages. Many of the people with other major occupations, especially those in the villages, do farm as a secondary occupation. They do this to supplement their cash income or to reduce expenditure on foodstuffs so they can spend more money on non-food items. Many of them do not work on the fields themselves. The agricultural labour on their farms is carried out by dependents within the household, by hired labour[27] from within the area, or through some type of communal labour arrangement.[28]

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[26] "…an area that has over 90% of its population dependent on rain-fed agriculture…" (CRS/GHANA 1992); "90% of the total population of about 540,000 is engaged in agricultural or its related activities." (MoFA 1993: 1); "About 471,000 people in the region (89%) resided in rural areas and were employed in rural and agriculture-related occupations." (Adolph *et al.* 1993: 20).

[27] The revenue of their major occupation enables these 'non-farmers' to hire labourers on their farms. In this way, they can make optimal use of their access to farmland.

In my survey sample, all sixty households cultivated crops, either as their major or as a secondary occupation. Five household heads received official salaries. As we will see in chapter seven, for about half the households in my sample, farm income was lower than total non-farm and off-farm income. But when I asked what their main occupation was, all except the aforementioned five respondents replied that they were farmers.

The overwhelming majority of the agriculturalists in the research area are small-scale, subsistence-oriented farmers or 'peasants'.[29] Traditionally, the most important food crops were millet, guinea corn, cowpeas, yams, beans and sheanuts. Other crops like maize, groundnuts and rice were introduced later, but were already cultivated by the grandparents of today's farmers.

Virtually all households claiming farming as their major occupation do not rely solely on agricultural income for their subsistence, at least not in the densely populated Nandom area. People of different gender and age groups engage in a large variety of minor occupations. In low population density areas in the Upper West Region, and especially those areas that are not close to (semi-) urban centres, the livelihoods are less diversified. The remoteness of villages restricts the people's market access. Moreover, in the remote, sparsely populated areas, it is less necessary for people to diversify their livelihoods because they are more capable of producing their own food needs. To meet cash needs, they can sell surplus food. In those areas, farmland is less scarce, and the soil is more fertile because fallow periods are still long (see Al-Hassan *et al*. 1997; Songsore 1985). On a district level, this is also illustrated in Table 5.5 (see below). Average per capita food production is clearly above subsistence in the sparsely populated areas.

With the exception of a few enterprises that are supported by the Producer Enterprise Promotion Service Centre (PEPSC), the non-agricultural activities in which most people engage are servicing local demand.[30] In the Nandom area, one can find a large variety of non-agricultural occupations (see Table 5.4). Most of the jobs are spatially concentrated in Nandom *Town* (strictly speaking not my research area). Besides the townsfolk, many villagers walk or bike to Nandom Town to carry out their jobs or to sell whatever they have produced back in the villages. Some of these activities are year-round; others are concentrated in the dry season. Some activities are carried out on a daily basis; others are carried out in intervals or irregularly. Besides these legal activities some people engage in smuggling, cattle theft, illegal hunting, illegal charcoal burning and perhaps other activities that I am not aware of. There are also about ten street beggars in Nandom Town.

Money from outside the region to pay each other for these services; to buy manufactured goods and to pay school and hospital fees is mainly generated through seasonal labour migration, remittances of relatives in southern Ghana and through the sale of livestock to southern Ghana. Some processed agricultural produce, like sheabutter and dawadawa, also leaves the Nandom area. These outflows of processed agricultural produce are small, however, because

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[28] These communal labour arrangements include 'uncle farming', 'friendship farming' and 'in-law farming' (see 'in-depth analysis of Osman Ali in chapter eight).

[29] In this study, I don't use the word 'peasant' for the simple reason that people in the research area do not use that word. They call themselves 'farmers'.

[30] Traditional smocks are another exception. Smocks from Nandom are sold all over Ghana.

Table 5.4 Some of the non-agricultural income generating activities encountered in the Nandom area

Female self-employment	Pito brewer; firewood seller; sheanut processor; dawadawa processor; food preparation; 'wild' food gatherer; cloth weaver; mat weaver; seamstress.
Male self-employment	Tailor; shoe repairer; metal worker; painter; wood carver; carpenter; mason; block moulder; stone carver; bicycle repairer; mechanic; electrician; tro-tro driver; watch repairer; butcher; fisherman; fodder gatherer; rope maker; ferry man; radio repairer; grinding mill operator; weaver; lotto staker; truck off-loader.
Trade	Grain trader; livestock trader; shop keeper; petty trader (table-top and hawking); bar owner.
Informal wage labour	Barmaid; waiter; communication centre operator; watchman.
Formal income	Religious clergy; nurses; teachers; agricultural extension officers; bank employees; other civil servants and NGO employees.

Source: observations during this study

there is enough local demand to meet supply. The same accounts for unprocessed agricultural produce. Some grains leave the area after the harvest, but the net flows seem to be negative for the Lawra District (Food balance sheets of MoFA, no date).

In a study carried out by the Wa Diocesan Development Office, the Nandom, Ko and Hamale[31] Parishes are labelled 'sub-subsistence' in all crops of which data were available (millet, guinea corn, maize, rice, cowpea and groundnut) indicating for each crop that "given all favourable production factors, there is always inadequate food production. The situation is worsened when farmers have to sell a part of the inadequate food to generate cash for other domestic needs" (CRS/GHANA 1992: 29). It is unclear whether this conclusion rests on measured empirical evidence or on observations and estimations. In the district, only Lawra Parish is considered to be 'subsistent'[32] in its millet and guinea corn production. The study of the Diocesan Development Office was carried out about ten years ago. If a certain area is considered to be overwhelmingly agricultural and at the same time the area is not self-sufficient in its food production, the situation seems quite alarming, especially when virtually no non-food cash crops are cultivated. But is the Lawra District really sub-subsistent in its food production?

In Tables 5.5 and 5.6, I have combined agricultural production data (1992-1998) of the Ministry of Food and Agriculture with demographic data, extrapolated from the Ghana Census 2000. The data in Table 5.5 suggest that in most years, the Lawra District has been subsistent in its millet and guinea corn production. The extremely low production in 1992 remains a mystery. No farmer I interviewed in the research area remembered an extreme crop failure in that year and the people in the regional Ministry of Food and Agriculture could not explain the low production either. The figures in Table 5.5 suggest that above-subsistence production of millet and guinea corn can compensate for below-subsistence production of maize and groundnuts, at least in terms of output.[33] Even though these figures do not say much about *household* level food security, the outcome is indeed surprising because most

[31] Ko and Hamale are relatively large settlements in the vicinity of Nandom.

[32] 'Subsistent' is defined here as: "should none of the foodstuff be sold out for other cash needs, an average family would have sufficient food throughout the year." (CRS/GHANA 1992: 29).

[33] The market price is usually highest for groundnuts, followed by guinea corn, millet and finally maize.

sources (including the Ministry of Food and Agriculture) state that the Lawra District is deficient in its food production.

Table 5.5 Production, human demand (in metric tonnes) and percentage self-sufficiency of four major food crops in Lawra District[34] (1992-1999).

		Millet (40 kg/cap/year)				*Guinea corn (40 kg/cap/year)*			
Year	Population	Biological production	Economic production	Human demand	% Self-sufficiency	Biological production	Economic production	Human demand	% Self-sufficiency
1992	84,184	1747	1223	3367	**36.3**	1180	826	3367	**24.5**
1993	84,595	4100	2870	3384	**84.8**	8960	6272	3384	**185.3**
1994	85,007	5166	3616	3400	**106.4**	9408	6586	3400	**193.7**
1995	85,422	9247	6473	3417	**189.4**	7590	5313	3417	**155.5**
1996	85,838	9308	6516	3434	**189.7**	9575	6703	3434	**195.2**
1997	86,257	9020	6314	3450	**183.0**	8365	5856	3450	**169.7**
1998	86,678	8118	5683	3467	**163.9**	8670	6069	3467	**175.1**
1999	87,100	6157	4310	3484	**123.7**	7376	5163	3484	**148.2**
average	**85,642**	**6608**	**4626**	**3426**	**135.0**	**7641**	**5348**	**3426**	**156.1**
		Maize (30 kg/cap/year)				*Groundnuts (30 kg/cap/year)*			
Year	Population	Biological production	Economic production	Human demand	% Self-sufficiency	Biological production	Economic production	Human demand	% Self-sufficiency
1992	84,184	282	197	2526	**7.8**	155	109	2526	**4.3**
1993	84,595	1820	1274	2538	**50.2**	640	448	2538	**17.7**
1994	85,007	1923	1346	2550	**52.8**	972	680	2550	**26.7**
1995	85,422	3328	2330	2563	**90.9**	5175	3623	2563	**141.4**
1996	85,838	3595	2517	2575	**97.7**	1914	1340	2575	**52.0**
1997	86,257	2835	1985	2588	**76.7**	2037	1426	2588	**55.1**
1998	86,678	2093	1465	2600	**56.3**	2342	1639	2600	**63.0**
1999	87,100	2431	1702	2613	**65.1**	2191	1534	2613	**58.7**
average	**85,642**	**2288**	**1602**	**2570**	**62.3**	**1928**	**1350**	**2570**	**52.5**

Source: Adapted from the regional Ministry of Food and Agriculture (MoFA) and Ghana Statistical Service 2002

[34] I have calculated the percentage self-sufficiency, following the method used by the Ministry of Agriculture, as the 'economic production' divided by the 'human demand' multiplied by 100. The agricultural production data as presented in the above table concerns the 'biological production'. The economic production (subtracting average post-harvest loss and seed requirement) is calculated as 70% of the biological production. The human demand is calculated as the population multiplied by the per capita consumption (set at 30 kilograms maize, 40 kilograms millet, 40 kilograms guinea corn and 30 kilograms of groundnuts annually). Besides, it is assumed that people eat 20 kilograms of rice, 15 kilograms of cowpea and 50 kilograms of yams. No reliable district level production data are available for these latter crops, but they should be considered secondary crops and it is unlikely that the district is self-sufficient in their production, especially for cowpeas. I have copied this method from the 'food balance sheets' of the aforementioned ministry. In their own calculation, the percentages for Lawra District are much lower because they have calculated the human demand with extrapolations of population size based on the 1984 census and 2.4% annual population growth rate while in fact the population growth rate in Lawra District has been approximately 0.49% (adapted from Ghana Census 2002).

Table 5.6 Indicators of population density, agricultural production and food security in the five districts of the Upper West Region ('92-'98).

District:	*Wa*	*Jirapa*	*Lawra*	*Sisala*	*Nadowli*	*UWR*
Population (average '92-'98)	198,708	91,427	85,426	76,192	76,942	529,434
Area (km^2)	5,899.3	1,667.6	1,051.2	7,115.4	2,742.5	18,476
Population density (inhabitants/km^2)	34	55	81	11	28	29
Maize, millet, guinea corn & groundnuts (average '92-98):						
Production (Mt.)	87,012	40,721	18,509	41,424	61,365	242,889
Cultivated area (ha)	68,175	39,125	16,538	35,725	52,741	212,820
Average yields (kg/ha)	1276	1041	1119	1160	1164	1141
Percentage of land under cultivation (%)	11.56	23.46	15.73	5.02	19.23	11.52
Cultivated hectares/capita	0.34	0.43	0.19	0.47	0.67	0.40
Agricultural production/capita/year (kg)	438	445	217	544	798	459

Source: Adapted from the regional Ministry of Food and Agriculture (MoFA) and Ghana Statistical Service 2002

The calculation of the percentage self-sufficiency is based on a number of assumptions (see footnote), and some assumptions may not be very accurate. Moreover, as I have already outlined in chapter four, the yield levels as calculated by the Ministry of Food and Agriculture may be higher than in reality. The estimated *acreage* harvested with maize, millet, guinea-corn and groundnuts is likely to be more accurate. It is surprising, however, that the percentage of land under cultivation (with the four major crops) is less in Lawra District than it is in the sparser populated Nadowli District and Jirapa-Lambusie District (see Table 5.6). If these data *are* correct, this could mean that in the Lawra District, higher population pressure leads to de-agrarianisation rather than agricultural intensification. It would also be interesting to find out what is going in Nadowli District. Over there, the acreage under cultivation per capita is substantially higher than in the rest of the region, and the result is a per capita food production of 798 kg per year, excluding secondary crops.

Conclusions about food security have to be approached with caution, but a straightforward conclusion that is confirmed by all sources is that within the Upper West Region, Lawra District is the *least self-sufficient* in its food production. From these data it cannot, however, be concluded that Lawra is the *most food insecure* district, because people also gain access to food by purchasing it with revenues from non-farm activities. To assess food security at a district level, one has to know more about differences in non-farm and off-farm incomes. If income from other sources is substantially higher in Lawra District than in the rest of the region, the picture becomes less gloomy. Unfortunately, these data are unavailable.[35]

While there is consensus that per capita food production is lowest in Lawra District, it is unclear whether the district is a net importer or exporter of food. MoFA data, adjusted for the results of the 2000 population census, suggest that on average the district has achieved subsistence in food production in the period '92-'98 (Table 5.5). Other sources and my own impression suggest that this is not the case. Once again, it has to be emphasized that even if

[35] Perhaps the raw data of the Ghana Census 2000 or the Ghana Living Standard Survey could give an indication.

self-sufficiency is achieved at the district level, many *individual households* will still suffer for food every year.

Policies to enhance food production have had limited success. In colonial days, investment in the northern sector was virtually absent (see chapter three). The few colonial efforts to improve northern agriculture focused on the promotion of mixed farming. Although these efforts were not very successful, the promotion of mixed farming is still a cornerstone of government and NGO agricultural policies. Recently, these efforts have become more successful, also in the Nandom area. With the assistance of the Nandom Agricultural Project (NAP), the Agricultural Development Bank and the Ministry of Food and Agriculture (MoFA), increasing numbers of farmers have adopted bullock and donkey farming (see chapter six).

Whatever the exact figures and trends, the Upper West Region is still predominantly agricultural. Industrial activities are virtually absent or small scale. In Boateng's (1966: 103) "A geography of Ghana", a map is shown of the main industrial establishments in Ghana. On this map, the author did not even bother to display the northern regions. In the three decades after this book was published, not much has changed with respect to large industry in the Upper West Region. Quite recently, some small-scale industries have developed, however. In Nandom, an 'industrial area' has been established by the Producers Enterprise Promotion Service Centre (PEPSC).[36] The clients of this NGO are small-scale industrial enterprises like metal workers, (building) contractors, carpentry workshops, mechanics, a roofing tile manufacturer, painters, etc. Most of these enterprises serve local demand, but some, especially the contractors, also operate outside the area (see Van der Geest 2002b).

Access to credit

Most non-farm income opportunities for 'self-employment' in the research area are low-yielding and require relatively little investment. For the very poor who are struggling for day-to-day survival, however, it is still difficult to gain access to the necessary investment capital. Without the necessary collateral, individuals cannot receive credit from formal banks. That is where the credit unions come in. The long history of micro-credit in Nandom started in the late 1950s when the first Credit Union was established by the Catholic Mission (McCoy 1988: 208-216, see chapter three). Nowadays, three credit unions are based in Nandom: Freedom from Hunger, the Nandom Credit Union and the Nandom Farmers Co-Operatives Union (NACOP). The latter's primary aim is not to promote non-farm activities, but rather to "prevent economic exploitation of farmers by middle men" (Millar *et al.* 1997: 64). Each organisation has its own background, target groups, system and rules. The credit unions do not give loans to individuals; they work with groups. Together, they have organised hundreds of credit groups in the Nandom area. The group is responsible for the payback behaviour of individual members. All three credit unions function as intermediaries between individuals, groups and the Nandom Rural Bank. The size of the loans varies from less than ten to over a hundred Euro equivalents. Most credit schemes charge commercial interest rates. Group

[36] PEPSC has a mission background and occasionally receives financial support from Bilance (formerly CEBEMO), a member organisation of one of the five Dutch Co-Financing Agencies (Cordaid).

members are encouraged to invest their loans in productive activities. Participation in credit groups is quite high, especially among women. Aside from the credit unions, there is a large variety of saving groups. These groups do not apply for loans, but enable productive investments that would otherwise be difficult to make. In the in-depth study of Francisca Mweyang's household, I describe the relationship between a credit union and individual members in more detail (see chapter eight). Members of the Producer Enterprise Promotion Service Centre (PEPSC) can apply for a loan individually, and these loans are usually higher since their activities require higher investments. People who have a formal income (civil servants and NGO-staff) can usually take out individual loans through the Nandom Rural Bank.

Seasonality of food prices

Several authors[37] mention the 'price scissors' that subsistence farmers in the research area experience due to the seasonality in market prices of food crops. In short, these scissors cut in the following manner: After the harvest, small-scale farmers are forced to sell part of their produce to meet cash needs or claims of creditors. At the time of these crop sales, prices are low due to the large supply of grains in the markets. What the subsistence farmers sell is often not a real *surplus*, however. In the months prior to next year's harvest, the granaries run low and people have to buy food at the market. By that time, prices have increased due to high demand and scarcity in markets. Poor households with little 'room to manoeuvre' are affected by the seasonality of food prices, while wealthy households can potentially benefit. Households with a high non-farm or off-farm income can buy grains in bulk when prices are low. Big farmers with enough buffer capacity can delay selling their produce with the aim of fetching higher prices.

The price scissors and the shortfall of domestic food production are not new. In the Rural Community Survey of 1972-1974, only 17 percent of the households sampled in the 'old' Lawra District sold farm produce when prices were high; 37 percent hardly ever sold because they had no surplus, and 46 percent sold directly after the harvest or whenever they needed money. Over 60 percent of the households re-purchased food in the lean season at higher prices. Seasonality of food prices, Songsore concludes, increases stratification among farmers because the poor households are forced to sell after harvest and buy in the lean season. They pay the "double penalty" and their capacity to benefit from a good – climatic – year and to invest in future productive capacity is limited (Songsore 1985: 17-19). The inability to benefit from short-term favourable conditions ('positive shocks') is an important characteristic of vulnerable households with low resilience (see Davies 1996: 30-31).

Graph 5.1 shows the trends in absolute wholesale market prices of maize, millet, guinea corn and groundnuts[38] in Lawra market, 25 kilometres from Nandom.[39] A bag of groundnuts is usually more expensive than a bag of millet, guinea corn or maize. The cheapest staple food

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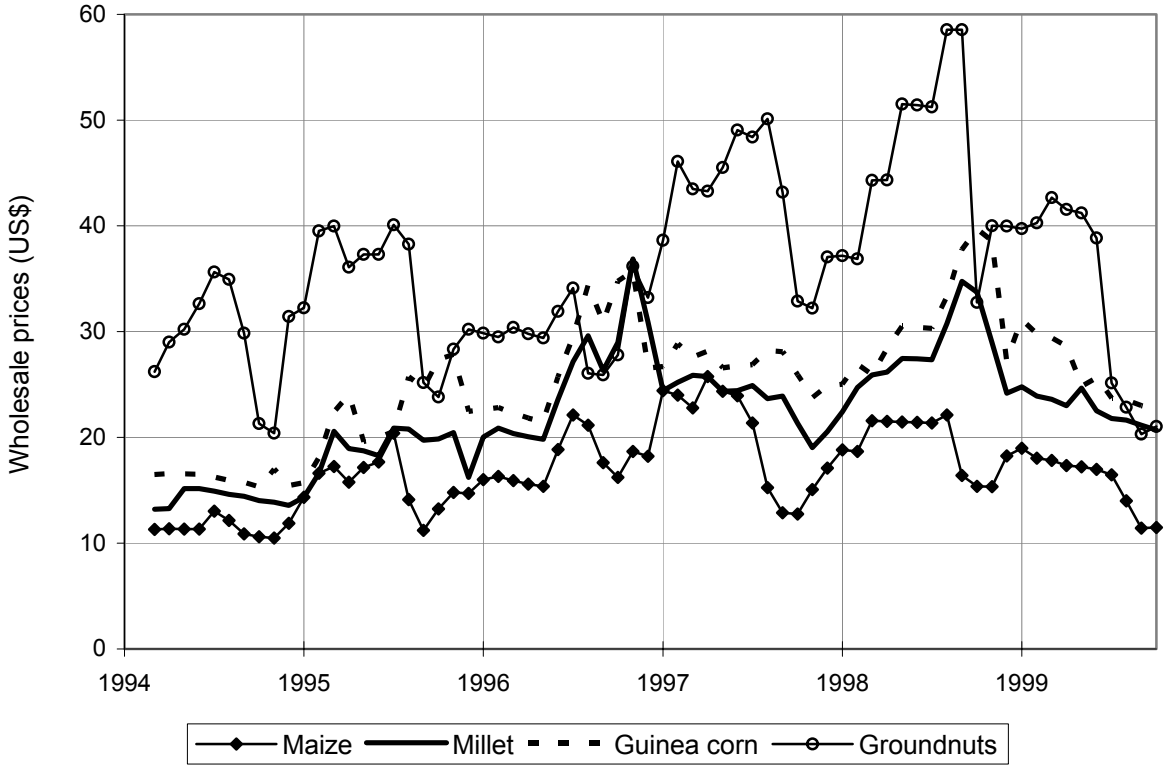
[37] For example: Songsore (1985: 16).

[38] The bagged crops have different weights. One bag of maize weights 100 kg; millet 93 kg; sorghum; 109 kg and groundnut – 82 kg (MoFA).

[39] People from the villages around Nandom do not go all the way to Lawra to buy foodstuffs; they go to the Sunday market in Nandom Town. No complete data set was available for Nandom market, however.

Graph 5.1 Wholesale prices of maize, millet, guinea corn and groundnut in the Lawra market in US dollars[40] (March 1994-December 1999)



Source: Adapted from Regional Ministry of Food and Agriculture (MoFA, Wa) and www.oanda.com

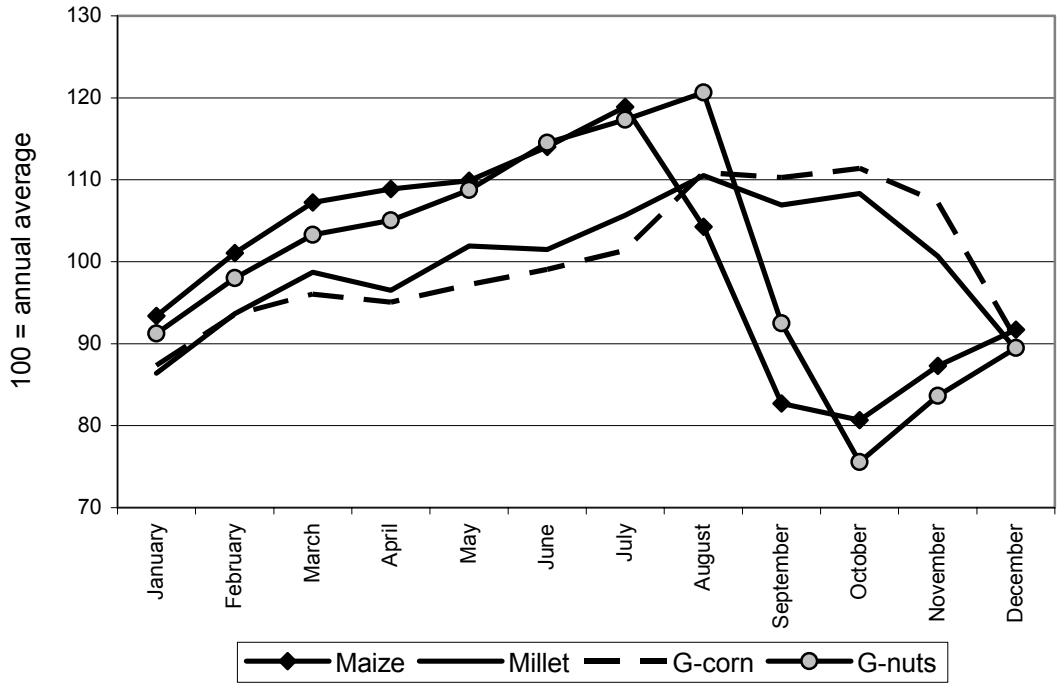
is maize. This explains why most people buy maize when their granaries are getting empty. A second reason for the popularity of maize in the lean season is that its price usually decreases about two months before the millet and guinea corn harvest. This is shown more clearly in Graph 5.2.

Graph 5.2 shows the *average* seasonality in market prices of the same crops for the period 1987-1999.[41] The average seasonality in food prices suggests that wealthy non-farm households with enough capital, or 'room to manoeuvre', should buy large amounts of maize and groundnuts around October and millet and/or guinea corn around Christmas. Wealthy farmers with above-subsistence production should try to keep their surplus maize and groundnuts in store until July-August and their millet and guinea corn until September-October. Poor farmers with below-subsistence food production are caught in the aforementioned price

[40] I traced monthly exchange rates from www.oanda.com.

[41] For every year in this period, I have divided the monthly prices by the average annual price. After this I have averaged the month indices over the whole period. General inflation distorted the seasonality of food prices, however. It would look like food prices are relative low in January and relatively high in December. In reality, the food prices do not drop between December and January as can also be observed in Graph 5.1. The average annual increase of food prices was between 19.5% (maize) and 22.1% (guinea corn) and the average monthly increase between 1.494% and 1.681%. I corrected the seasonality of food prices with the average monthly increase and the result is shown in Graph 5.2.

Graph 5.2 Average seasonality of food prices in Lawra market (1987-1999), corrected for inflation



Source: Adapted from Regional Ministry of Food and Agriculture (MoFA)

scissors *if* they sell part of their farm produce after the harvest, and if they have to buy food in the lean season when their granaries are getting empty. They can try to evade the price scissors by finding alternative sources of income after the farming season and, when they see that their harvest will not be enough to feed their household until the next harvest, buy food when it is still affordable. The survey findings in chapter six and seven suggest that indeed few farmers sell grains after the harvest. It is still quite common, however, to buy maize in the lean season. A second way to evade the price scissors is to sell produce to so-called grain banks and buy it back in the lean season at a price that is below the current market price. The Nandom Farmers Cooperatives Union (NACOP) organises such grain banks in some villages, but none of my survey respondents reported to participate in such projects.

Incidence and depth of poverty in the Upper West Region

Between 1987 and 1999, four extensive 'Living Standard Surveys' have been carried out in Ghana. The present section on poverty in the region is based on a report of the Ghana Statistical Service, called "Poverty trends in Ghana in the 1990s". The report analyses the findings of the last two rounds of the Ghana Living Standard Survey (GLSS) that were carried out in 12-month periods in 1991-92 and 1998-99. In the 1990s, the Ghanaian economy experienced an annual growth of 4.3% and per capita income increases (Ghana Statistical Service 2000b: 1). The question is how this growth was distributed socially and geographically. In the analysis of poverty, the report distinguishes four perspectives: consumption poverty, household assets, housing characteristics and human development (*ibid*: iii). Consumption poverty is elaborated in most detail. The GLSS, as it is presented in the methodological sections of the report (*ibid:*

2-6, 57-70), has carefully evaded most of the many pitfalls of poverty analysis (see e.g. Greeley 1994).

In the analysis of consumption poverty, people's 'standard of living'[42] is measured and related to two different poverty lines. The extreme poverty line or the 'food poverty line' is set at the monetary value of an average food 'consumption basket' that provides 2900 kcal per adult male equivalent. In Accra, this amounted to 700,000 cedis[43] on January first 1999 (295US$).

> Individuals whose total expenditure falls below this line are considered to be in extreme poverty, since even if they allocated their entire budgets to food, they would not be able to meet their minimum nutrition requirements (if they consume the average consumption basket). (*ibid*: 5).

In the poverty analysis, regional differences in cost of living are taken into account. In the 'Rural Savannah' of which my research area forms part, food is cheaper than it is in Accra. The 'food price index' in the rural savannah amounted to 73.1% of the Accra figures (*ibid*: 4). Thus the extreme poverty line for the rural savannah is set at a bit more than 500,000 cedis per adult male equivalent. The second poverty line or the 'overall poverty line' was set at 900,000 cedis to include the average non-food consumption expenditure of "those whose total consumption expenditure is at the level of the food poverty-line" (*ibid*: 6).

> Individuals consuming at levels above [the overall poverty line] can be considered able to purchase enough food to meet their nutritional requirements, and to be able to meet their basic non-food needs. (*ibid*: 5).

On a national level, the share of the population having a 'standard of living' below the extreme poverty line (i.e. the 'incidence of extreme poverty') fell from 36.5% to 26.8% between 1991-92 and 1998-99. In the 'Rural Savannah', however, the incidence of extreme poverty showed a small increase from 57.5% to 59.3% in the same period. In terms of 'consumption poverty', Ghana's 'Rural Savannah' is *by far* the most deprived zone. With an incidence of 28.2% in 1998-99, extreme poverty in the second most deprived zone (rural coastal) was far below the rural savannah figure (*ibid*: 8).

The 'depth of extreme poverty' is calculated as the *gap* between the food poverty line and the average standard of living of the extremely poor (both expressed in adult male equivalents). In the Rural Savannah, this figure amounted to 38.8% in 1998-99 (*ibid*: 35). Again, this is the highest figure in Ghana.

To summarise, almost 60 percent of the people in rural northern Ghana (Rural Savannah) have a standard of living that – on average – is almost 40 percent below the extreme poverty line. It would be wrong, however, to blindly conclude that almost sixty percent of the population in rural northern Ghana structurally has a food intake of less than sixty percent of the energy requirements even if they have no non-food expenditures. Crosschecking these data

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[42] The standard of living measure is the sum of the market value of own food production, the monetary income and the market value of received payments in kind. The units of analysis are households, but the standard of living was expressed per adult male equivalent to account for differences in household size and composition.

[43] The price of such a basket depends on *whose* consumption basket is taken as reference. Among the poorest twenty percent, a basket with a nutritional value of 2900 kcal averagely cost 665,300 cedis and among the lowest 50 percent, this amounted to 707,600 cedis. Note that the poverty lines were set *after* the standard of living surveys were carried out.

with nutritional surveys would reveal that people gain access to cheaper food than is assumed in the Ghana Living Standard Survey. Just to give a rough idea, in January 1999, sixty percent of 500,000 cedis (the extreme poverty line for the rural savannah) could buy about 470 kg of maize plus 100 kg of groundnuts in the Lawra market. This is far above the minimal energy and protein requirement per adult male equivalent.

Within the savannah zone, the Upper West Region had by far the highest incidence of extreme poverty in 1991-92. As much as 74.3% of the population lived under the extreme poverty line. By 1998-99, the incidence of extreme poverty had decreased to 68.3%. The depth of extreme poverty increased from 40.3% to 42.3%. The incidence of 'overall poverty' decreased from 88.4% to 83.9%. These data suggest that only one out of six individuals in the Upper West Region is able to meet his/her food needs and basic non-food needs. While there is a slight improvement in the Upper West, the Upper East Region experienced a dramatic worsening of standards of living. The incidence of extreme poverty increased from 53.5% to 79.6% and the incidence of overall poverty increased from 66.9% to 88.2%. The Upper East Region can now be called the most deprived region in terms of consumption poverty.

Economic growth in the 1990s has substantially reduced poverty on a national level, but in two of the three northern regions, poverty has actually increased in the same period. The contribution to national poverty of the three northern regions increased from 28.6% to 53.5% for the extreme poverty line and from 24.2% to 45% for the 'overall poverty line' (*ibid*: 39-40).

The report further presents the indices of poverty according to 'main economic activity' for Ghana as a whole. Poverty declined in all livelihood groups, but the improvement for food-farmers was marginal. Therefore, their representation in national poverty statistics increased from 70.7% to 78% for the extreme poverty line and from 66.9% to 72.2% for the overall poverty line. For a good interpretation, it should be taken into account that in the same period, their share of the total population decreased from 43.6% to 38.6% (*ibid*: 37-38).

The second aspect of poverty in the report is the percentage of households owning certain 'assets'. The most important asset of northerners (livestock) is not included in the analysis. Assets are operationalised as durable consumer goods, like refrigerators, TVs, videos, cameras and fans. On a national level, ownership of these assets has substantially increased, both in rural and in urban areas (*ibid*: 20). The people in my research area do not possess such goods, however. This is mainly due to the fact that the villages around Nandom Town do not have electricity. Only three types of durable goods that are more common in my research area (sewing machines, radios and bicycles) are included in the analysis. In the 'Rural Savannah', ownership of these three items, expressed as the percentage of all households possessing a certain item, has increased considerably: sewing machines from 15.6 to 19.3 percent; radios from 29.9 to 46.6 percent and bicycles from 44.0 to 52.8 percent. The findings were not specified per region (*ibid*: 41).

The third aspect of poverty (housing characteristics) focuses on household access to facilities, like clean water, sanitary facilities and electricity. The findings are specified by poverty status quintile and by locality (rural-urban). Rural areas clearly lag behind urban areas, but access in rural areas substantially improved in the 1990s, and the gap is shrinking. In 1991-92, half the population had no access to potable water. By 1998-99, this figure had fallen to one-third. Moreover, access to potable water does not depend on poverty status. In the poorest

quintile, access is just as high as in the wealthiest quintile. This is not the case for adequate toilet facilities (flush toilet or KVIP). Although its use has increased in all poverty status groups, the increase has been sharpest among people with a relatively high standard of living. In rural areas, the use of KVIPs has increased from a mere 3.7% in 1991-92 to 19.9% in 1998-99. Flush toilets are still reserved for the happy few (1.6%). In urban areas, over 60 percent of the people has access to KVIPs (45.2%) or flush toilets (15.2%). The increase in electricity use shows a similar pattern as the increase in sanitary facilities. About twenty percent of the rural households now uses electricity compared to 8.7% in 1991-92. In the wealthiest quintile, electricity is used in 37.0 percent of the households while in the poorest quintile, this amounts to only 5.1%. In urban areas, almost 80 percent of the households use electricity. These findings were not specified per region, either (*ibid*: 21-26, 44-48).

The fourth and last aspect of poverty (human development) focuses on healthcare and education. Increasing numbers of people, especially in rural areas, no longer consult a doctor or go to hospital when they are ill. The authors of the report attribute the fall in consults to the worsening of the price-quality relation. Since the 1980s, hospital fees have increased disproportionately. Rising costs were not accompanied by increased quality (*ibid*: 27-28). In *northern* Ghana, an additional problem is that it is very difficult to attract qualified hospital-staff. Most medical doctors prefer to work in southern Ghana or abroad. In the North, many hospitals are now staffed by Cuban doctors.

While health services declined in the 1990s, school enrolment increased. In all zones except the Rural Savannah, net enrolment rates[44] of both boys and girls in primary schools was above eighty percent in 1998-99. In the Rural Savannah, the enrolment rates were 66 and 61 percent for boys and girls respectively. Primary school attendance is lower among children from poor households than among children from relatively wealthy households, but the difference became smaller in the 1990s. Net secondary school enrolment increased only slightly in the 1990s: from 37.5 to 40.7 percent on a national level. In the Rural Savannah zone, secondary school attendance is much lower than in the rest of Ghana. Among boys, it decreased from 25.8 to 24.6 percent and among girls, it decreased from 22.1 to 21.5 percent (*ibid*: 28-32, 53-56).

The socio-cultural environment

In the villages north, south and west of Nandom, virtually all inhabitants are Dagara. In the villages east of Nandom, most inhabitants are Sisala. A third group that can be found in the villages are the cattle-herding Fulani. They constitute a small minority. The origin of the population of Nandom Town is much more diverse. Traders and civil servants with different ethnic backgrounds now inhabit Nandom Town together with those Dagara – and to a lesser extent Sisala – who moved from the villages to Nandom Town. The reasons for these short-distance migrations are multiple and vary per individual. The arrival of electricity in the late 1990s may speed up the growth of Nandom Town.

Most Dagara in the research area are Catholics or Traditionalists. Many Sisala people have converted to Islam, but there are also many Sisala Traditionalists and some Catholics. In

[44] The net enrolment rate is "the percentage of those in the relevant age range attending primary or secondary school" (*ibid*: 28).

Nandom Town, most people of northern origin, especially the Mossi from Burkina Faso, are Muslims. Inter-marriage between ethnic groups and across religious lines is quite common in the region, though this does not apply to 'all combinations'. Although sometimes there is tension, the various groups co-exist in relative tolerance and without large conflicts. At times, however, chieftaincy disputes give rise to conflict. In exceptional cases, these disputes result in fights between supporters of different candidates (see e.g. Lentz 1993).

Hoe-farming and identity

According to Tengan (2000: 59), "Societies in Northern Ghana define themselves by the work they do for a living." Although the Dagara increasingly engage in non-farm activities and adopt animal traction in their farming methods, they refer to themselves as hoe-farmers, as do the Sisala.[45] Neighbouring ethnic groups also refer to them as hoe-farmers. For the Dagara and the Sisala, hoe-farming is not only a way to make a living, to gain access to food, but also a historical and cultural tradition.

Those Dagara who no longer depend on farming for their livelihood security usually still cultivate some fields. Alexis Tengan, who is a Dagara himself, writes in his book that when he was working as a tutor in the Northern Region, he asked for land to farm "as a means of supplementing income" (Tengan 2000: 60). For a formally educated person, farming is usually not the most efficient way to supplement one's income. He decided to farm *because he is a Dagara*. It is part of his identity.

The Dagara do not only define themselves as hoe-farmers, but also as *hard workers* (Lentz 1994a: 72). Indeed, I had the impression that there is quite a strong work ethic in the villages around Nandom. People get up early in the morning and work long hours on their fields. Outside the farming season, many young men travel to southern Ghana to work, and those who stay behind try to find other ways to make money. A threat to the strong work ethic of Dagara people is the widespread consumption of 'akpeteshi' (a cheap, locally produced hard liquor). People – mostly men – who drink akpeteshi are 'tolerated' as long as they fulfil their duties. Often, the booze affects the man's strength and work ethic, however. These men are considered irresponsible because their wives and children will suffer (see also Luginaah & Dakubo 2003). As we will see in the in-depth livelihood analyses, the moral codes regarding mutual assistance also relate to hard work and laziness. When bad luck strikes a man or a woman who always works hard to feed his/her family, and s/he is in need of something, most relatives and friends will be willing to help, at least if they have the means. If someone is known to be a drunkard or a lazy man, few people will be willing to help.

The role of women in local agriculture

It is common knowledge that in many parts of Africa, food production depends to a large extent on women's efforts. This picture is confirmed for Ghana at a national level:

> Women account for about 70 percent of the total food crop production; they process and market nearly all the grain and starchy staple foods; and about 30 percent of the heads of households are women. The number of women farmers has been increasing at a faster rate than that of men (...). Between 1970 and 1984, the number of women farmers increased by 102 percent compared to 72

[45] Note that Sisala are also known as charcoal burners.

percent for men, and by 1984 women farmers outnumbered men in the Western, Central, Eastern, Volta and Ashanti Regions. (Asenso-Okyere *et al*. 1993: 19).

Notwithstanding the great contribution of women in farm activities, the above picture cannot be confirmed on the regional level. The regions in which women farmers outnumber male farmers are all in the south of Ghana. In Northern Ghana, at least among the Dagara, farming is an enterprise that requires both *women and men*, preferably both *young and old*. In the agricultural cycle, there are certain tasks for women (sowing and harvesting[46]), certain tasks for men (land preparation and weeding), certain tasks for children and certain tasks for the elderly. Although women indeed have a very important role in local agriculture, it is very difficult for them to farm independently. The two sexes need each other. Households need a *balanced* labour force. Most widows, divorced women and unmarried mothers try to get integrated in a larger household, for example the household of a (classificatory) father, brother or son. When a married woman becomes a widow, she can either be integrated in a farm unit of her husband's *yir* (house, patrilineage), or she can return to her paternal *yir*. Female-headed households are not very common in the *villages* around Nandom. In my survey sample, only three out of sixty farm households were headed by women. In Nandom Town, female-headed households are much more common.[47] Although some of these women still farm, their livelihoods mainly consist of non-agricultural income generating activities like pito brewing and petty trading. The livelihoods of female-headed households are relatively vulnerable, not in the least because their access to land is usually uncertain and because they have to hire male labourers for certain farm activities (see in-depth analysis of Francisca Mweyang in chapter eight).

In many parts of West Africa, men concentrate their efforts on the production of non-food cash crops, for example tobacco and cotton, while women engage in subsistence food production for the household. In my research area, this is not the case. Non-food cash crops play a very minor role. Only one out of sixty households in my survey cultivated cotton and only one man farmed some tobacco. For men as well as women, it is quite common to have separate fields for commercial *food* crops, especially groundnuts, rice and yams (only men). It depends on the household's food situation in a given year whether all, part or none of the produce will be sold. Men usually sell a larger part of their individual harvest than women, who are more inclined to use the produce to feed their own children on top of the food from the common granary, especially in those homesteads where several wives form one farming unit.

Although men work on the farm just as much as women, it should be noted that women have many more tasks in running the household. They have to fetch water, cook meals, gather

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[46] Note that sowing and harvesting are not the only agricultural tasks of women. Sowing and harvesting are rather *categories* of activities that include: sowing, resowing, refilling, transplanting, cutting, heaping, transportation, drying, threshing, shelling, winnowing, storing, etc. The other two *categories* of activities (land preparation and weeding) mainly consist of activities that are carried out by men. They include: site selection, clearing, ploughing, harrowing, ridging, mounding, capping (yam mounds), application of manure, weeding, application of chemical fertiliser and/or pesticides, replanting, thinning, shading, pruning, mulching, cutting sticks & staking (yam), watering, etc. (see Runge-Metzger & Diehl 1993: 194). Both in the male-dominated and the female-dominated *categories*, there are certain activities that are carried out by the opposite gender.

[47] See thesis of Arjen Schijf (forthcoming).

soup ingredients, clean the house, look after the children, etc. The main task of men is to build houses and carry out maintenance work. With the advent of 'modern houses', the time dedicated to this task has been reduced. Men have more leisure time than women.

Social organisation

In this section, I will highlight a few characteristics of social organisation of the Dagara in the research area. Many aspects of social organisation are elaborated elsewhere in this study (especially chapter eight). Let's start at the household level. Most Catholic Dagara men only marry one wife. Traditionalists and Muslims in the area accept polygamy, and if a man has the means and the desire, he will marry more than one wife. Virtually no Muslims are found among the Dagara villagers. Islam is wider spread in the Sisala villages.

There seems to be a trend away from large three-to-four-generation households. Although these generations often still live together in the same compound, brothers, fathers, cousins and uncles increasingly separate their farms and granaries (see also chapter two). Although it might have been different in the past, there are no clear-cut rules as to when a man should separate his farm and granary from his brother's or father's. It depends on the circumstances and the relation between father, brother and son. When a son marries, his wife will move to his house and the children will also grow up in the paternal house (virilocal marriage). Authority is closely linked to seniority. When the family eldest dies, it is usually his junior brother or his eldest son who takes over the role of household head. When there is disagreement about leadership, different sections can separate.

The social structure *between* households is determined by descent and territoriality. The Dagara trace their descent both through the paternal and the maternal lines (double descent). Land and dwellings are inherited through the paternal line. Since the marriage system is virilocal and many marriages occur between villages, patrilineage members usually live together in the same homestead or village whereas matriclan members are much more dispersed. Patrilineages are exogamous, i.e. patrilineage members are not allowed to marry each other. Most movable properties, including livestock, used to be inherited through the maternal line. Although 'the old ways' may still be followed by some, most people nowadays have adopted a patrilineal inheritance system. In some cases, the brother of the deceased will inherit his movable properties and in some cases the son will inherit.

Traditionally, one's territorial belonging was determined by the earth shrine area (tengan) one lived in. Over the course of the 20th century, other territorial units, like parishes, chiefdoms and administrative units grew in importance. These territorial belongings reflect the division of power between the earthpriests, the chiefs, the religious clergy and the political parties. The earthpriest (tengansob) is the custodian of the earth shrine. He is always a descendent of the first Dagara settler in the area. Rattray (1932: 430) summarised the traditional power and duties of the tengansob as follows:

> He was trustee for the land of the clan; he received lost property; he made sacrifices for rain; he purified the land when blood was shed; he was given some of the first fruits; he could put a stop to war and fighting and murder 'because these acts would stop the rain'; he could expel an unruly member of the clan (...); he made sacrifices to the land at the groves; he allocated uncultivated land and he purified the land also in case of suicide. (Rattray 1932: 430).

Religion and cosmovision

Although a majority of the Dagara people has become Christian, their traditional worldview still partly determines their cultural practices. The study of the Dagara worldview requires a specific approach. Whenever I inquired after certain traditional practices, I had the impression that I didn't get the full story, probably because the people felt that it would be hard for an outsider to understand, especially an outsider who had not come specifically to find out about their cultural practices and worldview. Fortunately, local scholars in history, sociology and anthropology have also published about their own people. Tengan (2000: 75) about Christianity and the traditional worldview:

> … selected elements of Western Christian cosmology are continually being integrated into Dagara traditional cosmology as a way of dealing with current sociocultural changes. Christianity and modernisation have not led the society away from their traditional methods of hoe-farming nor from their outlook on the cosmos as hoe-farmers. Interviews conducted and activities observed both among Christians and non-converts indicate the existence of a common cosmology based on the same concepts of space and time. (...) They view the ordering of the cosmos as a concrete process of ordering the environment in terms of locations consisting of farms, homesteads, village stead, the bush, hill, rivers, etc. and of dealing concretely with atmospheric conditions as personified agencies. (Tengan 2000: 75)

Hawkins (1997: 52) confirms that a large degree of syncretism exists among converts. The people try to merge 'the new ways' with the 'old ways'. "Accordingly, adoption of Christianity did not represent the abandonment of one set of beliefs for another, but merely the rearticulation of indigenous ideas." Certain aspects of Dagara cosmology clearly influence their interaction with their environment. As Tengan argues:

> Humans cannot act on any part of the universe as if they were in complete control or as if they were the dominant force presiding over an inert and impersonal but wild being to be domesticated for the sole purpose of satisfying human needs. Dagara, like most other African societies, relate with the different cosmic and environmental realms as though they were personified beings with life forces of their own. (Tengan 2000: 227-8).

Another cosmological motivation for Dagara to take good care of their natural environment is that the land and all its resources are believed to belong not only to the present generation, but also to their ancestors and future generations (see Millar 1999a and 1999b). The personification of natural forces, as indicated above by Tengan, is also present in the act of farming. For crops to grow, the two main prerequisites are soil and water. In Dagara cosmology, the sky that provides the water is masculine and the earth that provides the soil is feminine. For plants to grow, the male sky has to sleep with the female earth. When crop failure threatens due to drought, people traditionally make sacrifices to rain shrines and earth shrines. After the harvest, Traditionalists bring additional sacrifices to the Earth shrine and to the shrines of the ancestors. The sacrifices are meant to stimulate the continued fertility of the soil (Goody 1967: 32).

A.B. Tengan (2000) has written in much detail about Dagara hoe-farming as a social and cultural practice. The choices made as to which crops to grow when, on which type of field and at which location are only partly determined by the yield levels a Dagara farmer expects. Inter-personal relations also largely influence the allocation of labour (see chapter eight). It

will always remain a matter of debate to which extent such practices ‘survive’ in modern times, but it is good for extension officers to gain a little insight in these ‘old ways’ (see also Dessein 2002).

Photo 3
Labour party taking a break to drink local sorghum beer (pito)

6

Livelihood analysis: Agriculture

Chapter five addressed some causes of vulnerability at the area level. Within an area, however, individuals and households respond in very diverse ways to the opportunities and constraints of their environment. Even within occupational groups or livelihood systems, the inter-household variation in livelihood strategies and vulnerability is considerable. This diversity is neglected when farm households are treated as a homogenous group. A key to understanding the inter-household differences in livelihood vulnerability is the recognition that households have different levels of natural, physical, economic, human, social, cultural and political capital (Bebbington 1999).

Introduction to the livelihood analysis survey

In this chapter, I will present the findings of 60 questionnaire interviews that I held in the villages around Nandom Town between December 1999 and February 2000. In the methodology chapter, I have described how the households were sampled. Arjen Schijf (2004) and I designed the questionnaire as a tool for livelihood analysis, focusing on the *sources* of entitlements to food and income. We designed the questionnaire in the field, after an exploratory period of approximately six weeks in which we talked to different people to get a general idea of their sources of livelihood. These first enquiries resulted in a questionnaire with separate sections on land tenure and crop cultivation, livestock ownership, non-agricultural cash-income generating activities, non-monetary sources of livelihood, possessions and social support networks. One cash-income generating activity – seasonal labour migration – was given extra attention in a separate section of the questionnaire. We dedicated one section to cash expenditure.

A first objective of the questionnaire was to get a general impression of how different types of households gain access to food in a 'normal' rainfall year. A second objective was to use the household data to make a division in different vulnerability groups. I selected ten

variables that reflect some of the different types of 'capital' that a household possesses (see Table 6.1).

After processing the raw data from the sixty questionnaires, I selected ten indices of vulnerability on which each household in the sample had a certain score. The score of individual households on each index was divided by the highest score on that index (which was given value 100). Adding up the household scores on the ten indices resulted in an overall vulnerability score for each household in the sample. Based on the overall vulnerability scores of the households, I divided the sample in three groups: a vulnerable group, a middle group and a secure group, each containing twenty households. Of course, these groups do not reflect *absolute* vulnerability. A 'secure household' is just less vulnerable than a household in the middle group, and a household in the middle group is less vulnerable than a household in the vulnerable group. To put my vulnerability groups in perspective: the findings of the Ghana Living Standard Survey 1998-1999 (GLSS4) suggest that more than two-thirds of the population of the Upper West Region live in extreme poverty (Ghana Statistical Service 2000b: 39, see chapter five).

The survey focused on one year: 1999. In that sense, it was a so-called 'snapshot' of household vulnerability/security. In Davies' terms, the survey focused on proximate vulnerability, as opposed to structural vulnerability (Davies 1996: 30, see chapter one). In the questionnaire, I did ask the respondents to put their present situation into perspective by comparing it with the situation in the past. The answers to these questions do reveal some trends in the households' sources of livelihood, but they do not explain the *processes* that lie at the roots of the households' present situation of vulnerability or security. In-depth study of livelihood histories is a better tool to achieve this latter goal (see chapter eight).

Virtually all households in the sample are part of the same livelihood system: that of cultivators who own livestock and who have diversified their livelihoods with non-farm activities, seasonal labour migration and remittances from migrant relatives. This livelihood system could be labelled *'diversified agro-pastoralists'*. If farming is defined as a combination of crop cultivation and animal husbandry, the name of this livelihood system could be simplified into *'diversified farmers'*. For the sake of readability, I will just refer to this livelihood system as 'farmers' or 'farm households'.[1] Throughout this study, however, the reader should bear in mind that farm households also have income from sources other than local agricultural activities.

The sections of the questionnaire that inquired about sources of livelihood were preceded by three sections on: household determination, household composition and household history. It was of utmost importance for the assessment of inter-household variation in vulnerability to make sure that the units of analysis were correct, or at least as correct as possible. Six out of the ten indices in the quantitative vulnerability analysis were based on a simple principle: the lower the household's score on the quotient…

security endowments / number of consumer units

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[1] If the survey findings had justified a classification in different livelihood systems, more precise labels, like 'diversified agro-pastoralists' would have been required.

Table 6.1 The ten indices used in the quantitative analysis of vulnerability

	Index	*Value*[1]	*Measured/Calculated as*	*Range*	*Average*
1	(Inverted) dependency ratio	1	Labour units/consumer units[2]	0.48-0.98	0.78
2	Livestock ownership	1	Tropical Livestock Units/consumer units[3]	0.00-4.41	0.63
3	Acreage under cultivation	1	In acres/consumer units	0.16-4.78	1.23
4	Livelihood diversification	1	Weighted number of non-agricultural income generating activities/consumer units[4]	0.00-3.33	1.30
5	Annual cash income	1	In 1000 cedis/consumer units	4-491	164.45
6	Educational background of the household head	0.5	Value given to highest school level attained by the head of the household[5]	0.0-1.0	0.18
7	Land tenure situation	0.5	Value given to land tenure situation[6]	1-3	2.22
8	Non-livestock possessions	0.5	Weighted possessions, divided by consumer units[7]	0.0-4.0	1.47
9	Self-sufficiency in food production	0.5	Number of years surplus foodstuffs were sold minus number of years foodstuffs were bought in the past decade[8]	0-20	7.9
10	Strength of family networks	0.5	Value given to strength of family networks[9]	1-5	3.25
	Overall Vulnerability	**7.5**	**Sum of (index scores * index value)**	**176.9 to 509.8**	**308.9**

Notes:

1. The first five indices received value "1" and the last five indices received value "0.5". We decided to weight the indices because the former (except the dependency ratio) are real sources of livelihood, while the latter five indices either contribute *indirectly* to livelihood security (6 and 7) or were more like proxies of vulnerability (8 and 9). The last index (social networks) concerns an important source of livelihood, but this index was not quantified in a satisfactory manner and therefore also received value "0.5".
2. The dependency ratio is usually expressed as the number of consumer units divided by the number of labour units. A high figure indicates that each productive household member has to support a relatively high number of dependents within the household. In the quantitative vulnerability analysis, high scores on the indices indicated low vulnerability. I therefore inverted the dependency ratio. For conversion factors, see appendix.
3. For conversion factors, see table 6.8.
4. Weights of these activities are based on the reliability and the profitability of each activity as reported by the respondents. Monthly salary: 6; seasonal labour migration: 3; fishing: 3; dry season garden: 3; male casual labour: 3; pension/rent: 3; pito brewing: 2; firewood selling: 1; dawadawa and sheanut processing: 1; petty trade: 1; craftsmanship: 1.
5. 0 = never went to school; 0.3 = primary school; 0.5 = JSS incomplete; 0.6 = JSS complete; 0.7 = middle school incomplete; 0.8 = middle school complete; 1.0 = SSS and higher education.
6. 1 = 'no fallow land, begs supplementary land; 2 = 'no fallow land, does not beg supplementary land' or 'leaves land to fallow and begs supplementary land'; 3 = 'leaves land to fallow, does not beg supplementary land'.
7. Radio = 1; bicycle = 4.
8. In order to avoid negative values, the household scores on index 9 were corrected by adding '10' to the initial score. The range of household scores before this correction was -10 to 10.
9. Is household net giver (-1); neutral (0); or net receiver (1) of labour, food and/or money at three different geographical levels: local, regional and (inter-) national? Index score is the sum of the three. In order to avoid negative values, the household scores on this index were corrected by adding up '3' to the initial score.

… the more vulnerable the household[2] (see Table 6.1). Therefore, household membership had to be clear. In many households, however, membership is dynamic and complex (see chapter two).

As I indicated above, virtually all households in the survey sample find access to food and money through a combination of crop cultivation, animal husbandry and non-farm activities. The *extent* to which they rely on each source of livelihood varies greatly between households, however. Assistance from relatives and friends – within the area and elsewhere – is another important source of entitlements to food and cash. In the present chapter I will discuss the agricultural sources of livelihood, and in the next chapter I will look at non-farm and off-farm income. In the conclusion of chapter seven, I will explore the correlations between the ten indices of vulnerability, and merge the information about the different sources of livelihood into profiles of vulnerable and secure households.

Land tenure

In this section, I will use the words "to own land" to indicate that land has been allocated to the farmer by the 'tengansob'[3], or that the farmer has inherited the land from a patrilineage member to whom the 'tengansob' allocated the land in the past. Land ownership in the research area is usually described as "communal, with individual user rights" and it is usually added that "re-selling is strictly forbidden."(Adolph *et al.* 1993: 49). In that sense, the land tenure system is not 'private', but 'customary' (see Payne 1997: 3-5). The system is in transition, however. In the direct vicinity of Nandom Town, farmland is gradually converted for (semi-) urban land use. For one of my respondents, in the village of Segru (near Nandom Town), the division of farmland into building plots and the subsequent sale has become a very important source of income. In general, however, farmland in the research area is not a commodity (yet), and distress sales of farmland have fortunately not occurred. Not surprisingly, the matter of land rights occasionally causes disagreement between the 'tengandɛm'[4] and the people who claim private ownership and the right to sell.

In the research area, the 'tengansob' gives out land to the patrilineages in his area of jurisdiction ('tengan'). Though it might occasionally happen, it is not common for the 'tengansob' to take back the land once it has been allocated. According to Adolph *et al.* (1993: 49), "farmlands are given to the compound heads according to their needs and land availability" and "in villages with land pressure, old fallow land can be reallocated to other farmers who need more land". A family will always try to avoid giving land back to the 'tengansob', but they lose their claims to the land if it is no longer cultivated. In lineages with many migrants, some relatives have to stay behind to maintain their claim on the land. This system discour-

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[2] The households' security endowment portfolios were corrected for household size (number of consumer units) because large households need more security endowments than small households to attain the same level of food and livelihood security.

[3] The 'tengansob' is a descendent of the first settler who performs sacrifices to the land and manages access to land by the people in his earth shrine area ('tengan').

[4] In Dagara, 'dɛm' means 'people'. 'Tengandɛm' refers to the people around the 'tengansob': the patri-lineage of the 'tengansob'.

ages investments in the quality of the land. Farming a large acreage becomes more convenient than achieving good yields on a small area of land.

Within patrilineages, land is subdivided among the different households. Within some households, especially the larger ones, the land is further divided among individual members, including women. The division of land among individual household members occurs on a temporary basis and households reserve most of their land for collective staple food production. These days, farmers borrow land from each other without the need to consult the 'tengansob'. As we will see below, this practice is widespread. Pastures are still communal. In the dry season, a free-range system is practiced to feed and water the animals. In the farming season, when crops have to be protected and when water is usually less scarce, goats, sheep and cattle are tethered or herded. Only pigs are confined year-round.

In the period 1992-1998, an average of 'only' sixteen percent of the total land area in Lawra District was cultivated with the four principal crops.[5] If we assume that the area cultivated with secondary crops is about one forth of the area cultivated with primary crops, then the percentage of land under cultivation in the Lawra district can be estimated at around twenty percent. The population density in Lawra District in the year 2000 was 83 inhabitants per square kilometre (Ghana Statistical Service 2002). This means that on average, each inhabitant had 1.20 hectare at his/her disposal. As we sill see below, the average farm size (including secondary crops) per capita in the survey sample was 0.33 hectares. This suggests a field density of about 27.5 percent.

Table 6.2 shows the land tenure situation of the households in the survey sample. Over forty percent of the surveyed households had asked for land from other farmers in addition to the land they owned themselves. Another indication of land shortage is that over thirty-five percent of the farm households did not leave any land to fallow: they cultivated all the arable land they owned. Thirteen out of sixty households were in the 'worst situation': they could not fallow any land and they had asked for land from other people to supplement their own land. Twelve out of sixty households had borrowed land while at the same time they left part of their own land to fallow and/or they had given out some land to other farmers. Their land

Table 6.2 Land tenure situation of sixty households in the Nandom area (1999)

		Do you cultivate all the land you own?		
		Yes	No	Total
Do you own all the land you cultivate?	Yes	9 (15%)	26 (43.3%)	35 (58.3%)
	No	13 (21.7%)	12 (20%)	25 (41.7%)
	Total	22 (36.7%)	38 (63.3%)	60 (100%)

Source: Livelihood Analysis Survey

[5] The total land area of Lawra district is 1,052.2 square kilometres (Ghana Statistical Service 2000a). The average area cultivated with maize, millet, guinea corn and groundnuts was 16,538 hectares. This latter figure is based on estimations of the Ministry of Food and Agriculture.

tenure situation was better. A third group of nine households cultivated all the land they owned and had not borrowed any supplementary land. The largest group (twenty-six) consisted of households in the most secure tenure situation. They owned all the land they cultivated and they could afford to leave part of their land to fallow and/or give it to other farmers to use on a temporary basis (see Table 6.2).

Only three households in my sample did not own land at all. These households were the so-called 'strangers' that were included in the sample: two Fulani and one Mossi household. They had borrowed land to cultivate from Dagara or Sisala villagers. All three female-headed households in my sample did own land, or at least they replied "yes" when I asked whether they owned land. As later became clear during my in-depth interviews with Francisca Mweyang (see chapter eight), the land tenure situation of female-headed households can be quite uncertain. Customarily, women are not allowed to own land; they are allocated land by male relatives on a temporary basis.

People who beg land from other farmers while at the same time leaving part of their own land to fallow usually do so because they lack farmland with *specific qualities*. If a farmer who just owns upland fields wishes to cultivate yams and/or rice, he will ask a fellow farmer permission to use his lowland fields. The arrangement under which people give out land to each other varies. Most of the households in the sample who had begged land did not have to pay any rent. When the harvest is good, they can send small amounts (e.g. a basket) of produce to the landowner. These payments are voluntary but in certain tenure relationships, they are expected. If a tenant does not send any produce to the landowner for several years in a row, he can be denied access. Paradoxically, these tenants are *forced* to make *voluntary* payments every now and then. One farmer who had borrowed land told me that he was denied the right to farm that land after he had not visited a certain funeral in the house of the people who had let the land to him.

In general, the distribution of land and the tenure system in the research area is quite benevolent to small-scale cultivators and tenants, especially when compared to southern Ghana where tenants have to pay large sums of money for the right to cultivate land that they do not own. The fact that households' land tenure situation is not a prime determinant of livelihood security is confirmed by the very weak correlation between the land tenure situation and the overall vulnerability score.[6]

Crop cultivation

As I mentioned earlier, all households in my sample engaged in crop cultivation.[7] For some households, however, crop cultivation was not the *main* occupation. In almost fifty percent of the households in the sample, agriculture provided less than half the income in cash and kind.[8]

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[6] Kendall's tau-b=0.18 with significance 0.09. When, more correctly, the correlation is calculated between land tenure situation and overall vulnerability *minus index 7* (land tenure), Kendall's tau-b even decreases to 0.026 with significance 0.799 (not significant). I used Kendall's tau-b to calculate the strength of the correlation because both variables are of ordinal scale and because many 'ties' (equal scores) occur (see De Vos 1983: 60-67).

[7] Note that crop cultivation was not a precondition for being part of the sample.

[8] In chapter seven, Table 7.10 shows how the 'degree of de-agrarianisation' was measured.

In most of these households, other sources of livelihood were 'miscellaneous', however, and no single source was more important than crop cultivation.

The farming system in the research area is based on cereals, legumes and yams. Farmers make little use of external inputs. The average area farmed per household in the sample was 6.93 acres or 2.73 hectares. With an average household size of 6.19 consumer units (adult male equivalents, see appendix), the average acreage per consumer unit was 1.12 acres or 0.44 hectares. The average household size expressed in number of persons was 8.38. Thus, the average area cultivated per capita was 0.83 acres or 0.33 hectares. When the average acreage per consumer unit is calculated as the average of individual household scores, the average increases to 1.23 acres or 0.48 hectares. This is because smaller households in the sample cultivated relatively more land per consumer unit.[9] The respective figure for acreage per capita is 0.92 (0.36 ha).

A few calculations can put these figures into perspective. If we assume an average yield of six hundred kilograms of grain equivalents per hectare,[10] the harvest of an average farm household (0.48*600=288 kg/consumer unit and 0.36*600=216kg/cap) was just enough to meet minimal energy requirements.[11] The acreage farmed per capita varied considerably[12] between households, however, depending on availability and strength of household labour, access to land, crop mix[13], tillage method, access to capital, access to communal and hired labour and the degree of livelihood diversification and 'de-agrarianisation'. In the survey sample, thirty-eight out of sixty households cultivated less than the average acreage[14] and, with the same assumptions as above, were likely not to be self-sufficient in their food produc-

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9 Pearson's r = -0.253 with significance 0.051. A possible explanation for this correlation is that in the survey, both agricultural and non-agricultural activities were relatively underreported in larger households.

10 See below for an estimation of yields of different crops on different types of fields. The average yield levels, as reported by the Ministry of Food and Agriculture for Lawra district in 1999, were substantially higher: maize: 900 kg/ha; millet: 800 kg/ha; guinea corn: 1000 kg/ha; groundnuts: 1120 kg/ha. The acting manager of the Nandom Agricultural Project (Mr. Stan, interviewed in Nandom Town, 26/10/1999) confirmed that the yield levels as reported by the ministry are not attained in the Nandom area. According to Rung-Metzger and Diehl (1993: 194-5), "when yield data are estimated through crop cuts, there is the general danger to calculate averages only on the basis of measured crop cuts. Thereby, very often crop failures are neglected. Thus, average crop yields are easily overestimated (...)." Runge-Metzger & Diehl (*ibid.*) compared *measured* and *recalled* (by farmers) yield levels. The latter were found to be considerably lower, also when crop failures were included in the measured yield levels. This indicates that yield estimations of farmers tend to be lower than the actual yield levels.

11 In the Ghana Living Standards Survey (GLSS), minimal energy requirements were set at 2900 kcal/adult male equivalent per day (which is on the high side). If we assume that one kilogram of grains contains 3500 kcal, the minimal amount of grains needed per adult male equivalent is 302 kg. The minimal energy requirement in Ghana according to FAO is set at 1830 kcal per capita, which amounts to 190 kg. So according to the FAO standards for Ghana, an average household in the survey was able to meet food needs in 1999 (assuming a yield of 600 kg grain equivalents per hectare). According to the GLSS method, individual food production was just below the energy requirement (Ghana Statistical Service 2000b; Runge-Metzger & Diehl 1993: 198; Dietz *et al.* 2001b: 201; personal communication with Dr. B. Burlingame, Senior Officer of the Nutrition Assessment and Evaluation department of FAO, 7/11/2001;). Note that post-harvest loss and seed requirement are not integrated in the analysis (see pathway of Egidius Dugyi in chapter eight for a more disaggregated calculation in an individual farm household).

12 Standard deviation: 0.765 acres; standard deviation/average: 0.62.

13 Some crops are more labour intensive than others.

14 The distribution was positively skewed (Sk = 2.166). A few farm households cultivated an amount of land per capita that was far above the average.

tion. The acreage cultivated per consumer unit correlated quite strongly and very significantly with overall vulnerability.[15] Households with a large area under cultivation were relatively secure.

Photo 4
Woman sowing guinea corn with a baby on her back

Location of farms

People have fields around their compounds and fields at varying distances from their dwellings. The compound farms ('sigman') are usually upland farms, since people build their houses in relatively high places to protect against floods. On compound farms, the most common crops are guinea corn, maize, early millet, late millet and different vegetables like pumpkin, okra, *bir*[16] and *gyamboro*. These vegetables are grown (by the women) between the grains, and are used as soup ingredients to accompany the staple foods. Occasionally, beans are sown on the compound farm, too. Some women have small[17], fenced vegetable gardens around the house. These should not, however, be confused with the bigger and male-controlled dry season gardens.

Beyond the compound farm, the Dagara distinguish the farm of the settlement ('puo'), from the farm beyond the settlement ('wie') and the uncultivated land in 'the bush' ('kar') (Tengan 2000: 228-233). It is not always clear where one ends and the other one starts, but the 'wie' is always beyond a natural or man-made boundary like a hill, river, or road. This classification in 'sigman', 'puo', 'wie' and 'kar' does not coincide with the classification of land

[15] Spearman's rho = 0.588 with significance 0.000. The overall vulnerability index includes the acreage cultivated per consumer unit. When the contribution of this individual index is isolated, the correlation is of course weaker: Spearman's rho = 0.442 with significance 0.000). I used Spearman's rho to calculate the strength of the correlation because the lowest scale variable (overall vulnerability index) is of ordinal scale, and because virtually no 'ties' (equal scores) occur (see De Vos 1983: 60-67).

[16] Hibiscus subdariffa.

[17] The size of these vegetable gardens is usually about ten by ten meters.

use types in compound farms, bush farms, far-away bush farms and fallow land, used in farming system research in northern Ghana (Runge-Metzger & Diehl 1993: 64). Far-away bush farms are "more than 30 km away from the villages" (*ibid.*). This type of farm does not exist in the research area. Only six out of sixty farmers reported to have farms at a distance greater than two miles from their dwellings. The most distant farm was six miles from the cultivator's dwelling.

In my survey sample, a breakdown of farm sizes according to location and drainage situation reveals that thirty-two percent of the land people cultivated lies in the direct vicinity of their compound ('sigman'). These fields are mostly upland fields. The fields of the settlement ('puo') and beyond the settlement ('wie') can be subdivided into upland fields and lowland fields. Besides the compound fields, forty-two percent of the total land under cultivation concerned upland fields, and twenty-six percent concerned lowland and valley bottom fields. Most households have access to upland as well as lowland farms. In my sample, only eight households did not cultivate lowland farms.

Upland farms

In the upland farms of the neighbourhood ('puo') and beyond the settlement ('wie'), millet and guinea-corn are the main crops, but legumes such as beans, bambara beans and groundnuts are important here, too. The importance of maize decreases with increasing distance from the compound and with decreasing soil fertility. Towards the east of the research area (around Lambusie, in Sisala land), cowpeas are an important upland crop. A few farmers have recently started to experiment with soybeans. The most common inter-crop[18] combinations are millet with beans, guinea corn with beans (cereal-legume), guinea corn with millet or maize (cereal-cereal) and groundnuts with bambara beans (legume-legume). A few farmers intercropped groundnuts and cereals, but this was not as common a practice as it is elsewhere in northern Ghana.[19] In cereal-legume mixtures, beans are sown first and used as a cover crop to improve germination and reduce the impact of dry spells. Densities of bean plants are usually low, and very few farmers reported bean harvests of above a hundred kilograms. They quantify their bean harvest in bowls (2.5 kg) rather than bags (approximately 100 kg). Intercropping is an effective method to combat certain weeds and to reduce the variability of output in areas where rainfall is unreliable. Moreover, total output per hectare is often higher under intercropping regimes than under sole cropping (see Richards 1985: 66). Intercropping does not require much extra labour input when fields are tilled manually. Moreover, farmers indicated that intercropping is an effective way to deal with or even benefit from micro-variations in soil characteristics (patchwork agriculture).

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[18] "Intercropping – the planting of different crops in the same field during the same season – is used synonymously with 'mixed cropping'. Where a crop is planted and harvested, and followed by further crops in the same year, it is usual to speak of 'sequential cropping'. The term 'relay cropping' is used where these sequences overlap. Intercropping, sequential cropping and relay cropping are thus distinguished from 'sole cropping' – the planting of one crop per field per season, and 'monoculture' – the planting of a single crop in the same field for a succession of seasons, or indefinitely." (Richards 1985: 63-64). Intercropping has several advantages: less year-to-year variation in output; weed suppression and higher total energy output (Al-Hassan *et al*: 135).

[19] See Table 11 in Runge-Metzger & Diehl (1993: 82-83).

Fixed crop rotations as described by Adolph *et al.* (1993: 52-3) for the Upper West Region were not reported in the research area, but some farmers rotate millet and guinea corn to combat striga (a weed). Some farmers grow groundnuts or bambara beans when a field is exhausted.[20] The following year, these fields will be sown with cereals again. Sole cropping of millet, guinea corn and groundnuts occurs most on upland 'bush farms'.

Lowland farms

The principal crops on lowland farms are rice and yams. Farmers cultivate yams on mounds with rice in between. In addition, rice is grown as a sole crop on separate fields. Some people also sow maize, guinea corn and (early) millet on small mounds with rice in between and a few farmers cultivate sweet potatoes. The cultivation of lowland farms gains importance with increasing population pressure and declining fertility of upland soil. In areas with high pressure on the land, the most fertile soil occurs down the slope (see Runge-Metzger & Diehl 1993: 65; Ruthenberg 1980: 127). Many farmers in the Nandom Area indicated that increased use of lowland farms was also a response to more unreliable rainfall and drier conditions. When a drought strikes and upland crops fail, lowland fields may still yield well. This is due to the difference in the drainage situation. Increased lowland cultivation is a typical example of adaptation to altered conditions. It is, however, difficult to determine to *which* altered conditions people have primarily adapted their farm practices. What is the driving force behind this change in land use: increased population pressure or climate change? I cannot answer that question unambiguously.[21] People adapt their livelihoods to a *set* of altered conditions, and it has been my aim to also take the non-climatic factors into account in order to avoid climatic determinism.

Dry season gardens

On the valley floors, one also finds the commercial dry season gardens where tomatoes, okra, garden-egg, pumpkin (-leaves), bean (-leaves), lettuce and hot peppers are the most important crops. In some dry season gardens, people also grow cassava, sweet potatoes, plantain and cabbage. Dry season onion farming has not gained much importance in the Nandom area, but in the Lambusie area, three out of eight respondents did cultivate onions.

In 1999, dry season gardening was a source of income to eleven households in the sample. Four more households did have a dry season garden, but did not cultivate it in the year under investigation. The gardens are spatially concentrated in the village of Burutu, just south of Nandom Town, and in Lambusie, six kilometres east of Nandom Town. Besides topography (access to valley bottoms) and infrastructure (dams and dugouts), market access is an important determinant in the decision to start a dry season garden. In the most remote villages, no dry season gardens were encountered. On Sundays, but if necessary also on weekdays, Burutu gardeners sell their produce at the Nandom market. Gardeners from Lambusie sell their

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[20] Groundnut plants fix nitrogen in the soil.

[21] There is no significant correlation between 'distance to Nandom Town' (as a proxy for population pressure) and the percentage of land cultivated in lowlands (Pearson's r = 0.026 with significance 0.41). In the villages near Nandom Town, where population pressure on the land is higher, people do not tend to cultivate a larger part of their total farm in lowland areas.

produce at several markets, including more distant ones. Their onions are less perishable than the tomatoes that are mainly grown in Burutu. For a more detailed account of dry season gardening, see 'pathway' of Suurib Kyoo (Van der Geest 2002a).

Crop yields

Crop yields are highest on compound farms, in the lowland and valley floor farms and in the heavily manured and intensively cultivated dry season gardens.[22] Compound farms are relatively fertile because household waste, human waste, animal droppings (in the dry season) and animal dung from the kraal (in the wet season) supply the soil with nutrients. Few farmers carry manure to their more distant fields. The compound farms are cultivated continuously.[23] Although yields are relatively high on the compound farms, good yields are not *guaranteed*. In 1999, for example, seventeen out of forty-five households[24] estimated the yields on their compound farms to be below 500 kilograms per hectare. This figure excluded the harvest of vegetables used as soup ingredients. Nineteen farmers estimated their compound farm yields to be between 500 and 1000 kilograms per hectare, and nine farmers estimated it at over 1000 kilograms per hectare.

In the lowland and valley floor farms, relatively high yields are mainly due to the higher fertility of the soil and higher labour input. Lowland soil is usually heavier and difficult to till. Yam and rice cultivation is more labour intensive than the cultivation of the staple crops millet, guinea corn and maize. In my sample, forty-six out of sixty households cultivated rice. This contradicts the agricultural production data of the Ministry of Food and Agriculture. Those data suggest that rice production is negligible in the Lawra District. On average, the farmers in my sample sowed about ten to fifteen percent of their cultivated land with rice. In 1999, a wet year[25], eighteen farmers estimated their rice yields at over a thousand kilogram per hectare.[26]

Thirty-three households in the sample cultivated yams. Yield levels were usually reported in the number of harvested tubers. The average reported yield was 241 tubers, with an average field size of approximately a quarter of an acre. On the Nandom market, one average-sized yam tuber yielded about 1,000 cedis in 1999. These figures suggest that market-oriented yam production could be a very profitable activity. The *potential* monetary revenue of yams *per hectare* can be estimated at over 2 million cedis[27], which is far above the yields of grain

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22 No yield estimates were recorded for dry season gardens.

23 That is, every year in the wet season; not year-round.

24 The sample size was 60, but 15 respondents indicated that they didn't know how much they harvested from their compound farms and that they found it very difficult to estimate. For the remaining forty-five households, farm size and output (usually in bowls or bags) were estimated. I left the estimation of farm sizes to my interpreters/assistants (Festus Lankuu for Dagara households and Victor B. Damian for Sisala households) who both had an agricultural extension background.

25 Humid conditions are favourable for rice production.

26 Fifteen farmers estimated their rice yields at between five hundred and one thousand kilogram and five at lower than five hundred kilograms. For eight rice farmers no yield data were recorded. Rice yields were higher than the yields of all other grains and legumes. Note that rice yield data are relatively reliable as compared to millet and sorghum yields because, after harvesting, rice grains are stored in bags of 100 kilograms. The grains of millet and guinea corn are left on the heads and stored in the traditional granaries.

27 One forth of an acre is roughly one tenth of a hectare. The yield per hectare would thus be over 2,000 tubers with a market value of two million cedis (approximately 740 US$). No farmer in the Nandom area had such a

crops.[28] Only a few farmers reported yam sales, however. Presently, yams are cultivated on less than two percent of the total cropped area. Yams are clearly a 'niche' crop, and the soil characteristics of the research area will probably not allow a great expansion of yam production in the future. An exception may be the largely uncultivated stretch of lowlands along the Black Volta River.

Good maize and guinea corn yields can be achieved in the lowlands, too. Heavy rainfall and floods, however, can easily cause total failures of these crops, as was the case in many lowland farms in 1999. This makes lowland maize and guinea corn yields more variable. Moreover, the required labour input is higher than on upland farms because lowland maize and guinea corn are sown on mounds, whereas on upland farms, these crops are sown 'on the flat'. In drought years, crop yields are usually higher in the lowlands than in the uplands. In that sense, lowland cultivation is a good on-farm insurance against drought.

In the upland 'bush farms', yields are relatively low. Cultivation on these farms, especially on the 'wie' (farm beyond the settlement), is supposed to shift, but fallows have shortened or have been abandoned due to land shortage, especially in the vicinity of Nandom Town. The loss in soil fertility is not sufficiently compensated for by increased input of nutrients. Chemical fertilisers have never really gained much importance in the local farming system. In recent years, some of the few farmers who did use chemical fertilisers on maize have refrained from this practice because of the removal of subsidies and subsequent high prices. The application of organic manure is concentrated on the compound farms, although some farmers (e.g. Osman Ali, see chapter eight) now convey manure to their 'bush farms', too. In my sample, estimated yields in the upland 'bush farms' averaged less than 500 kilograms per hectare.

Land preparation

To farm the land, most households solely rely on (wo-)manpower. An increasing number of households, however, have invested in bullocks, ploughs, ridgers, cultivators and/or carts, and some farmers hire a tractor to prepare their fields. Table 6.3 shows the distribution of land preparation methods in the sample. Twenty-five percent of the households in the sample had used bullocks to prepare part of their land in 1999, and one farmer had used a donkey. Out of the fifteen households that prepared part of their land with bullocks and ploughs, six were not the owners of these farm implements. They paid a fellow farmer about 45,000 cedis[29] per acre to plough their land. In 1999, similar prices per acre were being paid for tractor hire. Ploughing for other people also occurs without monetary transactions, either in exchange for farm labour and other services, or without a clear *quid pro quo*.[30]

Lack of capital and lack of extension services (especially bullock training) are usually the main constraints to the adoption of bullock farming. After the establishment of the non-governmental Nandom Agricultural Project (NAP) in 1973, extension services have improved

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large yam field, however. An additional constraint is how to market the yams. When bulk amounts are sold to a trader, the farmer receives less than the market value. If the farmer sells the yams at the Nandom market himself, this means extra labour input. Moreover, the farmer will not be sure to sell all his yams.

[28] For grains, average reported yields were around 600 kg/hectare. The average 1999 price of a bag of grains (approximately 100 kg) at the Nandom market was about 60,000 cedis, resulting in a total of 360,000 cedis/hectare (133 US$).

[29] Approximately 17 US dollar (1US$ = 2,700 cedis).

[30] See 'pathway' of Osman Ali, in chapter 7.

considerably.[31] The Ministry of Food and Agriculture further provides bullock-training facilities. The improved access to credit among the poor in the research area does not seem to have removed the former constraint (lack of capital) as bullock farmers are predominantly found among the better off. Another constraint to the adoption of bullock farming is cattle theft. Some farmers reported that they had ploughed their land with bullocks for some years until their bullocks were stolen.

Table 6.3 Land preparation methods of 60 households and the acreage they cultivated (1999).

Method	*Frequency*	*Percentage*	*Average farm size (acres)*	*Farm size (acres) per consumer unit*
Hoe only	44	73.3	5.59	1.06
Bullock & hoe	12	20.0	9.85	1.25
Bullock, tractor & hoe	3	5.0	12.92	1.66
Donkey & hoe	1	1.7	10.75	4.78[32]
Total	60	100	6.93	1.12

Source: Livelihood Analysis Survey

In my sample, bullock farmers are spatially concentrated in Lambusie and Burutu, the same settlements where dry season gardens are concentrated. The revenues of the gardens may have enabled some farmers to invest in bullocks and ploughs. Other explanations for this spatial concentration can be the availability of extension services, micro-differences in the suitability of soils and cattle ownership. In Lambusie, there is a bullock-training centre of the Ministry of Food and Agriculture. Burutu is close to Nandom Town where the Nandom Agricultural Project provides extension services. I did not encounter any bullock farmers on the western transect (Gyengegangn, Kogle, Napaale and Dabagteng). This was no coincidence; no farmer in these villages had invested in bullock ploughs yet, as I found out after further inquiry.[33] Cattle ownership was more limited in these villages (an average of 0.7 head of cattle per household in the sample) as compared to the eastern and the southern transects along which the households in Lambusie and Burutu were sampled (average: 2.0 and 3.4 heads of cattle per household respectively). The farmers on the western transect are also farther removed from extension services. A third possible explanation is that, due to economies of scale, the relatively small household sizes on the western transect (see Table 2.2)

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[31] Initially, the project focussed on the introduction of bullock farming. In the 1980s the project started to provide other services like supply of new seed varieties and fertiliser. Dry season gardening has also been promoted since the 1980s. In the 1990s, more emphasis lay on sustainable land use. More emphasis was placed on the role of women in local agriculture (Stanneveld *et al*. 1994: 31).

[32] The one farmer who prepared his land with a donkey plough had the highest score on acreage per consumer unit of the whole sample. I cannot and do not assume that donkey farmers structurally farm a larger acreage per capita than bullock farmers. Fifty-eight out of sixty farmers cultivated an area per consumer unit of less than one hectare. Only two farm households were estimated to have cultivated more than this amount. Both were very small households (three members) that prepared their land with a bullock or a donkey plough.

[33] In May 2002, when I revisited the research area, one farmer in Gyengegangn had adopted bullock farming and three farmers in Kogle had adopted donkey farming. In 2004, several other farmers had followed their example.

make it more difficult to invest in bullocks and ploughs (see also Toulmin 1986). In general, households on the western transect placed more emphasis on education and non-agricultural income-generating activities in their pursuit of livelihood security.

One would expect that the land preparation method (hoe/bullock/tractor) is an important determinant of the area under cultivation. Indeed, there is a significant correlation between land preparation method and the acreage farmed *per household*.[34] The correlation between land preparation method and area under cultivation *per consumer unit* is much weaker, however.[35] Household size seems to be an intervening variable. Economies of scale make it easier for large households to invest in bullock ploughs and/or hire a tractor.[36] Runge-Metzger & Diehl (1993: 61) also found that farm sizes in northern Ghana do not increase much after the adoption of bullock farming, especially in high population density areas where land scarcity is a major constraint.

Critical observers (e.g. Shepherd 1981: 182 for the Upper East Region of Ghana) emphasize a negative side effect of the introduction of bullock farming: rural stratification. If only the well-to-do farmers can benefit from new technology by investing in bullocks and equipment, inequality between farm households increases. Bullock ploughing plays an important role in the 'moral economy' of some households, however. If a bullock farmer maximized his land under cultivation, he would encounter serious labour bottlenecks at the time of sowing, first weeding and harvesting – especially of rice and groundnuts. It is very difficult to get wage labourers at these critical moments. Potential farm labourers usually make sure that their own fields are taken care of first. To avoid labour bottlenecks, bullock farmers do not maximize their land under cultivation. Instead, they plough for relatives, friends and/or other people. Some farmers make strategic alliances with Fulani herdsmen. At times, they charge

Photo 5
Husband and wife prepare their compound farm with a donkey plough

[34] Kendal's tau-b = 0.351 with significance 0.001 (one-tailed). See also Table 6.3.
[35] Kendal's tau-b = 0.209 with significance 0.023 (one-tailed). See also Table 6.3.
[36] The correlation between land preparation method and number of consumer units is positive and significant, not very strong: Kendal's tau-b = 0.209 with significance 0.024 (one-tailed). This is in line with the findings of a research among the Bambara in Central Mali, where it was found that large households are more likely to invest in bullocks and ploughs (see Toulmin 1986: 62).

cash or they barter their services for labour in other stages of the agricultural cycle (see livelihood history of Osman Ali in chapter eight). This way, some 'have-nots' can also benefit from improved technology. A more detailed analysis of patron-client relations between bullock farmers and hoe farmers would be required to determine whether or not bullock farming exacerbates rural stratification.

Trends in acreages and yields

Population densities in the research area increased considerably over the course of the 20th century. In the 1980s and 1990s, population growth decreased, probably due to increased outmigration. With present densities[37], fallows shorten and there is less scope for extensification.[38] In the survey, I asked the household heads to compare their household's present farm size with the acreage farmed by their (classificatory) father's household in the past (before the present household heads started farming on their own). Acreages were compared for specific crops and for total farm size. Table 6.4 shows the results of this query. It should be noted that due to differences in household histories, respondents compared the present situation to different points in the past. Changes in the acreage under cultivation are highly dependent on changes in household composition because the availability of household labour is a very important factor in local agriculture. The general trend in the research area is that household sizes are decreasing. Table 6.4 shows that, on average, the total acreage under cultivation per household has slightly decreased, both when expressed as the sum of individual crops and as the total farm size. The decrease is not spectacular, however. Millet, maize and groundnut acreages decreased in more households than the acreages farmed with guinea-corn and rice.

The respondents were further asked to explain the changes. Most explanations of increased or decreased farm sizes were related to the labour situation in the household. *Decreases* in farm sizes were further attributed to division of land between brothers; the fact that more

Table 6.4 Inter-generational trends in the *acreage* cultivated with different crops.

ACREAGE:	*Increased (%)*	*Stayed the same (%)*	*Decreased (%)*	*Never cultivated this crop (%)*	*Not available**
Millet	31	8	52	8.3	12
Guinea-corn	51	11	38	0	13
Maize	31	15	54	0	12
Rice	40	15	40	4.3	13
Groundnuts	39	4	54	2.2	14
Sum	**39**	**11**	**48**	**2**	**64**
Total farm size	38	18	44	-	10

* A relatively large number of respondents did not answer these questions. Whenever I saw that an interview would take too much time, I skipped this section of the questionnaire because the data were not required for the quantitative analysis of vulnerability.
Source: Livelihood Analysis Survey

[37] 83 inhabitants/sq km at the Lawra district level.
[38] 'Extensification' here is not the antonym of intensification (increased labour/capital input per hectare); it refers to increasing farm sizes per capita, regardless of labour and capital input per hectare.

children and adolescents nowadays go to school; the death of a husband (female-headed households); changes in livelihood strategies and lack of capital (a farmer whose father used to hire a tractor to till the land). A few respondents indicated that landowners had taken back the land they were using. Some respondents had specific explanations for changes in the cultivation of individual crops. Most households that cultivated less maize did so because maize needs relatively fertile land. Shortened fallows and lack of manure and/or capital to buy chemical fertiliser made maize cultivation less popular in these households.

Increased acreages were attributed mostly to the adoption of bullock farming. Some households indicated that their farm size had increased because they had begged land in addition to their own. Obviously, *begging* land is not enough: one also has to work the land. To expand their farms, these households also had to invest more labour and/or capital. One Fulani man had taken up farming while his father had only been a cattle herder. Another household head emphasized that his father's land had not been divided because all his brothers had migrated to southern Ghana. For specific crops, some farmers indicated that they now preferred guinea corn because of the unreliable nature of rainfall. Guinea corn, they said, is more drought-resistant than the other crops. Those household heads who cultivated more rice said that they did so because rice yields have not decreased like the yields of other crops. Some respondents related the increase in rice production to consumption preferences. Crop prices were never mentioned as a stimulus for changes in the crop mix. This is not surprising, since food production in the research area is subsistence oriented rather than market oriented. Dry season gardens are the exception.

Table 6.5 Inter-generational trends in the *yield* of different crops

YIELD:	*Increased*	*Stayed the same*	*Decreased*	*Decreased, but better when rains are good*	*Never cultivated this crop*	*Not available*	*Total*
Millet	1	1	39	3	4	12	60
Guinea-corn	3	8	32	5	0	12	60
Maize	5	5	34	3	0	13	60
Rice	6	8	17	14	2	13	60
Groundnuts	5	8	30	3	1	13	60
Sum	**20**	**30**	**152**	**28**	**7**	**63**	**300**
Soil fertility	2	3	44	-	-	11	60

Source: Livelihood Analysis Survey

Besides trends in cropped acreages, the questionnaire also inquired about trends in crop yields. Whereas the changes in farm sizes were diverse and household-specific, the changes in crop yields were quite unambiguously negative (see Table 6.5), except for rice. It should be noted that the survey year was an exceptionally good year for rice. This, I assume, has influenced the outcome of the survey. Many interviewees indicated that rice yields have decreased except in wet years.

Declining crop yields were attributed mostly to decreased soil fertility and erratic rainfall. Thirty-two out of forty-seven respondents reported both explanations for diminished yields,

four reported only erratic rainfall and four reported only decreased soil fertility. Seven respondents had specific explanations, both for increased and diminished yields in certain crops: improved varieties, increased valley floor cultivation, increased use of animal dung and the application of chemical fertiliser on the positive side, and inadequate weeding due to labour constraints on the negative side. No improved soil and water conservation measures were mentioned as an explanation for higher yields.

> We used to plant small and get much. Nowadays, we plant more and get less. (Zacharia Beforɛ from the village of Gyengegangn).

The survey findings partly confirm this statement of a local farmer on an aggregate level. The findings suggest that, on average, farm *households* in the research area are not expanding their farm size. Household sizes are decreasing, however, so the acreage per *capita* may increase. When local farmers are consulted on crop *yields* they overwhelmingly confirm this one farmer's observation that the output per area unit has decreased. These findings do not correspond with the yield figures of the Ministry of Food and Agriculture. The annual reports of this ministry show substantially increased crop yields at the Upper West Regional level between 1986 and 1999 (see chapter four and five). This discrepancy between local perceptions and regional figures may *partly* exist in 'the real world'. Crop yields in the densely populated areas of the Upper West Region are under strain because fallows have shortened, and the transition to more intensive land use has not kept pace with deteriorating soil conditions. In the sparsely populated areas, on the contrary, the conditions for agriculture do not show the same deterioration.[39]

Intra-regional differences alone cannot, however, explain the discrepancy between trends in yield levels as reported by farmers in the research area (negative) and as reported by the ministry (positive). For the densely populated Lawra district, the ministry reports average

Photo 6
A bundle ('cajin') of millet is being removed from the granary

[39] For a more detailed comparison of soil characteristics and crop yields in the densely and sparsely populated areas of the Upper West Region, see chapter five.

yield levels of more than 1100 kilograms per hectare between 1992 and 1998, which is similar to the Upper West Regional figures over the same period. If yield levels were that high in reality, the farmers' estimations would not have been so negative, even though farmers' yield estimates are known to be on the low side (see Runge-Metzger & Diehl 1993: 194-5). Every farmer in the research area would rejoice over yields of above one thousand kilograms per hectare.

Food sales, food purchases and food self-sufficiency

Very few farmers in the Nandom area cultivate non-food cash crops. In the Lambusie area and further east into Sisala country, cotton production has increased considerably in the past decades, but in my sample, only one farmer cultivated cotton. Another non-food cash crop in northern Ghana is tobacco. In the research area, this crop is not very common, but some farmers do cultivate it. In my sample, one farmer cultivated tobacco for home consumption.

Twenty out of sixty households reported the sale of food crops in 1999. The average cash income from this source was 46,080 cedis[40] when divided by the whole sample size.[41] When related to the total average cash-income of households in the sample, the sale of agricultural produce is of minor importance (see Table 7.10).

The most *commercial food crop* in the research area is groundnuts. Out of the twenty households that sold agricultural produce in 1999, eleven sold groundnuts (see Table 6.6). Most Dagara in the Nandom area do not sell maize because they do not harvest much and they like maize T.Z. (the local staple food). Due to low soil fertility, most Dagara cultivate maize in relatively small quantities around the homesteads. Among the Sisala in the more fertile Lambusie area, maize is grown and sold on a much larger scale.[42]

Only a few farmers reported the sale of guinea corn. This is surprising because everybody grows it, and guinea corn is generally not *preferred* in the local staple food.[43] Guinea corn is the main ingredient of 'pito' (local beer). Part of the guinea corn harvest is usually reserved to brew pito for festivities in the dry season, and for labour parties in the farming season. The household head controls this guinea corn, and it is the women's task to brew. Commercial pito brewing is widespread among Dagara women (see Table 7.1). One would expect the men to sell surplus guinea corn to women and later buy it back from them in processed form. A woman's brewing business is separate from the household economy in the sense that she has total control over the input and output flows. She buys the guinea corn at the Nandom market or from other villagers. Even if her husband has guinea corn for sale, she will have to buy it from him at market prices. Conversely, when the husband wants to drink pito from his wife, he might get a small pot free of charge, but if he wants to buy a gallon, he has to pay for it.
The question remains why so few farmers reported the sale of guinea corn. Perhaps some interviewees did not like to admit that they had sold guinea corn. Although guinea corn is the main ingredient for pito, it is also a staple crop that can feed the family in the lean season

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[40] Approximately 17 US$.
[41] The figure was 145,560 cedis (54 US$) when divided by those households that actually did sell.
[42] Some Sisala also apply chemical fertilisers to their maize farms.
[43] This is not to say that people do not eat guinea corn T.Z. They do, some because they like it, and others because they have no millet or maize left in their granaries and no money to buy these preferred grains.

Table 6.6 Food sales by crop and by vulnerability group and food purchases by vulnerability group (1999)

	Number of households (N=60)	*Average revenue (¢) (1US$=2,700¢)*
1999 food sales by crop:		
groundnuts	11	19,550
rice	6	4,950
yam	3	5,000
maize	3	7,250
guinea corn	2	7,670
millet	2	1,670
total		46,090
1999 food sales reported…		
…in vulnerable group	5	18,300
…in middle group	8	58,200
…in secure group	7	61,750
…in total sample	20*	46,080
1999 food purchases reported…		*Average expenditure (¢)*
…in vulnerable group**	16	51,900
…in middle group**	12	35,350
…in secure group	12	39,000
…in total sample***	40*	42,100

* It is a coincidence that the sum of totals is sixty: seven households in the sample reported both sales and purchases; seven households reported no sales and no purchases and there were two missing values.
** Missing value: 1
*** Missing values: 2

Source: Livelihood Analysis Survey

when millet and maize stocks have been depleted. Another possibility is that very few farmers have *surplus* guinea corn; that all the guinea corn is finished during celebrations and labour parties.

In some households, especially the larger ones, individual household members like wives, grown-up sons, junior brothers and unmarried sisters of the household head have small farms on which they cultivate crops for sale.[44] The most common commercial food crops for women are rice and groundnuts. Among men, yam cultivation is popular. According to Tengan (2000: 230), an anthropologist who comes from the research area, people will never sell any harvest from the compound farm. The household members will consume this produce "as a sign that they are all knit into one social bond" (*ibid.*). Commercial food crops are cultivated in the 'puo' and the 'wie', alongside subsistence food crops.

When we compare food sales and food purchases in 1999, we see that one third of the households in the sample sold part of their harvest, while two thirds of the households in the sample had to buy grains to fill the food gap in the lean season (see Table 6.6). In fact, there

[44] See also Adolph *et al.* (1993: 135). I cannot quantify in how many households of the survey sample this was the case. During the interviews, we emphasized that the questions concerned the activities of *all* household members. In the section on crop cultivation we did not distinguish collective fields and individual fields. All fields were supposed to be included.

was some overlap. Seven households reported both food sales and purchases. An additional group of seven households reported no sales and no purchases at all. The average revenues from food sales (¢ 46,080) and the average costs of food purchases (¢ 42,100) were similar, at least when calculated over the whole sample. This is in line with the expected self-sufficiency rates based on the acreage under cultivation, yield levels and minimal energy requirement (see above). A breakdown in vulnerability groups shows that vulnerable households buy more (¢ 51,900) and sell less (¢ 18,300) food than households in the middle and secure group. The most common food to buy was maize. In addition, people regularly buy yams, cassava (gari and konkonte), soup ingredients, fruits, prepared food, snacks, meat and/or sorghum beer (which is considered food by the people in the research area). The money spent on these latter items is not included in Table 6.6.

Table 6.7 Self-sufficiency in food production in the 1990s: scores of three vulnerability groups

	Vulnerable	*Middle*	*Secure*	*Total*
Average number of years grains were **sold** in the past decade	1.90	3.70	2.90	2.83
Average number of years grains were **bought** in the past decade	6.45	4.10	4.25	4.93

Source: Livelihood Analysis Survey

In terms of food sales and purchases, 1999 was not an exceptional year. Thirty-five out of sixty household-heads said that, in the past decade, they had never sold surplus grains. Only thirteen household-heads reported that they had not bought grains in the past decade. As we can see in Table 6.7, in the 1990s, it was more common among households in the research area to buy food than to sell food, especially among vulnerable households. Interestingly, the middle group scored better than the secure group.

Animal husbandry

For farmers in the research area, one of the most common *insurances* against climatic stress and crop failure is to create a buffer in the form of livestock. On the other side of the coin, the sale of domesticated animals is one of the most common *coping* strategies when food production falls below subsistence levels (see chapter eight). As we have seen in the previous section, many households have to buy food every year. For these households, selling animals to buy food is a *seasonal* coping strategy. Food secure households, on the other hand, only dispose of livestock to buy food in exceptionally bad years, i.e. as a *genuine* coping strategy (see chapter one for the distinction between genuine and seasonal coping strategies). In normal or good years, they also sell animals, but fewer, and they can use the revenues for non-food consumption and investments. In good years, people will try to increase the herd size, at least within the limits of fodder availability and household labour force. Out of forty-

nine[45] household heads, thirty-seven responded positively to the question: "Are you sometimes forced to sell animals in order to buy grains to feed your family?" The twelve households that never sold animals to buy grains[46] were found predominantly among the most secure group of households. They used the revenues from animal sales (especially small ruminants) to meet other cash-needs, and they used more animals for home consumption (especially poultry).

Livestock ownership

The most common domesticated animals in the research area are chickens, guinea fowls, goats, sheep, pigs and cattle. Some people keep ducks, turkeys, rabbits and/or donkeys. In northern Ghana, horses are, or were, traditionally kept by chiefs as a sign of status and authority. A few chiefs and 'big men' may still own horses, but I have not seen any horses in the research area.[47] When I carried out the survey, I was not yet aware of the importance of dogs. I assumed that dogs were not kept for sale or for their meat. In fact, it never crossed my mind to consider dogs livestock. Later, I found out that most people do eat dog meat and that dogs are saleable assets. Depending on the size, the price of a dog was about half the price of a goat.

Table 6.8 shows some characteristics of livestock ownership among the surveyed households. In absolute numbers, chickens and guinea fowls[48] are the most important animals (average: 27 birds per household). Virtually every household keeps poultry. Goats, the second-most important animal in absolute numbers, are kept by over three quarters of the sampled households while only one quarter owns sheep. Fifty percent of the households in the sample keep pigs. Pigs need more care because they are not allowed to range freely in the dry season. They have to be fed with pito mash, household waste, crop residues, wild leaves, etc. Therefore, a limited number of pigs per household is usually kept. Pigs are often owned by women who can use the residues from their processing jobs as pig feed.

Eighteen households in the sample owned cattle. The average herd size of cattle owners was 6.3 heads of cattle per household. The average herd composition was: 3.1 cows; 1.6 calves and 1.6 trained bullocks.[49] Besides the Fulani, very few people milk their cows. The most common cattle breed in the area is the humpless, locally adapted and small-bodied WASH (West African Shorthorn).[50] In the Nandom area, this breed is often referred to as 'Dagara' cattle. They are relatively small as compared to the humped, large-bodied Zebu cattle, often referred to as 'Fulani' cattle. Two crossbreeds of WASH and Zebu cattle are also

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45 There were eleven missing values because the question was added to the survey at a later stage.

46 At least, not in the past decade.

47 According to the Livestock Census Figures (1996/97) of the Veterinary Services Department of the regional Ministry of Food and Agriculture, there were 189 horses in the Upper West Region in 1996/97 (no more recent data were available). In Lawra district, zero horses were counted.

48 A few households in the sample kept turkeys and/or ducks. In the vulnerability analysis, and also in Table 6.8, these animals were included in the figure for guinea fowls. One turkey counted for two guinea fowls and one duck was assigned the same value as one guinea fowl.

49 The figures in table 6.8 are lower because here, the average ownership of cattle was calculated over the whole sample, including the forty-two households that did not own cattle.

50 See Hall (1999: 45).

Table 6.8 Selected indicators of livestock ownership among sixty farm households

Type of animal	Average[1] number of animals per household (n=60)			Number of households that keep this type of animal (n=60)	T.L.U. Value per head[2]	Average livestock ownership expressed in T.L.U.[3]	Average price per grown animal (1000 cedis)[4]	Average stock value (1000 cedis)[5]	Potential off-take rate[6]	Potential annual revenue (cedis)[7]
	Small	Grown	Total							
Chickens	10.3	8.6	18.9	58	0.04	0.548	5	69	5.0	171
Guinea-f	2.9	5.3	8.2	27	0.04	0.269	5	34	5.0	106
Goats	2.0	4.7	6.7	46	0.10	0.568	25	142	1.3	122
Sheep	0.6	1.9	2.5	16	0.10	0.217	35	76	0.87	46
Pigs	0.7	1.5	2.1	30	0.20	0.359	50	90	1.0	59
Cattle	0.5	0.9	1.4	18	1.00	1.170	300	353	0.21	47
Trained bullocks	-	0.5	0.5	9	1.25	0.588	400	187	0	0
Total				**59**		**3.719**		**949**		**551**

Notes:

1. The average has been calculated over the whole sample (sixty households) and not over the households that did own this type of animal. In the case of sheep, for example, the average flock size of people who *did* own sheep was more than nine heads, while in the whole sample, it was only 2.45.
2. Conversion factors were taken from Al-Hassan *et al.* (1997: 151). Runge-Metzger & Diehl (1993: 199) use other conversion factors. As I found out too late, the conversion factors of Al-Hassan *et al.* (1997: 151) give too much value to poultry. This results in a bias towards poor households for whom poultry is relatively important as compared to the total livestock ownership.
3. Calculated as: average number of *grown* animals * T.L.U. value of this animal + average number of *small* animals * 0.5 * T.L.U. value of this animal.
4. Estimation, based on the prices received by my interviewees in 1999. 1 US$ = 2,700 cedis.
5. Calculated as: average number of *grown* animals * average price of this animal + average number of *small* animals * 0.5 * average price of this animal.
6. Off-take rates have been taken from Runge-Metzger and Diehl (1993: 124). The off-take rate is defined as "the number of surplus animals which can be sold or consumed annually without reducing the herd size in the long run" (*ibid.*). The figure for pigs is my own estimation.
7. Calculated as: average number of grown animals per household * 0.8 * potential off-take rate * average price. The average number of adult animals has been multiplied with 0.8 in order to arrive at an estimation of the number of *female* animals over which the potential off-take rate is calculated (see Runge-Metzger and Diehl 1993: 124).

Source: Livelihood Analysis Survey

encountered in the region: Sanga and N'dama.[51] The price of 'Dagara' cattle is usually about fifty percent below the price of the other breeds.[52] In the Livelihood Analysis Survey, I did not distinguish between different breeds of cattle

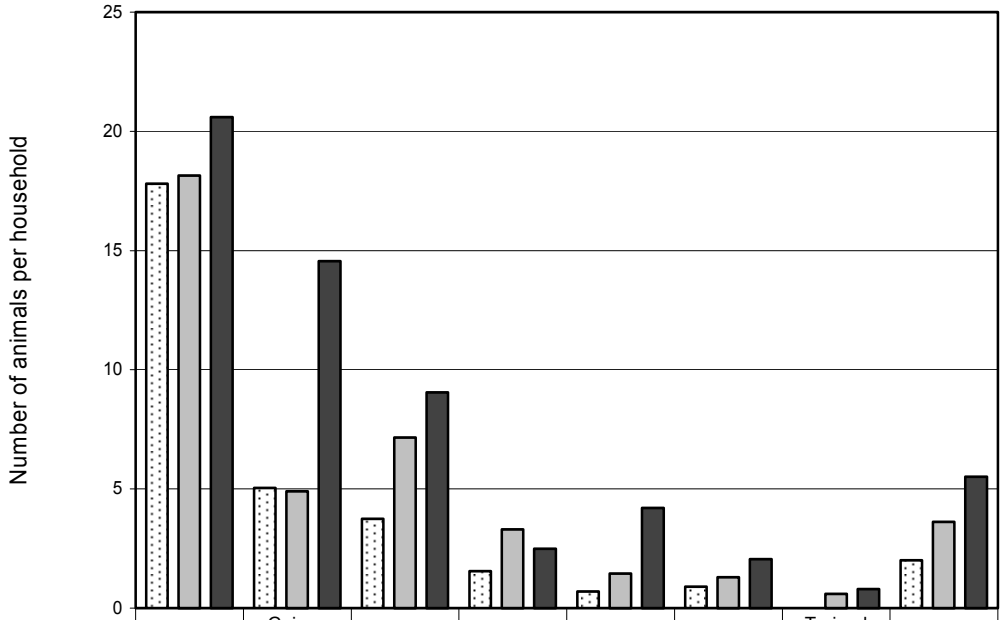
The 'Tropical Livestock Unit' is a tool that can be used to express the ownership of different types of livestock as one common value. The conversion factors that are used to calculate T.L.U. values vary across regions and between studies. With the conversion factors I used

[51] A Livestock Census sheet (1995/96) of the Veterinary Services Department of the Ministry of Food and Agriculture reports that in the Lawra district, 56.8 percent of the 21,365 heads of cattle are of the WASH type. Zebu, Sanga and N'dama constituted 10.0, 14.3 and 18.9 percent of the herd respectively.

[52] Source: Monthly Market Reports on Livestock Prices of the Veterinary Services Department of the Ministry of Food and Agriculture. No prices for N'dama cattle were mentioned.

(taken from Al-Hassan *et al.* 1997: 151), one T.L.U. is equivalent to one cow (see Table 6.8). When expressed in tropical livestock units, cattle are the most important type of animal among households in the sample,[53] followed by goats, chickens, pigs, guinea fowls and lastly sheep (see Table 6.8). On average, a household in my sample owned an equivalent of 3.72 cows at the time of the survey (December 1999 – February 2000).[54]

Graph 6.1 The distribution of livestock by vulnerability group



	Chickens	Guinea fowls	Goats	Sheep	Pigs	Cattle	Trained Bullocks	Total T.L.U.
Vulnerable	17.80	5.05	3.75	1.55	0.70	0.90	0.00	2.01
Middle	18.15	4.90	7.15	3.30	1.45	1.30	0.60	3.63
Secure	20.60	14.55	9.05	2.50	4.20	2.05	0.80	5.52

Source: Livelihood Analysis Survey

As in many rural societies, the distribution of livestock was very unequal.[55] The ten largest livestock owners possessed almost sixty percent of the livestock in the total sample.[56] Note

[53] That is, on average. Seventy percent of the surveyed households did not own cattle at all.

[54] When livestock ownership (in T.L.U.) is calculated with more common conversion factors, the figure is lower. Runge-Metzger *et al.* (1993: 199) use the following conversion factors: cattle: 0.7; trained oxen: 0.8; pigs: 0.2; sheep: 0.1; goats: 0.1; poultry: 0.1). With these conversion factors, livestock ownership per household is 2.54.

[55] Skewness = 2.657.

[56] When expressed in Tropical Livestock Units, the livestock ownership of the ten largest owners was 130 T.L.U., against 223 T.L.U. for the whole sample.

that the ten largest livestock owners were not all in the most secure group. Four were in the middle group and one in the vulnerable group. Graph 6.1 shows the distribution of different types of animals over the three vulnerability groups.

Caloric terms of trade

What does it mean for household vulnerability to climate stress that an average household owns 3.72 Tropical Livestock Units (cow equivalents)? As I indicated above, a farm household can sell animals to buy food when their own harvest is below subsistence levels. The terms of trade between animals and grains are, however, volatile, and usually worsen when there is an area-wide crop failure, especially when infrastructure and market relations with other regions are poor. The Upper West Region is the most isolated region in Ghana, but within the region, the research area is relatively accessible. Infrastructure has improved considerably in the course of the 20th century and is likely to further improve in the near future.[57] In southern Ghana, there is always enough demand for northern meat, but the prices that northerners get for their animals can vary considerably over time. In case of a nation-wide economic crisis, additional problems, like lack of fuel and spare parts for transport, can negatively influence the prices paid to livestock owners in the north. According to Wenner and Mooney (1995, in Hall 1999: 51), the "mark-up from farm gate to market" varied between 150 and 300 percent (the period was not specified).

With average 1998 and 1999 prices, a farmer in the research area could buy about seven bags of maize if he sold one average cow.[58] This amounts to a caloric term of trade between cows and maize[59] of 10.7, which is quite favourable, but not exceptional (cf. Zaal 1998, in Dietz *et al.* 2001b: 206). In a year following an area-wide bad harvest, the caloric terms of trade are very likely to decrease. Grain prices are likely to increase due to high demand and low supply. Livestock prices are likely to decrease because many farm households will sell off animals. Unfortunately, I could not get hold of long-term data on livestock prices, and therefore I cannot trace the trends and fluctuations in caloric terms of trade.[60] This makes it difficult to predict how much the terms of trade would deteriorate in case of a future crop failure. Using evidence from other parts of Africa (Davies 1996: 217-8; Zaal 1998; Dietz & Millar 1999: 58-60), it seems reasonable to assume that the caloric terms of trade between cattle and maize may decrease to around 3.5. One cow could then buy about 230 kg of maize. If we further assume that the caloric terms of trade between cattle and maize is more or less

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[57] A tarmac road is under construction that will connect Nandom to the regional capital Wa. Meanwhile, efforts are being made to connect Wa to the south of Ghana.

[58] Sources: Ministry of Food and Agriculture "Monthly Reports on Livestock Prices" and "Market Prices for Lawra District".

[59] Assumptions have been taken from Dietz *et al*. (2001b: 201) and personal communication with Prof. T. Dietz (6/9/2001). One kilogram of cow meat has a caloric value of 2,300 cal. One kilogram of maize has a caloric value of 3,500 cal. One bag of maize contains 100 kilograms. One cow yields 100 kilograms of meat.

[60] Grain prices were available for 1987-1999. In this period, average *annual* maize prices in the Lawra market have never increased more than 70 percent per year. The highest increase was recorded in 1995. *Monthly* maize prices have on several occasions more than doubled as compared to the same month in the previous year (source: Ministry of Food and Agriculture, "Market Prices for Lawra District"). Steep increases in maize prices are sometimes due to production failures and sometimes they reflect general inflation (see Graph 5.1).

representative for the caloric terms of trade between livestock and grains in general[61], and if we divide the average T.L.U. (3.719) per household by the average number of consumer units per household (6.33), then an average household in the sample could buy 0.634*230 = 145.8 kilograms of maize per consumer unit (adult male equivalent), that is, *if* the household would sell all its animals. This is about half the minimal annual food requirement, but it would take a household quite far in its attempt to find access to sufficient food in the case of a total crop failure.

In the above calculations, I have used *average* livestock ownership. It is more interesting, however, to look at the *distribution* of livestock among households. If we take 200 kilograms of grain per capita or 300 kilograms of grain per adult male equivalent as the cut-off point for minimal energy requirements and the same terms of trade (one T.L.U. can buy 230 kg of grains), a household should possess at least 1.30 T.L.U. per consumer unit to convert its animal stock into sufficient grains to meet minimal annual energy requirements. In my sample, only six out of sixty households met this condition. In the group of twenty most vulnerable households, the average T.L.U. per consumer unit was 0.32.[62] In 'normal' years, when caloric terms of trade between livestock and grains are favourable, animal sales can be a very effective strategy to deal with idiosyncratic (household-specific) food shortfalls. When, after an area-wide crop failure, the terms of trade between livestock and grains deteriorate, animal sales become less effective as a strategy to attain food security. With a caloric term of trade of 3.5, only 73.6 kg of maize per consumer unit can be bought if an average household in the vulnerable group sold *all* its livestock (0.32 T.L.U. per consumer unit).

The above calculations serve to better understand the role that livestock can play in the pursuit of food security. The disadvantage of such calculations is that they are based on a large set of assumptions that may or may not be valid or accurate in a 'real-world' situation. A few qualifications are therefore necessary. Firstly, in the past decades, *total* crop failures have not been recorded in the research area. Due to risk-avoidance in cropping strategies, people are always able to harvest some fields, be it with reduced yields. Secondly, the sale of animals is only one out of many coping strategies that people adopt when own food production is below subsistence. Thirdly, most households will try to avoid selling off all their animals in times of crisis even if this means that they have to reduce consumption. They will prefer to protect their *future* livelihood security. Fourthly, not all revenues from animal sales can be used to buy food. They serve to cover necessary *non-food* expenses as well, even in times of dearth.

With these side notes in mind, it can be concluded that due to the unequal distribution of livestock between households, a very small group of households owns sufficient livestock to avoid food stress when harvests fail. For the majority of households, the sale of livestock can only *contribute* to food security when harvests fail. This latter group of household cannot rely

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[61] In reality, caloric terms of trade between livestock and grains vary per type of animal. For an analysis of caloric terms of trade in Ghana's Upper East Region, see Dietz *et al.* 1999: 58-60.

[62] Poor households own relatively much poultry as compared to other domesticated animals. The conversion factors I used to calculate the Tropical Livestock Units 'overvalued' the importance of poultry (twenty-five chickens is one cow). Thus, the livestock holdings of the twenty most vulnerable households are even smaller than these figures suggest.

on animal sales *alone* when they are faced with a crop failure. Other coping strategies will have to be adopted.[63]

There exists a relatively strong correlation between livestock ownership and the overall vulnerability index among the surveyed households.[64] This suggests that, in general, farm households with little livestock also score relatively low on other axes of vulnerability. Their non-livestock security endowments are weaker than those of households that own more animals.

Trends in livestock ownership

In the questionnaire, I also inquired after *trends* in livestock ownership. For each type of animal, I asked whether the herd size had increased, decreased or stayed the same in the past decade. Table 6.9 shows the result of this query. For all animals, the trends are predominantly negative. The trends for cattle, sheep and pigs are slightly less negative than for poultry and goats. Most of the interviewees who reported an increase in cattle ownership indicated that they had bought bullocks specifically for ploughing.

Table 6.9 Trends in livestock ownership among sixty households (1990-2000)

	Decreased	*Stayed the same*	*Increased*	*Never owned*	*Not available*	*Total*
Chickens	41	7	6	0	6	60
Guinea fowls	40	1	4	10	5	60
Goats	43	3	7	2	5	60
Sheep	21	0	7	28	4	60
Pigs	27	1	8	20	4	60
Cattle	19	0	8	31	2	60
Total herd size	**41**	**10**	**6**	**0**	**3**	**60**

Source: Livelihood Analysis Survey

At the regional level, livestock censuses by the Ministry of Food and Agriculture for the period 1984-1997 set against population trends (Ghana Statistical Service 2002) suggest that per capita ownership of livestock has been quite stable in the past two decades. Per capita goat and poultry ownership has even increased considerably (Van der Geest 2002a: 139-140). I have the impression that the reported trends in livestock ownership in the research area were more pessimistic than in reality. When asked whether the numbers of animals have increased,

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[63] Al-Hassan *et al.* (1997) have compared farm household strategies to achieve food security in high and low population density areas. Their conclusion was that livestock production was more important in low population density areas, and that non-farm income was more important in high population density areas. As we will see in chapter seven, my findings do not contradict this conclusion, but the findings do indicate that the role of livestock should not be underestimated in high population density areas like the Nandom area.

[64] Spearman's rho = 0.533 with significance 0.000. The overall vulnerability index includes livestock ownership per consumer unit. When, more correctly, the contribution of this individual index is isolated, the correlation is of course weaker: Spearman's rho = 0.393 with significance 0.002). I used Spearman's rho to calculate the strength of the correlation because the lowest scale variable (overall vulnerability index) is of ordinal scale and because no 'ties' occur (see De Vos 1983: 60-67).

decreased or stayed the same in the past decade, the interviewees may automatically choose a point in time when they owned more livestock than at present. One cannot expect the interviewees to know how much livestock they owned exactly ten years ago. If, however, the figures *are* correct, this means that the importance of livestock as a source of livelihood security and as a buffer against crop failure is decreasing. This would be especially alarming when it is taken into account that the 1990s should have been a decade of *recovery* from the troublesome 1980s.

Photo 7
Man going to the Nandom market with a sheep on his bicycle

Livestock sales and productivity

The previous section looked at livestock ownership as a source of food and livelihood security in case of crop failures. The present section looks at the role of livestock under more normal conditions. For rural households in the research area, small animals function as liquid assets. When a certain cash need arises, the household will sell an animal. For small cash needs, poultry will do. For bigger expenses, goats, sheep, pigs or even a cow will have to be sold. In the case of poultry, there is no clear seasonality in sales. People sell their chickens and guinea fowls year-round. The sale of small ruminants and pigs has two peaks: one around Christmas when demand and prices of animals are high and when many people, especially the Catholics, want to buy new clothes. The second peak is in or just prior to the farming season. During this peak, some households sell animals to buy food to bridge the hunger gap, and other households sell animals to finance farm inputs, especially non-household labour. Cattle-owning households will sell a cow or bull when they face bigger expenses like funerals, bridewealth payments[65], large school or hospital fees and the construction of 'modern' houses. Some bigger cattle owners also sell cattle as a regular source of money, and some big farmers sell a

[65] In the research area, cattle are customarily used for bridewealth payments, but many families pay with cash nowadays.

cow every year to buy farm inputs.[66] In general, however, people avoid the sale of cattle. They will try to meet cash needs in other ways first.

According to Runge-Metzger & Diehl (1993: 124), the turnover of livestock in northern Ghana is low. Livestock production could be a more important source of protein-rich food and cash than it is at present: "The number of animals which can be sold or consumed annually without reducing the herd size in the long run is (...) low. For cattle this amounts per annum to 0.21 animals per cow, for sheep it is 0.87 animals per ewe and for goats it is 1.30 per female goat" (*ibid*).[67] The figure for poultry in northern Ghana is approximately five.[68] When we look at the approximate prices of animals at the time of the survey; the off-take without reducing the herd size; and the average livestock ownership, we see that the potential average revenue could be more than half a million cedis[69] per household (see table 6.8, last column). In the year 1999, the average revenue from animal sales among the surveyed households was only 108,750 cedis.[70] This is rather poor, especially if we take into account that most households do not often use animals for home consumption. Animal sales probably vary widely from year to year, however, so we have to be careful in drawing conclusions from these findings.

Table 6.8 also shows that poultry and goats overtake cattle as the most important type of livestock when expressed in potential productivity and revenue. Cattle ownership is a good *insurance* against livelihood stress because of its value, but it is not such a strong *productive* asset because the annual turnover is relatively low.

The revenue derived from animal sales had a positively skewed distribution.[71] For over three quarters of the sample, the revenue derived from animal sales was below the sample average. There were some outliers that pulled up the average. The 'five percent trimmed mean'[72] is 84,570 cedis[73] per household per year. With average 1999 prices, this money could buy two bags of maize.[74]

Interestingly, the revenue from animal sales does not correlate as strongly[75] with the overall vulnerability index as is the case with livestock ownership.[76] A possible explanation is that relatively secure households *can afford not to sell*: they use more meat for home consumption

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66 In my sample, few households had sold cattle in the past year so I could not determine a seasonality in cattle sales. If such a rhythm exists, Schijf (forthcoming) is likely to write about it because he interviewed cattle traders in Nandom Town.

67 Runge-Metzger & Diehl base their total 'off-take rates' on herd models for northern Ghana, developed by Brinkmann (1990).

68 Calculated from Van Veluw (1987) and Brinkmann (1990), in Runge-Metzger & Diehl (1993: 123). In their "model of traditional poultry keeping in northern Ghana", three pullets and four guinea fowl hens produce an "output" of twenty chickens and fourteen guinea fowls.

69 Approximately 204 US$.

70 Approximately 40 US$.

71 Skewness = 3.713.

72 The five percent trimmed mean is the average calculated over the sample, excluding the upper and lower five percent of the scores. In my sample (n=60), the three lowest and highest-ranking households were excluded.

73 Approximately 31 US$.

74 Ministry of Food and Agriculture, Market Prices for Lawra District, 1999.

75 Spearman's rho = 0.130 with significance 0.355 (insignificant).

76 Spearman's rho = 0.393 with significance 0.002, when the contribution of index 2 (livestock ownership) is isolated from the overall vulnerability index.

(especially poultry); they use more animals (especially goats and pigs) to invite labourers to their farms; they use more animals for funerals and sacrifices and/or they use more animals as gifts to visitors and in-laws. Vulnerable households, on the contrary, are forced to sell most of their animals, either to buy food or to cover other expenses.

Photo 8
Communal fishing with baskets in shallow water

Other agricultural activities

Besides crop cultivation and animal husbandry, other agricultural activities in the research area are hunting, fishing, gathering and the exploitation of planted fruit trees. The processing of agricultural produce, like pito brewing and sheabutter making, can also be considered an agricultural activity, but will be treated here as a cottage industry, especially when it is done on a 'commercial level'. Commercial pito brewing, sheabutter making and dawadawa extraction will be dealt with in the chapter about non-agricultural income-generating activities.

Hunting has lost much importance as a source of animal protein because of the decreased availability of wild animals, and because of the bylaw that banned hunting in the mid-1990s. The traditional, communal hunting method was to set fire to the savannah grasses in the dry season and kill the animals with bows and arrows or with throwing sticks ('dakora').[77] It is now forbidden to burn vegetation for hunting purposes, but communal hunting continues without burning. Some people hunt individually, with guns, and young boys kill rats and bats with their catapults. Out of fifty-seven households, twenty-six answered that they do get food from hunting, and nine answered that they stopped hunting after the ban. The most common prey were rabbits, partridges, rats, mice, wild guinea fowls, porcupines and wild ducks. In the Lambusie area, a few households reported that they occasionally hunt monkeys, deer and grass cutters, but these animals are quite rare nowadays.

[77] See 'pathway' of Egidius Dugyi, chapter eight.

Fishing is an important source of animal protein and income closer to the Black Volta River. In the rest of the research area, people fish in small streams. Five households in the sample fished commercially, with nets and some with canoes. All lived in Dabagteng and Napaale (see Map 3). Only six households in the sample mentioned fishing for home consumption as an additional source of food. In reality, I think this figure is higher because fishing is a typical boy-activity in the dry season, and because many people join the communal (basket-) fishing campaign. Children also look for crabs and 'water-meat' (shellfish) in the dry season.

In virtually every household in the sample, women gather a wide variety of 'wild' natural resources from the bush and from around the homestead. Gathering is a typical female activity. Almost every woman gathers sheafruits (with nuts inside), dawadawa pulses and a wide range of wild herbs, vegetables and tree leaves.[78] Some women have specialised in processing sheanuts and dawadawa into butter and a condiment respectively. The other women either process the raw materials for home consumption, or they sell what they gather to the women who process at a commercial level.

The wild herbs, vegetables and tree leaves are mostly used as soup ingredients and medicines. Some of the vegetables that are cultivated in the compound farm also grow in the bush. The same accounts for certain trees that people plant around their homesteads. Several interviewees mentioned that they gather more wild foods after bad harvests. In their meals, the proportions of porridge-vegetables changes toward less porridge (grains) and more vegetables when grain stocks are low. In addition, some wild root crops are gathered in years of dearth and people eat more wild fruits to fill (or deceive) the stomach (see 'pathway' of Egidius Dugyi in chapter eight).

Besides the wild natural resources mentioned, people also gather grasses for mat weaving, stocks for door weaving, fibres for rope making, 'vola' for pito brewing and probably more. Trees are also exploited for their wood, both for the preparation of meals and for the construction of tools and houses.

Thirty-six out of forty-three[79] households in the sample had planted fruit trees around their houses and/or in their dry season gardens. The fruits can be used for home consumption, as gifts, for barter and/or for sale in the market. The most popular fruit tree is mango, not in the least because of the shade these trees provide. Some people have also planted pawpaw, ebony, guava, cashew, and/or banana trees. Fruit trees could become an important source of income in the future, but so far, the marketing of fruit in the research area is very poorly developed. Perhaps some lessons can be learned from Burkina Faso, where grafted mangos have become an important cash crop in some areas.

A last direct source of food among households in the research area is to work for food. It is very common to work on someone else's farm in exchange for a meal, meat and/or sorghum beer.[80] In most households, the exchange of labour and food goes in two directions. In the

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[78] For Dagaare speakers, a few examples mentioned by the interviewees (including women) were saapla, bangnigbe, bolo, tuo, fokyolo, vuolo, bir, kalingzuge, donkuu, kankyir, baapaaboru, kyuunpegge and gyamboro.

[79] There were seventeen missing values because the question about fruit trees was added to the questionnaire in a later stage.

[80] Muslims will drink non-alcoholic beverages like cow milk instead of sorghum beer.

survey, I did attempt to determine the balance between providing labour and receiving food on the one hand, and inviting labourers and providing food on the other hand, but the answers were not reliable. Virtually no household-heads 'admitted' that they worked *more* on other people's farms, while many did 'boast' that they invited more people on their farms. One of the reasons why the answers to this question were unreliable is that working on other people's farms is usually done by household member other than the head of the household. In most households, individual members are free to go and work on other people's farms in the afternoon, after they have worked on the household fields in the morning. I got the impression that members of vulnerable households, especially female-headed households[81], are likely to spend more time on other people's farms, while secure households are likely to be net-receivers of labour. For a food-insecure household, the advantage of working on other people's fields is that they find *instant* access to food during a period of the year when grain stocks are usually low. Obviously, the disadvantage is that these households will harvest less from their own fields and that food problems are likely to reoccur in the following lean season (see 'pathway' of Francisca Mweyang in chapter eight).

Before we turn to the non-agricultural income generating activities in the next chapter, a few words have to be said about bartering. In the past decades, the importance of money as an exchange medium has increased considerably. Simultaneously, the importance of bartering has decreased, but the practice of exchanging goods without using money has not disappeared altogether. The most common goods to exchange, especially among 'vulnerable' households were yam seeds for goats. Other examples of reported barter relations were: a hoe for a guinea fowl; cow dung for labour; rice for millet; a cock for a hen; 'other goods' for fruit; 'other goods' for crafts and a sheep for groundnuts. In addition, different types of labour were exchanged, for example weeding for ploughing and weeding for herding.

[81] See 'pathway' of Francisca Mweyang in chapter eight.

7

Livelihood analysis: Diversification

Introduction and link with theory

Until the early decades of the 20th century, local farm household insurance strategies against crop failure and famine largely consisted of risk-avoidance in cropping systems, grain storage, livestock accumulation[1] and certain features of the social organisation. The partial integration of the area into a national money economy has not always been considered to have enhanced food security, but it has undeniably opened up new possibilities for insurance and coping strategies. All are based on the fact that money can – usually – buy food.

The 20th century was one of a slow transition from an almost entire reliance on farming to a more diversified local economy. In the section of the questionnaire that inquired about the household history, I asked the interviewees to tell me a little bit about their fathers. What was his occupation? Did he ever travel to southern Ghana? Some fathers had worked down south for some years. One had been a headman of the Dagara migrants in a southern Ghanaian town. A father of a Sisala respondent had had a successful career in Accra. He started as a charcoal burner, then became a charcoal trader and finally became a 'big man' in the housing sector. One respondent's father had fought in the British army during the Second World War. Some other respondents' fathers had worked in southern Ghana as miners, charcoal burners or (seasonal) farm labourers. Eventually, most of them returned to the village and took up farming again. In general, the generation before the interviewed household heads did travel south for work, but less than the present generation. In a recent fieldwork among Dagara settlers in the Brong Ahafo Region, I found out that in most villages, Dagara men had been coming for seasonal farm labour since the early decades of the 20th century, but only started establishing their own farms since the 1970s. Further evidence of increased out-migration is found in the

[1] Before the advent of a money economy, households bartered livestock and grains. In the case of a local crop failure, the affected households could negotiate with relatively food secure households at varying distances to acquire sufficient grains to feed the family until the next harvest. After area wide crop failures, this option was less effective, especially in places with no proximity to long-distance trade routes.

fact that the population of the Lawra district has almost stabilised between 1984 and 2000, whereas in previous decades, the population was still growing considerably (Ghana Statistical Service 2002).

Local income generating activities of the fathers' generation were mentioned, too. Two interviewees in Burutu told me that their fathers already kept dry season gardens back then, besides their normal farm activities. Two fathers had been butchers. One father used to grow tobacco commercially. One was a fisherman and a mason. One had been a foreman in road construction. The majority, however, stated that their fathers had just been farmers. Some typical *female* income generating activities, like beer brewing and sheanut processing, were also carried out by previous generations. It has only been a few decades, however, since pito brewing became an income generating activity for so many women. In the past, pito was brewed mainly for celebrations and labour parties.[2] Sheabutter, on the other hand, was already traded and even exported to southern Ghana in the pre-colonial era, when cowries were the exchange medium. In general, the livelihood strategies of the fathers' generation were based on agriculture and were diversified only to a limited extent. Seasonal labour migration was probably the main diversifying factor in those days.

The picture has changed radically in the past decades. Only three out of sixty households in the sample had no income generating activities outside of crop cultivation and livestock production. These three households consisted of grandparents and their grandchildren. The productive generation of these families was elsewhere in Ghana and remitted money to their relatives in the home village. All other households in the sample had some income generating activities outside farming. This is hardly surprising because the seasonal distribution of rainfall and farm labour lends itself very well to non-agricultural activities. This was already the case in the past, but cash needs and non-farm income opportunities have increased tremendously over the past decades.

Not all the income generating activities outside crop cultivation and animal husbandry are truly *non-agricultural*. For my analysis of livelihood diversification, I have included commercial fishing, dry season gardening, seasonal labour migration, firewood selling and cottage industries like pito brewing, sheanut and dawadawa processing among the 'non-agricultural' income generating activities, provided that these activities were carried out on a commercial level, i.e. not for home consumption (cf. Bryceson 1997a: 5). When we talk of diversification, it is important to assess whether these activities are carried out *alongside* normal farm activities. In Nandom Town, some households have fully specialised in activities like pito brewing and trading. These households have abandoned farming. Their livelihoods have de-agrarianised and not necessarily diversified.[3]

Livelihood diversification is a process. The starting point in rural areas is a – perhaps hypothetical – situation in which people solely rely on crop cultivation and animal husbandry as their sources of livelihood. In my vulnerability analysis, I assumed that households are less vulnerable to climatic stress when they have other sources of livelihood to fall back on in

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2 See also 'pathway' of Philibert Maaniasie in Van der Geest (2002a).

3 Note that there is also an important group of 'alien' traders who have settled in Nandom Town. The starting point for their livelihoods is non-agrarian. Some have, however, adopted farming in the past decades, especially in the 1970s and 1980s when chemical fertilisers were subsidised and tractor services more readily available. For them, farming was a response to improved opportunities (see Schijf 2004).

times of scarcity. In that sense, I have considered livelihood diversification as a positive development. A critical note comes from Davies:

> Livelihood-system diversity [in the Sahel] constantly evolves in response to changing agro-ecological and socio-economic conditions. One of the most obvious patterns of change is the incorporation of activities which were reserved in the past for periods of food stress into normal strategies for poorer households. Consequently, when the next cycle of drought hits, resort can no longer be had to traditional fall-back strategies to increase food entitlements. What are perceived to be coping strategies have thus become the livelihood strategies of certain groups. (Davies 1996: 34).

When looked upon from that angle, livelihood diversification is not necessarily a positive development. In the quantitative analysis of vulnerability, I have considered non-agricultural income generating activities as *one of several* security endowments (see Table 6.1). Households that have been *forced* to diversify their livelihoods score low on other indices of vulnerability (see also Ellis 1998: 7 and Scoones 1998: 9).

When a household with a diversified livelihood experiences a crop failure, it can fall back on other sources of entitlements to food. This strategy is effective as long as there is money circulating in the local economy, and as long as food prices do not skyrocket. In case of an *area-wide crisis*, it remains to be seen whether this household can benefit from its non-agricultural income generating activities. In other words, non-farm activities in the research area are not always effective as *genuine* coping strategies, especially when households have to deal with area-wide trigger events or 'covariate risks' (see chapter one for the distinction between genuine and seasonal coping strategies). When a drought or other hazard hits, people do not suddenly take up all sorts of jobs and activities. The in-depth analyses in chapter eight rather indicate the contrary. During area-wide crises, the existing non-agricultural income generating activities often become less profitable because there is less demand in the local economy. Meanwhile, other strategies are adopted to gain access to food, but these strategies – for instance animal sales, calls on relatives and reduced consumption – are often not *productive* activities. People also diversify their livelihoods by establishing extra-local security networks, usually through the geographical dispersion of families (permanent or circular migration). When the situation is critical for most households in the area, these networks become more important.

Non-agricultural income generating activities are more effective as coping strategies when households have to deal with idiosyncratic, household-specific shocks. When the food and livelihood situation of most households in the area is normal and a certain household experiences a crop failure or other setbacks, this household is more likely to benefit from its secondary or tertiary activities than in situations of area-wide crises. Similarly, as we have seen in chapter six, selling livestock to buy food is a less effective coping strategy in times of area-wide crises when caloric terms of trade between livestock and grains deteriorate. Theoretically, it would be possible to monitor the seasonal and inter-annual changes in terms of trade between grains and different income generating activities. This would tell us much about the effectiveness of coping strategies (see Davies 1996, chapter 9).

Non-agricultural income generating activities in the research area have become fully integrated in rural people's livelihoods. It is debatable to what extent this is a response to deteriorated conditions in local agriculture, or a response to improved opportunities outside farming. It is probably a combination. Agriculture in the research area is indeed under pressure. A

number of households are still capable of producing their own food needs[4], but very few can also meet cash needs by selling off their surplus produce (see chapter six), and that is where non-agricultural income generating activities come in. The *overall livelihood strategy* of farm households in my research area can be described as follows.

> Households try to harvest enough to fill their stomachs throughout the year and they meet additional cash needs with animal sales, seasonal labour migration, non-farm activities and remittances from migrant relatives. When food production falls short, they can use the money from these other sources to buy food.

This is a typical strategy for farm households in high population density areas in northern Ghana. In low population density areas, there are fewer opportunities for non-farm income, but better conditions for above-subsistence agriculture.[5]

Table 7.1 lists the categories of income generating activities that were encountered during the survey and the distribution of these activities over the three vulnerability groups. Some categories are straightforward: sheanut and dawadawa processing, pito brewing, firewood selling, dry season gardening and fishing. In these categories, the type of work was the same for all households, but the intensity and the profitability varied between households. Petty trade, crafts, male casual labour, salary work and seasonal labour migration were more diverse categories. Table 7.2 further specifies what exactly these categories consisted of.

Table 7.1 Distribution of income generating activities over households in three vulnerability groups

Type of activity	*Vulnerable*	*Middle*	*Secure*	*Total*
Dry season gardening	4	4	6	13
Commercial fishing	2	2	1	5
Pito brewing	17	19	18	54
Firewood selling	5	3	6	14
Sheanut & dawadawa processing	5	1	2	8
Petty trade & food preparing	5	9	9	23
Commercial craftsmanship	3	3	3	9
Male casual labour	2	11	10	23
Salary work	1	0	6	7
Pension, rent & land sales	0	2	4	6
Seasonal labour migration	10	18	10	38
Total	54	72	74	201

Source: Livelihood Analysis Survey

[4] Thirteen out of sixty households reported that they had been self-sufficient in food production every year of the past decade. Four reported that they had only bought grains one year, and five had bought grains in two out of ten years. Nineteen households had bought grains every year.

[5] For a northern Ghanaian case study that compares household strategies for achieving food security in high and low population density areas, see Al-Hassan *et al.* (1997).

Table 7.2 Breakdown of six diverse categories of income generating activities

(Female) petty trade & food preparing (n=23)	*Crafts (n=9; 2 male, 7 female)*	*(Male) casual labour (n=23)*
- bean cake preparing (5)	- basket weaving (6)	- shoe and leather repair (2)
- kenkey preparing (3)	- rope making and door weaving (1)	- tailoring (2)
- rice and stew preparing (1)	- mat weaving (1)	- masonry (2)
- milk retailing (5)	- hat weaving (1)	- carpentry (3)
- pepper retailing (1)		- lottery staking (1)
- dawadawa retailing (1)		- brick making (2)
- groundnuts cracking and retailing (2)		- stone carving (1)
- kuli-kuli[6] preparing and retailing (1)		- ferryman (1)
- charcoal retailing (4)		- labourer in garden (1)
		- cattle herding (3)
		- tro-tro driver (1)
		- ploughing (2)
		- cloth weaving[7] (2)
Salary work (n=7)	*Pension & rent (n=6)*	*Seasonal labour migration (n=38)*
- forest guard (1)	- pension (4)	- weeding in maize farms (23)
- Commission of Human Rights officer (1)	- land sales (1)	- raising yam mounds (4)
	- house renting (1)	- maize and yam (4)
- floor sweeper in hospital (1)		- weeding rice & cocoa (1)
- bank employee (1)		- weeding tomatoes (1)
- cook at Nandom S.S.S. (1)		- brick making (1)
- bullock trainer for MoFA (1)		- construction (1)
- bar maid (1)		- not available (3)

Source: Livelihood Analysis Survey

Female non-farm income

In fifty-one out of sixty households, at least one woman had an income generating activity. Typical income generating activities for women in the research area are beer brewing, sheanut processing, dawadawa processing, firewood selling, petty trade and the preparation of food (fried bean cakes, kenkey and rice). In addition, women often sell the produce from dry season gardens for their male relatives.[8] Women and men engage in different types of craftsmanship. Basket and mat weaving are crafts that are typically practiced by women. No woman in my sample produced pottery on a commercial scale, while in fact this is a common craft in the research area. One young woman worked in Nandom Town as a barmaid.

Most jobs of rural women in the research area are low-yielding. The women have many other duties in and around the house, so they cannot invest much time in their cash-earning skills. Furthermore, their access to capital is limited and competition is high. Pito brewing is clearly the most popular job. In forty households, pito was brewed. In twenty-eight cases, this was done by one woman (plus an assistant, usually a daughter). In ten households, two

6 'Kuli-kuli' is a popular and very tasty snack that is sold in the local markets. It is a by-product of groundnut oil. After squeezing the oil out of the groundnuts, the groundnut mash is shaped into small balls and roasted.

7 The weavers are supported by an NGO: Producer Enterprise Promotion Service Centre (PEPSC). This NGO mainly offers credit and training and coordinates the purchase of tools and raw materials.

8 See also 'pathway' of Suurib Kyoo in Van der Geest (2002a).

women brewed separately and in two cases, this was done by three women. Thus, a total of fifty-four women in the sample brewed pito. The frequency and the importance of beer brewing as a source of livelihood varied greatly among the women. Only two women were full-time brewers. They produced two 'blows' of pito a week. Twenty-one women brewed once a week. Thirteen brewed twice a month, ten brewed once a month and eight brewed less than once a month. All these women brewed pito commercially, i.e. for sale. An additional group of women only brewed pito for celebrations and for labour parties in the house. On these occasions, women usually brew at their husbands' requests and with guinea corn from the house granary.

Commercial pito brewing decreases in the farming season, when women have less time because they have to sow and harvest on the family farm. A second explanation is that there is less demand in the wet season because the men often get pito when they work on each other's farms (group farming). A female relative of the farm owner usually brews this pito. A third explanation for the seasonality in pito brewing is that people simply have less money to spend in the wet season; it is a time of scarcity. A fourth explanation is the fact that guinea corn prices are relatively high in the wet season.

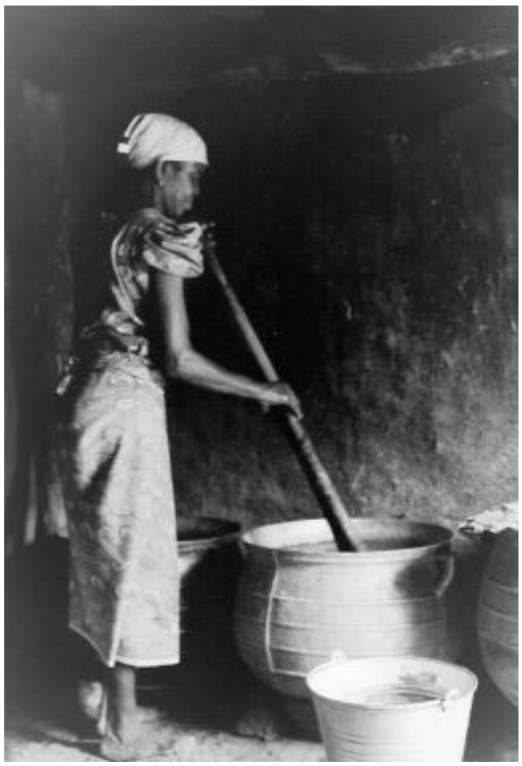

Photo 9
Woman brewing pito (sorghum beer)

The amount of beer women brew per blow does not vary much. It is usually between fifteen and thirty gallons per blow, depending on the size of the metal pot the brewers use. On average, the profit margin is about twenty-five percent, depending on the price of the pito and the price and concentration of the main ingredient, guinea corn. Other factors that determine profit are whether or not the brewer has to buy firewood and water; whether or not she buys

guinea corn on credit (this is usually more expensive); whether or not she has to rent pots and/or a selling spot; and whether or not the customers pay for all they drink. Per blow, estimated profits varied between 2,500 and 10,000 cedis.[9] The amount of labour invested per blow is three days, although some preparatory work also has to be done. Profits vary seasonally: they are highest when guinea corn is cheap. On average, the price of guinea corn is high between July and November, and low between December and June (see graph 5.2). When guinea corn prices are high, the profit can even drop below zero (see 'pathway' of Francisca Mweyang in chapter eight and Ouedraogo (1995) who writes about Dagara brewers in Bobo-Dioulasso who sometimes have to sell at a loss).

As we can see in Table 7.1, pito brewing is not an activity that is reserved for women from either vulnerable or secure households. For Dagara women, rich or poor, brewing is part of their identity. A house is *alive* when the women brew pito. Several informants told me that firewood gathering and selling was a typical occupation for poor women because the work is not popular, and because very little productive investments are needed.

> If a woman sells firewood, it means that her husband is not capable of taking good care of her. It indicates that she is suffering in the house. If you are not suffering, you can't carry firewood all the way from the Volta [River] to this place for 1,500 cedis. It means that you are in dire need of money. When somebody carries firewood, you know straightaway that she is poor. (John Yirkuu).

Richer women, who have a choice, will avoid this income generating activity because the work is very hard. Surprisingly, six women from the most secure group sold firewood compared with five and three from the other groups. This can be a coincidence (due to the small sample size), but it may also reflect an intra-household struggle for resources. A woman from a well-to-do household is not necessarily a well-to-do woman. A wealthy household head can assist the house women by investing in inputs for higher-yielding and less physically demanding jobs, but if he does not, and if the women do not have the capital themselves, they will have to engage in less popular occupations.[10] A good example comes from the most secure household in the sample. Every Sunday, the household head's stepmother walks six kilometres with a heavy load on her head to retail charcoal in Nandom Town. In 1999, this activity earned her about 1,000 cedis[11] each Sunday, while the annual income of the household-head was over three million cedis.[12] For the old woman, to have a personal income was also a matter of pride. Generally, inhabitants of the research area identify themselves as hardworking people, and therefore consider it better to engage in a job that generates little income and respect than to do nothing at all.

In my sample, only sheanut and dawadawa processing were typical activities for women from vulnerable households, but again this could be a coincidence. Petty trade and food preparation for sale, on the other hand, were less common activities among poor households. Women from vulnerable households engaged in basket weaving just as much as women from relatively secure households. The sale of agricultural labour was mentioned in only one

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[9] Between 0.9 and 3.7 US$.

[10] In chapter eight, Osman Ali, a well-to-do farmer, describes the process of negotiating responsibilities with his wives.

[11] About 0.37 US$.

[12] 1,100 US$.

household. In reality, this is much more common, especially in Lambusie where some big tractor farmers need a lot of womanpower at the time of the cotton harvest. Labourers from Burutu, Nabugang, Ko, Dondometeng and other Dagara villages go to Lambusie to make some extra money when they have finished work on their own farms.[13] Within the Dagara villages, it is also common to find poor women working on the fields of better-off farmers, either for food or for money, especially when it is time to harvest the groundnuts (see 'pathway' of Francisca Mweyang in chapter eight).

Photo 10
Mother and daughters preparing sheabutter

The contribution of female income generating activities to food and livelihood security varied among households in several ways. Firstly, the return to labour: most activities generated between 1,000 and 3,000 cedis[14] per day. Secondly, the amount of labour invested: a few women carried out their skills and trades on a daily basis and throughout the year, including the farming season, whilst other women did so only "once in a blue moon"[15]. Thirdly, the way the revenues were spent: although I did not structurally inquire about intra-household responsibilities in the survey, I know from the in-depth interviews and from informal interviews that the way money earned by women is spent differs greatly among households. In most households, women buy soup ingredients with their own money. In some poor households, women also pay the school fees of the children and food in the lean season. In well-to-do households, women can often use their earnings to cover personal expenses such as clothes, soaps, European-style hairdos and bleaching chemicals to make their skin lighter.

Male non-farm income

In the following two sections, I distinguish between non-farm income and off-farm income. Non-farm income is generated through *local* non-agricultural activities. Off-farm income is

[13] See 'pathway' of Osman Ali in chapter eight. Osman frequently hires Dagara labourers on his farm even though the acreage he farms does not compare with the farm sizes of some big commercial farmers in Lambusie.
[14] Between 0.37 and 1.1 US$.
[15] My interpreter Mr. Festus Langkuu was fond of using this expression.

generated through *extra-local* activities that can be both agricultural and non-agricultural. Seasonal labour migration is the main source of off-farm income. Remittances from migrant relatives can also be considered off-farm income.

In fifty out of fifty-seven male-headed households[16], at least one man engaged in an income generating activity outside local crop cultivation and livestock production. Four of the households without non-farm or off-farm activities consisted of grandparents with their grandchildren who received remittances. Two of the three remaining households concerned very serious farmers who, in the past decade, were always able to sell off enough surplus (including animals) to meet cash needs. They never had to buy food. When livelihood diversification is seen as a *forced* adaptation, it could be argued that these two households have 'proudly withstood the pressures of an unfavourable natural environment'. When, however, livelihood diversification is looked upon as a response to improved opportunities, it could be argued that these two households are conservative and lagging behind. The truth probably lies somewhere in between. In my vulnerability analysis, one of the farmers 'pur sang' ended in the most vulnerable group, and the other in the least vulnerable group.

In only one household did I not find out why the household head did not have any non-farm or off-farm income. This was one of the most vulnerable households. Although they did get some assistance from relatives in Accra, they could certainly have used some extra income. Perhaps a household member engaged in an illegal activity. Smuggling, poaching, illegal charcoal burning and cattle theft are the most common illegal sources of livelihood in the research area.

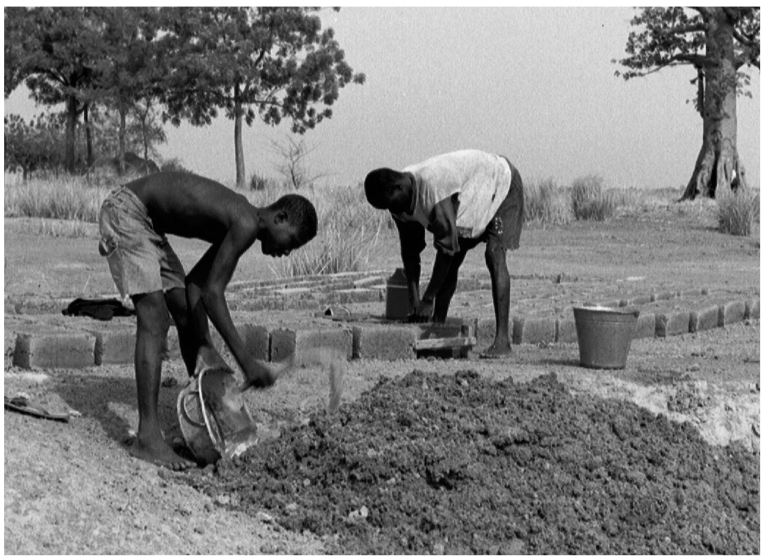

Photo 11
Young men making bricks for house construction

I can safely state that it has become the norm for at least one man in every household to have a non-farm or off-farm income. He learns a skill outside farming and uses that skill to make money, especially as a dry season occupation, or he goes to the south of Ghana to make money as a seasonal farm labourer. Depending on the composition of the household, up to

[16] There were three *female*-headed households in the sample.

four men per household engaged in such activities. It was also quite common that one man engaged in different non-farm activities. Some skills, like carpentry and masonry, are taught in the vocational school of Nandom. Only one of the interviewees – a weaver – had actually received his training there. The others had learned their technical skills from relatives, friends and masters (as apprentices). They had either no educational background, or only primary school or junior secondary school.

By far the most common income generating activity for men was seasonal labour migration. This activity will de dealt with in the next section. From Tables 7.1 and 7.2, it can be deduced that 56 men in the sample had local non-farm income[17] against 38 men who engaged in seasonal labour migration.[18] Locally, men have several income opportunities. The dry season gardens have been mentioned; commercial fishing is popular in the villages near the Black Volta River; six men in the sample have a fixed salary; some elderly men receive a pension; and there is a host of other activities grouped together under 'male casual labour' (see Table 7.2). Of course, not every option is open to everybody. Some jobs need specific skills, a certain level of formal education, good contacts, starting capital, a specific geographic location and/or a strong body.

Depending of course on the amount, a fixed monthly salary is the best insurance against climatic stress and crop failure. All households with salaried workers, except one, ended in the least vulnerable group.[19] The salary alone can usually feed a moderately sized household. All salaried workers farmed to supplement their income, however. Interestingly, out of the five household heads with a salary whom I asked about self-sufficiency, three answered that they never used their salary to buy grains. They always harvest enough from their own fields. They do, however, spend more money on productive investments like farm labour, chemical fertilisers, plough blades and/or tractor hire.

In five out of six cases, the male salaried worker was the head of the household. In one case, it was a son. The official[20] salaries varied between 80,000 and 200,000 cedis per month.[21] The jobs were carried out year-round. All six worked in the public sector. The forest guard and the officer of the Commission of Human Rights had received training beyond secondary school. The bank employee had finished S.S.S. The hospital floor sweeper, the cook at the Senior Secondary School and the bullock trainer had only attended a few years of primary school.

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[17] 13 dry season gardeners, 5 commercial fishermen, 2 craftsmen, 23 casual labourers, 6 salaried workers and 6 pensioners.

[18] I want to emphasize that these were the 'real activities' of 1999. If I had inquired about what they have been doing in, say, the course of the past decade, the figures would have been much higher.

[19] The situation in this household was a bit troublesome. The wife was crippled and could not contribute much labour. The man, a sweeper in the hospital, spent much of his income on 'akpeteshi' (hard liquor). Of the salary workers, he was also the one with the lowest wage (80,000 cedis/month). Due to the specific problems, the household did not farm much and had not been able to accumulate assets. Taken together, it is not strange that they ended among the vulnerable households.

[20] Besides the official salaries, some salary workers can get access to money in 'less official' ways. 'Chopping money' and 'side-issues' are widespread, especially among higher-ranking officers. In a peculiar way it is even accepted. This is certainly a threat to development in the area.

[21] Approximately 30 to 74 US$.

Photo 12:
Young man making bicycle seat covers out of leather and waste materials from the hospital

While the amount of monthly salaries does not need much calculation, the income men derive from other non-farm activities, like casual labour, has at times been difficult to assess. For women, it was easier because most activities they engage in have relatively straightforward input and output flows. Some men were able to make good estimates of their profits, but the estimates of others may not even come near the real figures. With an average of 110,000 cedis[22] per season, the estimated income from dry season gardens was disappointing. In reality, this figure must be (much) higher. In one of the in-depth studies, that of Suurib Kyoo (see Van der Geest 2002a), a more careful analysis of benefits and costs resulted in an annual profit of approximately one million cedis while, at the time of the survey, he had estimated his profit to be much lower. I cannot tell whether this was the case in all other gardens, but at least it is an indication.

The estimates of revenues from fishing in the Black Volta and its tributaries, on the other hand, were rather high (average: 928,000 cedis[23]). After subtracting the costs of productive investments, like nets, a canoe,[24] hooks, torchlight and batteries, the fishermen still estimated their profits at approximately 800,000 cedis a year. One man had his fishing grounds near a popular crossing point in the river. Any time a traveller wanted to cross, the fisherman would come with his canoe and charge one thousand cedis. This activity, he estimated, earned him an additional 500,000 cedis annually. Two fishermen fished year-round. Their farm sizes were below average and fishing was their main occupation.

As could be expected, the diverse category of 'male casual labour' also showed much variation in profit (see Table 7.3). The highest estimate came from a tro-tro driver who made about 90,000 cedis a month. The lowest estimates (80,000 and 100,000 cedis/season) were for

[22] Approximately 41 US$.
[23] 344 US$.
[24] Nets and especially canoes can last for several years. Their costs were spread over the estimated years they could last.

a water-boy in a big dry season garden in Lambusie and for a shoe repairer. In between, the brick makers probably had the most physically demanding job. Their income was above average (580,000 cedis), just as that of the tailors (600,000 cedis). The average estimated annual income from casual labour in the research area was 351,000 cedis per year, a bit more than a hundred US dollars.

Table 7.3 Estimated annual income from different types of male casual labour in 1999 (1 US$ = 2,700 ¢)

Occupational group	*Annual income (¢)*	*Occupational group*	*Annual income (¢)*
Carpenters (3)	360,000	Cattle herders[25] (3)	150,000
	240,000		240,000
	n.a.		240,000
Masons (2)	200,000	Shoe repairers (2)	100,000
	200,000		480,000
Stone carver (1)	300,000	Tro-tro driver (1)	1,080,000
Brick makers (2)	600,000	Cloth weavers (2)	200,000
	560,000		200,000
Commercial ploughing (2)	80,000	Tailors (2)	600,000
	335,000		600,000
Lottery staker (1)	360,000	Labourer in garden (1)	80,000
Ferryman (1)	500,000	Average	**¢ 351,000**

Source: Livelihood Analysis Survey

Table 7.1 showed the distribution of non-agricultural income generating among the three vulnerability groups. Of all activities, male casual labour and salary work were most clearly underrepresented in the group of vulnerable households. Apparently, households in which no men engage in local non-farm activities tend to score low on other indices of vulnerability. When one or several men in the household have a local non-farm income, the household's livelihood is relatively more secure.

Seasonal labour migration

Among men from the research area, the most common source of income outside local farming was to sell one's labour in southern Ghana, especially in southern maize farms. The importance of this source of income goes far beyond the wallets of the migrants and their household economies. Virtually all income generating activities in the area, both of women and men, depend to some extent on the money that migrants bring in. This money is the oil of the local

[25] The income from cattle herding was difficult to assess because the Fulani have different agreements with the owners of the cattle. The figures in Table 7.3 are calculated as the revenue from milk sales divided by two (because women do at least half the work) plus additional cash generated, for example the money they get when cows are sold. As a source of livelihood, the importance of herding goes beyond these monetary earnings. Milk consumption constitutes an important source of protein in their diet. Some cattle owners pay the Fulani with grains and others with farm labour. Some bullock farmers plough for the Fulani in return for their services. These non-cash sources of livelihood reduce vulnerability. In the vulnerability index, this is reflected in higher scores on index 3 (cultivated acreage/consumer unit) and index 9 (food-self-sufficiency).

economy. Although I do not know the exact multiplier effect, it is clear that this money is spent several times before it leaves the area again (when goods or services from outside the area are bought).

Table 7.2 showed that thirty-three out of thirty-five seasonal migrants worked in agriculture. Twenty-three migrants worked on maize farms; four on yam farms; four on both maize and yam farms; one on a tomato farm and one on a rice and cocoa farm.

Seasonal labour migration was a source of income in twenty-nine out of sixty households. In twenty-three households, only one man went down south; in four cases two went; in one case three and in one case four brothers went together. Table 7.4 shows some characteristics of the seasonal labour migrants and of their migratory behaviour. Most seasonal migrants were between twenty and forty years of age. The average age was 29.6. It is not very common for teenagers to go down south. Due to malnutrition and retarded growth among children in the research area, most boys are still children when they are in their late teens. They are not yet strong enough to work independently in the south. The majority of migrants (21) never went to school.

Table 7.4 Selected characteristics of seasonal labour migration in the survey sample

Indicator	*Missing Values*	*Average*	*Frequency (n=38)*					
Age of migrant:	0	29.6	<20	20-29	30-39	40-49	≥50	
			3	21	8	3	3	
Migrant's level of Education:	1		none	primary	JSS	SSS		
			21	11	4	1		
Number of migrants per household:	0		1	2	3	4		
			23	4	1	1		
Length of stay (months):	1	5.3	3	4	5	6	7	8
			3	16	5	3	2	8
How often in past decade?	2	5.1	0-1	2-3	4-5	6-7	8-9	10
			5	12	6	2	0	11
'Profit'[26] in 1999 (*1000 cedis[27]):	4	231	<100	100-149	150-249	250-349	350-450	
			1	8	9	11	5	
Is migrant the household head?	0		yes	no				
			9	29				
Does migrant report earnings?	3		yes	no	migrant =HH-H			
			17	9	9			
Does migrant contribute?	2		yes	no	migrant =HH-H			
			17	10	9			

Source: Livelihood Analysis Survey

Over half the migrants travelled down south in January, after the post-harvest and Christmas celebrations, and came back in April or May, in time for the new farming campaign. Seventeen out of thirty-seven already left before Christmas. Three of them went early, in

[26] 'Profits' are the amounts of money that seasonal migrants brought home in 1999. Costs of transport and living have been subtracted.

[27] 1 US$ = 2,700.

September, celebrated Christmas at home, and returned to the south in January. The average time migrants spent down south was a bit more than five months.

The maximum amount of money seasonal migrants brought home was 400,000 cedis[28]. This excludes the cost of transport and the cost of living down south; it is real profit. The average amount was 231,000 cedis. In 1999, that was enough to buy a new Chinese bicycle or approximately five hundred kilograms of maize. In the middle vulnerability group, returns from labour migration were highest: 255,000 cedis against 215,000 and 204,000 cedis for the vulnerable and secure group respectively (see Table 7.5). The average monthly savings of seasonal labour migrants was 44,000 cedis. This amounts to approximately 1,700 cedis per working day (0.63 US$).

Following Davies' theory on vulnerability, coping and adapting (see chapter one), one would expect that among vulnerable households, the money earned in the south is needed to bridge the food gap almost every year. For vulnerable households, Davies would argue, seasonal labour migration has become a permanent source of livelihood instead of a coping strategy to deal with unusual stress. Among secure households, on the other hand, one would expect that men engage in seasonal migration as a *coping* strategy in times of unusual food stress.

Table 7.5 Seasonal labour migration characteristics per vulnerability group

	Vulnerable		*Middle*		*Secure*		*Total*	
Number of migrants in 1999	10		18		10		38	
Average length of stay in 1999 (months)	4.8		5.4		5.5		5.3	
Average number of migration years (per migrant) in the past decade	7.8		4.1		3.9		5.1	
Average age of migrant in 1999	31.6		27.9		30.5		29.6	
Average revenues in 1999 (*1000 cedis[29])	215		255		204		231	
Average revenues per month (*1000 cedis)	45		47		37		44	
	yes	*no*	*yes*	*no*	*yes*	*no*	*yes*	*No*
* Is migrant the head of the household?	3	7	2	16	4	6	9	29
* If not, does migrant contribute to household income? (missing values: 2)	6	1	8	7	3	2	17	10

Source: Livelihood Analysis Survey

In 1999, the distribution of seasonal migrants over the three vulnerability groups was 10-18-10 (see Table 7.5). Men from the vulnerable group migrated just as much as men from the relatively secure group of households. This does not confirm Davies' theory. When we look at migratory behaviour over the decade, however, we see that among the most vulnerable households, seven out of ten seasonal labour migrants had travelled south *every year*. In the middle and secure groups, this figure was only two out of eighteen and ten respectively (not

[28] 148 US$.
[29] 1 US$ = 2,700 cedis.

shown in the tables). On average, seasonal migrants in the vulnerable group had travelled south to work almost eight times in the past decade (see Table 7.5). This supports the hypothesis that in vulnerable households, non-agricultural income generating activities have been permanently integrated in the livelihood strategies. For those households, livelihood diversification is a *forced* adaptation. On average, men from the less vulnerable households only travelled south in four out of ten years. The fact that ten men from the relatively secure group (including four household heads) migrated in the 1998-1999 dry season, suggests that 1998 was an exceptional agricultural year; a year with more food stress (1998 was a year with 'severe drought risk'[30] in Nandom).

Out of thirty-eight seasonal labour migrants, only nine were household heads.[31] Twenty-nine migrants were sons, junior brothers or paternal nephews of household heads. Household-heads were especially few among the migrants in the middle group (see Table 7.5). In the questionnaire, I asked whether the migrant contributed to the household economy. When the household head himself was the migrant, the answer was, of course, always positive.[32] It was more interesting to see if sons and brothers of household heads had to report their earnings and contribute to household expenses. As we can see in Table 7.5, it was much more common for migrants from vulnerable households to contribute than for migrants from secure households. This confirms the hypothesis that for young men in vulnerable households, seasonal labour migration was more forced than in relatively secure households. This latter type of migrant could spend more money on personal needs. Men from relatively secure households can engage in seasonal labour migration as an *opportunity* to make some extra money in the slack season. In good years, these men will invest the revenues in assets or spend it on luxury goods, rather than food.

***

Although it is quite common for young women to leave their villages temporarily to stay with relatives in southern Ghana, their migrations do not seem to have a clear *seasonal* pattern. Usually, when a woman travels to the south, she temporarily becomes part of the household of a relative. Not all female migrants have southern Ghana as their destination. Northern Ghanaian administrative centres, like Wa, Bolgatanga and Tamale, are also popular destinations. A relatively large number of Dagara civil servants live and work in these towns. Many migrant women help in their relatives' households. They clean, cook and look after the children. Some women will have informal sector jobs, like pito brewing and preparing food for sale. Some women may stay away for several years, while others return within a few months. This often depends on (changes in) the household composition, both in the home village and in the destination area.[33]

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[30] The annual amount of rainfall was average (1068 mm), but the distribution was very adverse with extended dry spells in June and July and extremely heavy rainfall (430 mm) in August (Nandom Agricultural Project).

[31] In addition, four times a household that was 'randomly' selected (see chapter two) for an interview had to be removed from the sample framework because the head of the house had gone on seasonal migration.

[32] I do not know whether they actually contributed or used the money they had earned for personal desires, such as pito drinking and meat consumption, but they all said they contributed.

[33] For an interesting qualitative analysis of female Dagara migrations from the Disin Area to Bobo-Dioulasso (in Burkina Faso), see Ouedraogo (1995).

Family networks and inter-household transfers

Of the ten indices used in the quantitative analysis of vulnerability, the 'strength of social networks' was most difficult to quantify, but the importance of these networks in the pursuit of livelihood security made it indispensable for this index to be included.[34] One section of the questionnaire was dedicated to social networks. It focused on family ties[35] (paternal, maternal and in-laws). In this section, four geographical levels were distinguished: local, regional, national and international. The respondents were asked whether they had relatives in the village; outside the village but in the Upper West Region; outside the Upper West Region but in Ghana; and lastly outside Ghana. It was attempted to record the main inter-household flows of labour, food and money between the respondents and their relatives at different locations. Clearly, these flows can go in two directions. In each relation, the surveyed household can be a net receiver; a net giver or 'neutral' (when the different flows are more or less in balance). At each geographical level, the household may have more than one economic relation with other households. Whenever possible, I tried to let the respondents quantify the amounts of labour, food and money given to and/or received from relatives in different locations. It would, however, be an illusion to think that the information was complete or even near complete.

In the stage of processing the raw data into a vulnerability index, I determined for each household whether they were net receivers, net givers or neutral at the different geographical levels. Help relations with relatives abroad were very scarce and therefore this category was merged with the category of relatives outside the Upper West Region. Table 7.6 shows an

Table 7.6 Net inter-household flows of labour, food and money (including consumer goods) at three different geographical levels.

	receive	*give*	*two ways*	*no transfers*	*no data*	*sum*
Family networks: local						
labour	9	0	43	7	1	60
food	4	19	27	9	1	60
cash & consumer goods	6	11	14	28	1	60
Family networks: regional						
labour	17	4	6	32	1	60
food	6	37	6	10	1	60
cash and consumer goods	15	12	3	29	1	60
Family networks: (inter)national						
labour	3	0	0	57	0	60
food	17	17	2	24	0	60
cash and consumer goods	42	1	1	16	0	60

Source: Livelihood Analysis Survey

[34] In-depth interviews are a more suitable tool for the analysis of social networks, but I could not re-visit all households in the sample for in-depth analysis. I had no choice but to find a way to use the survey findings as input for the quantitative vulnerability analysis. In the 'pathways' and in-depth livelihood analyses in chapter eight, the social networks of three individuals are described in more detail.

[35] I agree that social support networks are not only based on kinship, but also on friendship. According to informants, help relations are much more common between relatives, however. This is confirmed by findings from my present research on migration in Northwest Ghana.

overview of inter-household flows of labour, food and money (including consumer goods) within the village, the Upper West Region and at the national level. At each level, different flows are important. In the 'neutral' category, I distinguish between a situation in which the flows are more or less balanced and a situation in which no transfers occur.

Family Networks and Transfers at the Village Level

At the *local* level, the most common inter-household transfers are of labour and food. These flows are usually in two directions and between households of the same patrilineage. People help each other with farm work and house construction. Fifty out of fifty-nine household heads reported inter-household transfers of food (prepared meals or grains). A few respondents indicated that these transfers increase in August when the first early maturing crops are harvested. The fact that a relatively large number of interviewees reported that they are net receivers of labour and net givers of food can be explained by the fact that the interviewees were predominantly household-heads. Although they should have answered the questions for the whole household, some of them probably answered just for themselves. Their dependents are likely to work on relatives' farms and eat food from these relatives' granaries just as often. About half the household heads reported occasional transfers of money between households. The amount of money transferred between households at this geographical level is usually small. When larger amounts are transferred, this usually occurs in the form of loans. Most transfers of money between households within the village only occur in special circumstances, when the household on the receiving end has to deal with a specific problem. Only the salaried workers in the sample reported that they gave money to relatives on a regular basis. Conversely, the households that regularly *received* money all had relatives with formal incomes at the village level.

The inter-household transfers of labour, food and money enhance food and livelihood security by reducing variability in the availability of these resources at the household level. Labour peaks and food scarcity are thereby smoothened. Transfers usually occur at request. One farmer explained the 'rule of this game' as follows:

> When a close relative, like a direct brother or sister, comes to you and says he is in need of something, you must give it to him if you have it. If you don't have, you can't give it. If it is a more distant relative who begs for something, you will know when to give it. If he always works hard on the farm, you know that he has been unlucky and you help him. If he is a lazy man, you don't give it to him. It is only your direct brother or sister whose request you cannot turn down. (Paul Kyaapuokuu from Gyengegangn).

Family Networks and Transfers at the Regional Level

At the regional level, three different geographical levels can be distinguished: firstly between villages in the research area; secondly between the villages and Nandom Town and thirdly between the villages and the towns in the rest of the Upper West Region (especially the district capital Lawra and the regional capital Wa). The nature of inter-household transfers with relatives in Lawra and Wa are in fact similar to the relations with family members in the south of Ghana.

Most household heads reported transfers of labour and food with sisters and daughters who had married in neighbouring villages or in Nandom Town. In the farming season, these

women often visit their paternal houses to help on the farms of their fathers and/or brothers. They can only do this when they are not needed on their own households' farms. When they visit their paternal relatives, also outside the farming season, these women usually get a basket with grains or legumes before they return to their husbands' houses. When a household faces a food shortage, the women of the house can usually turn to their paternal kin for help. If the food situation in the paternal house is better, they will help the woman's household. If necessary and feasible, these requests can be repeated several times in the course of a hunger season. This can, however, be a disgrace to the woman's husband, who apparently is not able to feed his family adequately. If a man is proud, he will try to avoid this response to food shortages at the household level.

As we can see in Table 7.6, many household heads reported that they give food to relatives in other villages while they do not receive labour in return. Some of them supported old or disabled female relatives in other villages, but it should be noted that many household heads did not report that their own wives go to work on the fields of their paternal relatives and receive food from them. Three household heads (all in the vulnerable group) reported that they received a full bag of maize from relatives outside the village, and four respondents received substantial amounts of money (between 50,000 and 200,000 cedis[36]) from relatives in Wa and Lawra.

One could expect that vulnerable households are more likely to be net receivers at the local and regional level than secure households. This was not the case, however. The average scores of the three vulnerability groups were quite similar.

Family Networks and Transfers at the National Level

In terms of monetary value, the most important family ties are with relatives in southern Ghana. The remittances of these permanent or circular migrants are important additional sources of food and cash. Whereas the transfers on the local and regional level go two ways, inter-household transfers with relatives down south usually occur in only one direction. The people in the research area are at the receiving end, though it should be noted that visiting relatives usually eat from the household granary during their stay. Forty-two out of sixty households received remittances from relatives on a regular basis. The reported amount in 1999 averaged about 75,000 cedis[37], but ranged between a token and 300,000 cedis. There was no significant difference between the average amounts of remittances received by households in the three vulnerability groups.

Many (semi-)permanent migrants also contribute to the *future* livelihood security of their relatives in the village by paying school and hospital fees. Many northerners in southern Ghana further assist their relatives in the village by financing the construction of 'modern' houses (with zinc roofs). Seventeen respondents also reported that they received at least one bag of maize a year from relatives in the south. In some cases, the maize was bought by these relatives and in other cases, the relatives were maize farmers in Ghana's middle belt who sent some produce to their villages of origin. Besides small quantities of sheabutter, dawadawa, groundnuts and poultry, none of the respondents sends food to relatives in the south of Ghana.

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[36] Approximately 18.5 to 74 US$.

[37] In 1999, this amounted to approximately 28 US$. To compare, the average revenue from animal sales was 108,000 cedis (40 US$).

A few interviewees reported that the food they have to give to their relatives when they come home for a visit is more than the remittances they receive.

At the national level, I had expected secure households to have stronger support networks. The survey findings do not confirm this, however. More households in the vulnerable group received remittances from relatives elsewhere in Ghana than households in the middle and secure groups.

Many Dagara in the Nandom area have relatives in the adjacent Dagara areas in Burkina Faso. Although contact is less frequent and inter-household flows of labour, food and money less intensive, the relations with these relatives are similar to the relations with relatives in villages of the Nandom area. Two respondents had close relatives in Nigeria; one had a relative in France and one in Japan. They had lost contact with these international migrants and no remittances were received from them.

Trends in Family Networks and Inter-Household Transfers

> "In the olden days, when you were short of food, your relatives would share with you. Nowadays, when you are short, you have to go to the market to buy food." (Tenganle Tug from Napaale).

> "In the olden days, people already helped each other, but nowadays people request for help all the time. In those days, people could help themselves. I try not to give too often because if I do, everybody will come to me for help." (An anonymous salaried worker).

> "In the olden days, the lineage head could enter everybody's granary in the lean season to check how much grain people still had in store. Then he would sit down with the senior men to decide about the redistribution. Nowadays, we don't do that anymore." (Theodolo Yir-Mole from Dabagteng).

The above quotations depict some – partly contrasting – views of changes in *local* support mechanisms. The advent of a money economy can put great strain on inter-household support networks at the local level. When opportunities for monetary exchange exist, above-subsistence production at the household level is more likely to be converted in consumer goods. Improved mobility and communication, on the other hand, can enable the strengthening of *extra-local* networks. In the survey, I asked the respondents whether inter-household transfers at the different geographic levels had increased, decreased or stayed the same. Table 7.7 shows the result of this query. Locally, no clear trend is discernible. At the regional and (inter-) national level, an increase in the importance of inter-household transfers was reported.

Table 7.7 Trends in inter-household transfers of labour, food and money

	Increase	*Decrease*	*Equal*	*No Ties*	*No Data*	*Sum*
Family networks: local	15	17	23	2	3	60
Family networks: regional	26	8	15	4	7	60
Family networks: (inter)national	24	9	16	5	6	60

Source: Livelihood Analysis Survey

Individual explanations of increased or decreased inter-household transfers at the local and regional levels usually centred on the economic situation 'on both sides'. At the national level, it is mostly the economic status of the *migrant* that determines the amount of remittances. Many respondents indicated that when a migrant down south does not assist his relatives up north, this is usually because the migrant is struggling to survive himself. This was especially common when migrants had only recently settled in the south, and when migrant relatives had many dependents to take care of. Conversely, increased remittances by migrant relatives were usually attributed to improved economic conditions.

Food aid

In 1999, thirty-nine out of fifty-two[38] households in the sample received food aid. The thirteen households that did not report to have received any food aid in 1999 were predominantly among the 'secure' households. In that sense, 'the food did go where the mouth was'. It is questionable to what extent this is a merit of the food aid-providing authorities. Households were assigned only one bowl (approximately 2.5 kg) of maize each by Catholic Relief Services (CRS). For the more well-to-do households, such an amount was hardly worth the effort and perhaps embarrassment of queuing up. Some respondents reported more substantial amounts of food aid in the 1980s, for instance a full bag of wheat per compound. Food and non-food aid, like blankets and mattresses, are also provided by the National Disaster Management Organisation (NADMO), represented at the district level. Several respondents reported that food aid was also provided through schools. On several occasions in the 1980s and the 1990s, grains were sold at subsidized prices. Food aid plays a minor role in people's portfolio of entitlements to food, at least in non-disaster years. When an area-wide drought triggers disaster for many, like in the 1980s, and if the national authorities and international community react, food aid can be an important additional source of food.

Income portfolios and degree of de-agrarianisation

The previous sections have dealt with three categories of livelihood diversification: female non-farm income, male non-farm and off-farm income (including remittances). In chapter six and elsewhere in this study, some diversifying practices *within* agriculture have been dealt with. In this section, I will discuss the distribution of non-agricultural income generating activities and total cash income over the three vulnerability groups (see Table 7.8).

The average number of non-agricultural income generating activities per household in the vulnerable group was 2.65. In the middle group and the secure group, on average, one additional person per household engaged in such an activity, even though the average household size was smaller. The correlation between the number of non-agricultural income generating activities per household and the overall vulnerability index is almost zero (the influence of index four – diversification – was neutralised to avoid auto-correlation). When the bigger household size of vulnerable households is taken into account, we see that the differences between vulnerability groups increase and the strength of the correlation increases, too. The

[38] Eight missing values.

correlation is still not significant, however. When we also take account of the strength of each *type* of income generating activity (by attaching a value to each activity[39]), we see that the non-agricultural income of households in the vulnerable group is significantly less effective and reliable than the non-agricultural income of households in the secure group. It can be concluded that there is no significant correlation between the *number* of non-agricultural income generating activities and overall vulnerability. In vulnerable households, however, people are more likely to engage in low yielding activities. This is confirmed by the total cash income of households in the three vulnerability groups. Per capita, the cash income in secure households is more than three times as high as in vulnerable households. For the whole sample, the average annual cash income per capita (excluding remittances) was 124,000 cedis, or 46 US$. As we will see below, the total productive income, including the value of subsistence production, is substantially higher, but still far below the national average (see Ghana Statistical Services 2000b).

Table 7.8 Non-agricultural income indicators of the three vulnerability groups[40]

1 US$=2,700 ¢	*Most vulnerable group (n=20)*	*Middle group (n=20)*	*Most secure group (n=20)*	*Correlation with overall vulnerability*[41]
Average…				
…number of NAIGAs* per household	2.65	3.58	3.70	0.042
…number of NAIGAs per consumer unit	0.40	0.57	0.73	0.185
…*value* of NAIGAs per household**	5.45	8.18	9.03	0.155
…*value* of NAIGAs per consumer unit	0.83	1.28	1.77	0.272***
Average…				
…annual cash income excl. remittances (¢)	568,000	958,000	1,364,000	0.277***
…annual cash income/consumer units (¢)	89,000	143,000	262,000	0.494****
…annual cash income/capita (¢)	64,000	106,00	201,000	0.513****

* NAIGAs are non-agricultural income generating activities
** For values attached to each NAIGA, see Table 6.1
*** Significant at the 0.05 level (1-tailed)
**** Significant at the 0.01 level (1-tailed)
Source: Livelihood Analysis Survey

The section of the questionnaire that inquired about non-agricultural income generating activities also included trend questions. The respondents were asked whether their household's cash income from non-agricultural income generating activities had increased, decreased or stayed the same over time (approximately one decade). The same was asked for the *number* of income generating activities. Table 7.9 summarises the responses to these questions. About half the households in the sample indicated that both the number of income

[39] See Table 6.1.

[40] Excluding remittances of migrant relatives and inter-household transfers of money from relatives and friends within the area.

[41] I used Spearman's rho to calculate the correlations because the vulnerability index is a variable of ordinal scale and because virtually no ties occur (see De Vos 1983: 60-67). To avoid auto-correlation, the contribution of the respective indices (index four for NAIGAs and index five for annual cash income) has been subtracted from the overall vulnerability index before the correlations were calculated.

generating activities and the revenues from these activities had increased. The rest of the households had experienced no clear change or a decrease. These figures indicate a clear but not spectacular trend towards a more diversified livelihood in the past decade. A breakdown of trends in vulnerability groups shows that among secure households, both non-agricultural income and the number of income generating activities had increased relatively often (12 and 14 out of 19 respectively), whereas among vulnerable households, only four out of eighteen households reported an increase.[42]

Table 7.9 Trends in non-agricultural income and the number of non-agricultural income generating activities among the three vulnerability groups

	Vulnerable		*Middle*		*Secure*		*Total*	
	non-agric income	Number of NAIGAs*	non-agric income	number of NAIGAs*	non-agric income	number of NAIGAs*	non-agric income	number of NAIGAs*
Increased	4	4	10	9	12	14	26	27
Decreased	8	5	5	8	4	1	17	14
Stayed the same	6	9	3	1	3	4	12	14
No data	2	2	2	2	1	1	5	5
Total	20	20	20	20	20	20	60	60

* 'NAIGAs' are non-agricultural income generating activities.
Source: Livelihood Analysis Survey

One of the great questions in the livelihood diversification debate is whether it is a 'forced' response to increased livelihood stress, or whether it occurs voluntarily as a response to improved opportunities. If it is a forced response, then one would expect higher degrees of diversification among poor households. The empirical data from my research rather tend to favour the theory that livelihood diversification is a response to improved opportunities. Better-off households engage in more non-farm activities than vulnerable households, and even though they farm a larger acreage, their 'degree of de-agrarianisation' (see Table 7.10) is higher.

Bryceson (1997a: 4) has defined de-agrarianisation as "a long-term process of: (1) occupational adjustment, (2) income-earning reorientation, (3) social identification, and (4) spatial relocation of rural dwellers away from strictly peasant modes of livelihood." She argues that de-agrarianisation is taking place all over Sub-Sahara Africa as a result of environmental degradation, certain economic pressures that undermine agriculture and certain politico-economic opportunities that favour occupational shifts (Bryceson 1997b: 237-244). For the research area, my survey findings confirm that non-agricultural income has conquered an important position in rural people's livelihoods. It was the aim of the 'Livelihood Analysis Survey' to trace and quantify all the household's sources of livelihood. Therefore, it should be

[42] The correlation between the trend in non-agricultural *income* (increase = 1; equal = 0; and decrease = -1) and the overall vulnerability index, calculated with Kendall's tau-b, is 0.297 with significance 0.003. The correlation between the trend in *number* of income generating *activities* (increase = 1; equal = 0; and decrease = -1) and the overall vulnerability index, calculated with Kendall's tau-b, is 0.278 with significance 0.005.

possible to roughly quantify the extent to which farm households in the research area have 'de-agrarianised' (with a focus on Bryceson's second facet of de-agrarianisation).

Table 7.10 Indicators of de-agrarianisation and income diversification in the three vulnerability groups (1999)

(1 US$ = 2,700 cedis)	*Vulnerable*	*Middle*	*Secure*	*Total*
Household average…				
… area under cultivation (ha)	2.06	2.87	3.26	2.73
… estimated crop output (kg)*	1236	1722	1956	1638
… estimated value of output (¢)**	741,600	1,033,200	1,173,600	982,800
… revenue from animal sales (¢)	+ 78,000	+ 89,000	+ 164,000	+ 109,000
… value of agricultural prod. (¢)***	819,600	1,122,200	1,337,600	1,091,800
… total cash income excl. remittance (¢)	568,000	958,000	1,364,000	963,000
… cash income from food crops (¢)	- 18,000	- 58,000	- 62,000	- 46,000
… cash income from livestock (¢)	- 78,000	- 89,000	- 164,000	-109,000
… 'non-agricultural' cash income (¢)	+ 472,000	+ 811,000	+ 1,138,000	+ 808,000
… total productive income (¢)	**1,291,600**	**1,933,200**	**2,475,600**	**1,899,800**
*… degree of de-agrarianisation****	*36.5%*	*42.0%*	*46.0%*	*42.5%*
… productive income/cap (¢)	139,600	216,000	356,200	226,700
… productive income/consumer unit (¢)	192,500	292,000	472,400	306,900

* calculated as acreage (ha) * 600kg grain equivalents
** calculated as 100kg = 60,000 cedis
*** excluding the value of subsistence livestock production (no data)
**** = non-agric. cash income/total productive income * 100%
Source: Livelihood Analysis Survey

In Table 7.10, some indicators of agricultural and non-agricultural income have been brought together. The 'degree of de-agrarianisation' has been calculated as the total non-agricultural cash income divided by the total value of household production (including subsistence production). The resulting figures have to be considered *rough estimates*. As I have indicated in the table, the calculation is based on several assumptions about crop output. Another weakness concerns livestock production. The survey only provided information on livestock ownership and on the revenues from animal sales. The value of subsistence livestock production, i.e. the monetary value of home-consumed animals, remains unknown. The produce of subsistence foraging[43] and tree crops was not included in the calculation either. This reduces the total value of agricultural production and increases the 'degree of de-agrarianisation'. On the other hand, remittances from relatives were not included in the non-agricultural cash income. This reduces the 'degree of de-agrarianisation'. If the two outbalance each other, the degree of de-agrarianisation should be quite representative. The average 'degree of de-agrarianisation' in the sample was 42.5 percent. A breakdown in vulnerability groups shows that the 'degree of de-agrarianisation' is higher among households in the secure group than among households in the vulnerable group even though secure households have a

[43] Foraging includes hunting, fishing and gathering.

higher agricultural output. Table 7.10 further shows that the average annual productive income (excluding subsistence livestock production and foraging) can be estimated at 226,700 cedis per capita (84 US$) and 306,900 cedis per consumer unit (114 US$). If we increase this figure to 400,000 cedis per consumer unit (148 US$) in order to include all sources of entitlements to food and livelihood, a comparison with the findings of the Ghana Living Standard Survey becomes possible. At the Upper West Regional level, an average income of 604,500 per adult male equivalent (consumer unit) was recorded against 1999 prices. The regional figure includes urban and semi-urban households whose standard of living was higher than their rural counterparts'. The average income of rural households in the villages around Nandom Town was substantially lower: approximately 400,000 cedis against average 1999 prices. On a national level, the average income per adult male equivalent was about 3.5 times as high (1,412,000 cedis or almost 600 US$ per adult male equivalent) as in my survey sample.

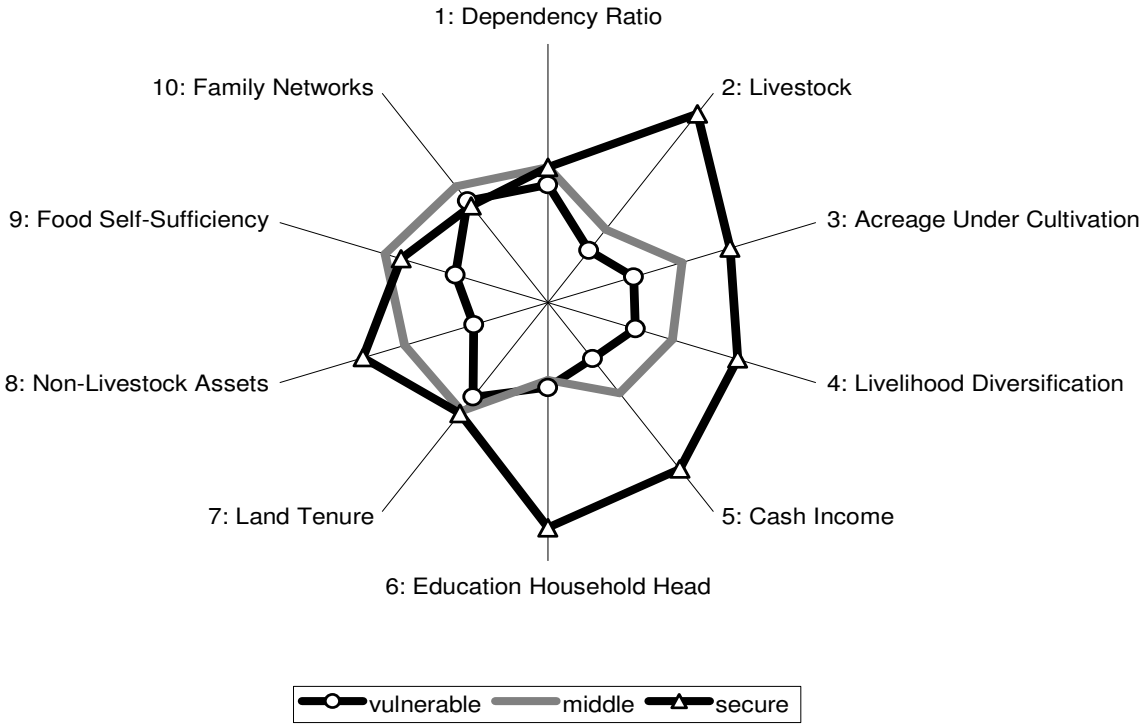
Conclusions and livelihood vulnerability profiles

Graph 7.1 shows the standardised group scores on the ten indices of vulnerability. The closer a household comes to the centre of the radar, the more vulnerable it is. In five indices of vulnerability, the average group scores are as expected: vulnerable households score low; secure households score high, and 'middle group' households are in between. These indices are: livestock ownership, acreage under cultivation, livelihood diversification, cash income and non-livestock possessions. Future studies in the area that need proxies for vulnerability could use these variables.

Households that own much livestock are also likely to score better on other indices of vulnerability. They have a relatively strong security endowment portfolio. An analysis of cross-correlations between individual indices of vulnerability (see Table 7.11) shows that livestock ownership correlates significantly and positively with the acreage under cultivation and food self-sufficiency in the past decade. There is no significant correlation between livestock ownership and the number and 'value' of non-agricultural income generating activities. An explanation may be that these two sources of livelihood compete with each other in terms of labour.

Households with a large farm size also score relatively well on other axes of vulnerability, especially food self-sufficiency, livestock ownership, possessions and to a lesser extent cash income and non-agricultural income generating activities. Not surprisingly, there was a significant and relatively strong positive correlation between non-agricultural activities and cash income. Perhaps more interestingly, households in which a relatively large number of members had non-farm income often had low dependency ratios. In households with high dependency ratios, the productive generation could not invest as much time in such activities. There are more interesting cross-correlations between individual indices of vulnerability, but I

Graph 7.1 Livelihood vulnerability/security profiles of the three vulnerability groups based on average index scores of vulnerability



Source: Livelihood Analysis Survey

Table 7.11 Correlations between indices of vulnerability (Kendall's tau-b).

Indices of Vulnerability	Dependency Ratio	Livestock	NAIGAs	Acreage under Cultivation	Cash Income	Land Tenure	Education HH-H	Non-Livestock Possessions	Food Self-Sufficiency	Family Networks
Dependency Ratio										
Livestock	0.050									
NAIGAs	0.359**	-0.071								
Acreage Under Cultivation	0.069	0.301**	0.155*							
Cash Income	0.070	0.169*	0.422**	0.157*						
Land Tenure	-0.164	0.030	-0.054	0.036	0.138					
Education HH-H	-0.187*	0.160	0.069	0.012	0.316**	0.105				
Non-Livestock Possessions	0.178*	0.237**	0.202*	0.247**	0.243**	0.059	-0.051			
Food Self-Sufficiency	0.006	0.261**	-0.095	0.271**	-0.048	-0.048	0.001	0.115		
Family Networks	0.028	-0.171*	-0.081	-0.071*	-0.174*	0.093	-0.240*	-0.008	-0.012	
Overall Vulnerability Index	*0.114*	*0.279***	*0.197**	*0.303***	*0.348***	*0.026*	*0.099*	*0.348***	*0.034*	*-0.156*

Correlations in shaded cells are significant at the 0.05 level (*) or at the 0.01 level (**)
The correlations between individual indices and overall vulnerability exclude 'own contribution' of individual indices
Source: Livelihood Analysis Survey

will not describe them all in detail. Anyone with a specific field of interest can look those up in Table 7.11. For a correct interpretation, Table 6.1 shows how the different indices were measured and calculated.

For three indices of vulnerability, the average scores of the vulnerability groups do not vary much: dependency ratio, land tenure situation and family networks (see graph 7.1). In chapter six, an explanation has been presented for the absence of a strong correlation between land tenure situation and overall vulnerability.[44] The weakness of the correlation between dependency ratio and overall vulnerability can partly be explained by the fact that dependency ratios do not *vary* as greatly as other indices of vulnerability, like for example livestock ownership (see Table 6.1 for ranges). To calculate dependency ratios, a set of conversion factors has been used that determines the number of consumer units and the number of labour units in the households (see appendix 2). These conversion factors take into account that children consume less than adults; that women consume less than men and that children and elderly people do contribute to household labour, but less than people who are in their productive age. The resultant dependency ratios[45] are: 1.36 for the vulnerable households, 1.23 for the middle group and 1.20 for the secure group. If the dependency ratios are simply calculated as the total number of household members divided by the number of household members aged between 15 and 65, then the respective figures are: 1.97, 1.95 and 1.55. In other words, in secure households in the sample, every two adults aged 15-65 have to take care of one 'dependent'. In 'vulnerable' households, each adult has one dependent to take care of.

The third index that does not show a clear correlation with the overall vulnerability index is 'family networks'. We have to be cautious not to draw the wrong conclusion from this lack of correlation. As the in-depth analyses in chapter eight will show, family networks are very important sources of livelihood security. If we look at the way I quantified this variable in the analysis of vulnerability (see Table 6.1 and the section on family networks in the present chapter), it is actually surprising that no strong and significant *negative* correlation was found. One would expect to see vulnerable households more often as net receivers in inter-household transfers of labour, food and money.

In two indices of vulnerability, the average position of vulnerable and secure households is in accordance with expectations, but the 'middle group' plays a special role. These indices are the educational level of the household head and food self-sufficiency. On average, the heads of households in the secure group were much more educated than the heads of households from the vulnerable and middle group. Between the vulnerable households and households in the middle group, there was not much difference, however. Four men in the survey sample had furthered their education beyond the secondary school level. All four were in the most secure group, which indicates that investment in a long educational career does pay off. A short educational career, on the other hand, is no guarantee for a more secure livelihood. In the vulnerable group there were just as many household heads who attended primary school as in the secure group.

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[44] To summarise, people who do not own enough suitable farmland borrow land from other people without substantial payments.

[45] Note that for the quantitative analysis of vulnerability, I used *inverted* dependency ratios because high scores had to indicate security rather than vulnerability. In the figures presented in this section, dependency ratios have been calculated in the conventional way (consumer units divided by labour units).

When we look at the 'food self-sufficiency' axis of vulnerability in graph 7.1, we see that the households in the middle group score slightly better than the households in the secure group. This is a bit surprising because the reported acreage under cultivation per consumer unit was considerably larger in the group of secure households. I have pondered over possible explanations, but none was really convincing. One important difference between the two indices relates to time. The acreage was recorded for one specific *year* whereas the food self-sufficiency was quantified over the past *decade* (see Table 6.1).

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When we look at the average scores of households in the three vulnerability groups, a 'livelihood vulnerability profile' can be described for each group. This can help us to understand the depth of vulnerability and poverty and the inter-household variation of vulnerability in the research area. Let me first describe the average vulnerable household. The household has nine members, of whom four or five are in their productive age (15-65). When expressed in consumer units, the household size is 6.71 (adult male is one). In 1999, this household farmed about 2.05 hectares of land. Assuming an average yield level of 600 kg/ha[46], this household can harvest about 1,230 kg of grain equivalents. Assuming a minimal annual food consumption of 200 kg grain equivalents per capita, the household was not self-sufficient in its food production in 1999. The food gap was almost 600 kg of grain equivalents. Before the 1999 harvest, the household spent about 55,000 cedis[47] to buy maize in the market (to bridge the food gap of the 1998 harvest). The past two years (1998 and 1999) were not exceptional, because this household had to buy grains in six out of the last ten years. The purchased grains alone cannot bridge the food gap. The household buys other foodstuffs (like konkonte) and gathers wild foods to reduce the food gap, but their food intake is most probably below minimal energy requirements.

The household had several sources of exchange entitlements to food. Firstly, they sold livestock. The animal stock of the household at the time of the survey was twenty-three chickens and guinea fowls; four goats; one or two sheep; one pig and one cow.[48] The revenue from animal sales in 1999 was about 80,000 cedis.[49] Non-farm and off-farm income is more important than the income from animal sales, however. One woman in the household brews pito for sale, and another woman sells firewood, processes sheanut or dawadawa, engages in petty trade or weaves baskets for sale.[50] Only one man is likely to go on seasonal labour migration or have another dry season occupation like dry season gardening or fishing. Together with the revenue from livestock and crop sales,[51] the cash income of this household amounted to about 568,000 cedis.[52] This is more than the money needed to bridge the annual

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[46] The assumption here is that there are no structural differences in crop yields between vulnerable and secure households. In my sample, the average estimated yields were slightly higher in the secure group, but no significant correlation existed between yield level and vulnerability rank (Kendall's tau-b = 0.081 with significance 0.204). There were nine missing values.

[47] Approximately 20 US$.

[48] The *average* number of cattle per household in the vulnerable group was 0.9 (see graph 6.1), but only 6 households in the vulnerable group actually owned cattle.

[49] Approximately 30 US$.

[50] In some households, the pito-brewing woman also engages in a second income-generating activity.

[51] The average revenue per vulnerable household was only 18,000 cedis (7 US$).

[52] Approximately 210 US$. Per capita, this amounted to about 23 US$.

food gap, but with this money, school fees, school uniforms, hospital fees, funeral expenses, clothes, soap, kerosene for lanterns, hoe blades, building and maintenance materials, cooking utensils, soup ingredients and other items have to be bought, too. A strong focus on *food* security neglects the fact that the process of commoditisation is quite advanced. It would be wrong to conclude that this household is food secure because the food gap is smaller than the monetary income. People simply cannot spend all their monetary income on food and with a budget of about 20 US$ per person per year, it is very difficult to make ends meet. To give an indication: in 1999, the fees for public Senior Secondary Schools in the region amounted to about 250,000 cedis per year. Sending one child to SSS would mean a tremendous cut in the household's budget. Vulnerable households in the research area live in hard-core poverty. They have very little 'room to manoeuvre' and there is very little scope for accumulating wealth in good years.[53] They are struggling to survive. Remittances from migrant relatives can sometimes bring a little relief. They are an important extra source of food[54] and income (average 50,000 cedis[55]) for vulnerable households.

Now let me describe a relatively secure household in the research area. The household is smaller in size: it has seven members, of whom four to five are in their productive age. The household cultivates an area of about 3.26 hectares. To prepare the land, the household is likely to use bullocks or hire a tractor. Assuming an average yield level of 600 kg/ha, this household can harvest almost 2,000 kg of grain equivalents. Due to its smaller size (5.24 consumer units), the household needs a minimum of only 1,400 kg of grain equivalents per year, so there is above subsistence production. Only a small part of the surplus food is sold, however (61,750 cedis in 1999, the price of 100 kg of millet). Part of the surplus food is used to invite farm labourers in the following farming season and part of the food is stored as an insurance against crop failures in the future. Although the survey findings are not unambiguous about this, secure households are likely to transfer a small part of their surplus to less fortunate relatives and neighbours.

The secure household also owns more animals. Its stock consists of about thirty-five chickens and guinea fowls, nine goats, two to three sheep, four pigs and three heads of cattle. In 1999, the revenue from animal sales was about 165,000 cedis.[56] Just as in the vulnerable household, one woman brews beer to make money and a second woman has another source of non-farm income, most probably petty trade. The difference between the non-farm income of vulnerable and secure households is to be found in the activities of the men rather than the women. Whereas among vulnerable households, only one man has a non-farm or off-farm income, among secure households two men have jobs outside farming. Moreover, the jobs of men in secure households are more rewarding. One man has either a formal job with a monthly salary; a pension or a skill like masonry, carpentry, tailoring, etc. A second man in the household goes on seasonal labour migration, has a dry season garden or engages in commercial fishing. Not surprisingly, the annual cash income of a secure household is

[53] Looking at the non-livestock saleable assets, the average vulnerable household had one bicycle and one radio.

[54] Nine out of twenty households in the vulnerable group received between half a bag and three bags of maize from migrant relatives in 1999.

[55] Approximately 18.5 US$.

[56] Approximately 61 US$.

considerably higher than that of a vulnerable household. In 1999, it amounted to about 1,364,000 cedis.[57] With 72 US$ per capita per year on top of the subsistence food needs, a relatively secure household in the research area does not live in luxury, but the budget is *manageable* and leaves space for investment in assets that further increase livelihood security and the capacity to cope with adverse events in the future.

Photo 13:
Women gathering leaves to be used as soup ingredients or to be sold in the market

[57] Approximately 505 US$.

8

Livelihood histories and in-depth analyses

Introduction

An often-heard criticism on livelihood approaches to poverty and development is that they are a-historical and too much actor-oriented. Indeed, if I had confined my study of rural livelihoods to the livelihood analysis survey (see chapters six and seven), there would certainly have been a lack of historical depth and a lack of understanding of the larger structures in which the respondents eke out a living. Chapters three, four and five served to analyse these structures and in the following chapter, I will try to give historical depth to the more actor-oriented analysis. I will describe the *livelihood histories* of three individuals from the survey sample. All three are household-heads. Their livelihoods will be described in the context of the larger kin groups of which they are part. Intra-household struggles, tasks, rights and responsibilities will be given much attention. In chapter two, I have discussed the selection procedure and some other methodological and theoretical considerations for studying livelihood histories. The three in-depth studies will be presented in order of vulnerability: from most vulnerable (Francisca) to most secure (Osman).

The huge diversity in food and livelihood security between the three individuals and their households will strike anybody who thinks that rural African communities are 'egalitarian'. Francisca's pathway is a story of a secure youth, then abject poverty and chronic food insecurity caused by quite specific family circumstances at a later age. She is suffering. Egidius' livelihood is more typical for households in the research area that are having problems in securing their food needs through own food production, and that do not have very rewarding and reliable sources of non-farm and off-farm income. They are struggling, but somehow they are able to make ends meet. Finally, Osman Ali is the head of a large household that has invested in animal traction and that produces a food surplus every year. Some brothers are living in southern Ghana and also contribute to the household economy. Osman's livelihood is very secure.

Originally, I had reconstructed the livelihood histories of two more individuals from the research area (Philibert Maniaasie and Suurib Kyoo). Their situation was typical for households that produce sufficient food in most years and that have quite reliable sources of non-farm and off-farm income. In terms of vulnerability, they were in between Egididus and Osman. Suurib practices the ancestral religion, has a dry season garden and is a bit of a 'bon-vivant'. Philibert is a returned migrant with a very strong social network. Anybody interested in their stories can download the texts from http://users.fmg.uva.nl/kgeest.

Each of the three analyses that follow starts with a summary of the life history and a genealogy of the patrilineage. The objective is to assist the reader in tracing and placing the large number of names, dates and places that appear in the text. It should be noted that the genealogies are not complete. During interviews, the reconstruction of genealogies was a *tool* to better understands how family networks and relations function; the reconstruction of the genealogies was not an objective in itself.

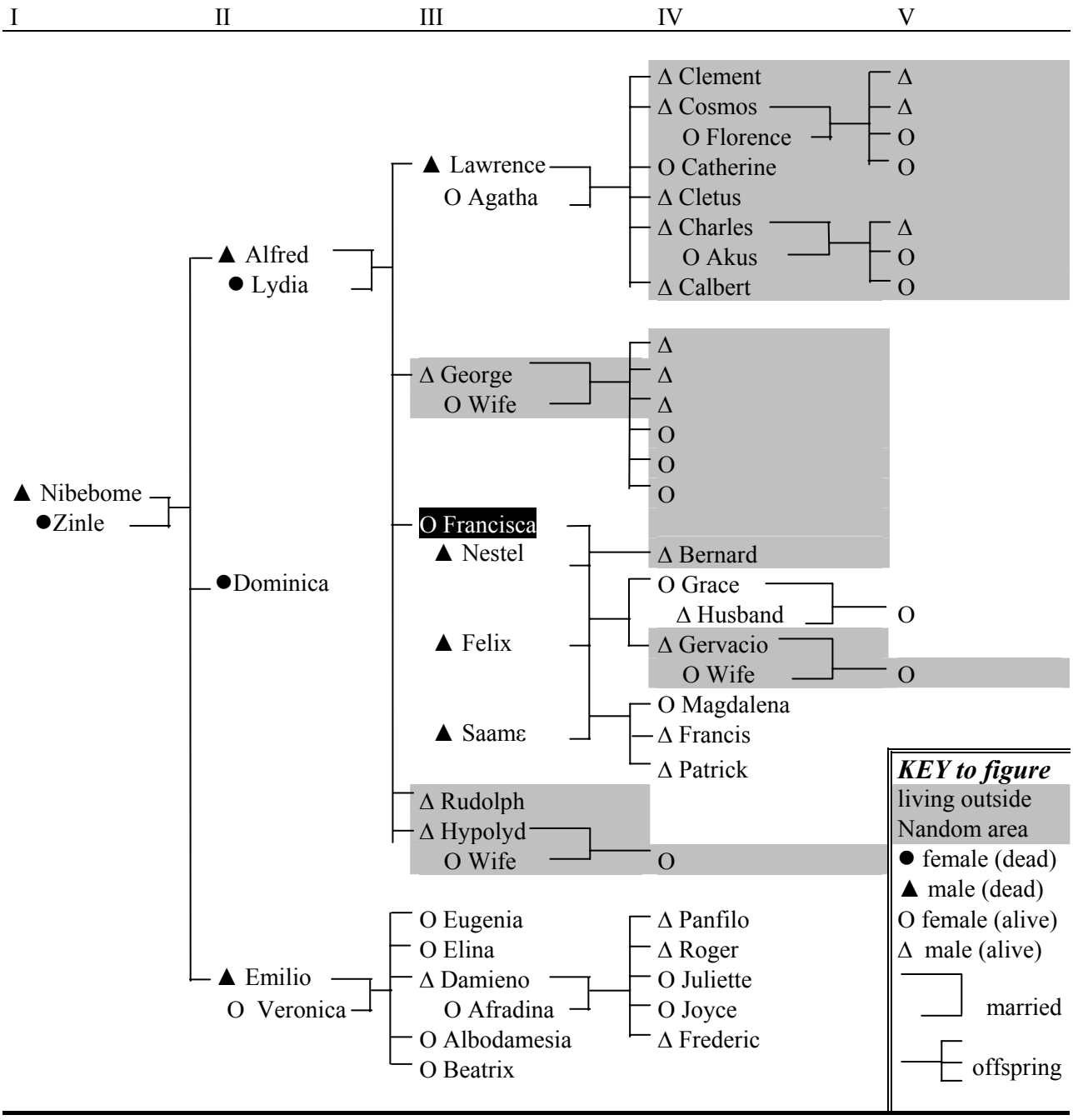
Photo 14
Cooking pots and maize cobs

Francisca Mweyang

Table 8.1 Summary of Francisca's life history

1941	15 July: Born in Gyengegangn. Dagara, Roman Catholic.
± 1952	Francisca moves to Kokoligu where her senior brother works as a teacher. Later they move to Ko. Francisca stays with her brother until she marries.
± 1964	Francisca marries Nestel (from Goziire).
± 1965	First child is born (a son: Bernard).
± 1966	Francisca's husband dies. She returns to her family house one year later.
1968	Francisca is courted by a man from Kentuo (Felix). She moves to his house. Francisca's second child is born (a daughter: Grace).
1969	17 August: Francisca marries Felix.
1971	Second husband dies while Francisca is pregnant. She returns to her family house. Third child is born there (a son: Gervacio).
± 1972	Francisca's father dies. Francisca's brothers are all elsewhere in Ghana. Francisca and her mother stay in the family house.
1974	Francisca's fourth child is born (a daughter: Magdalena). The father of the baby is a man from Nandom-Pataal (Saamɛ). Francisca moves to his house, but they don't marry officially.
1977	Fifth child born (a son: Francis).
1980	Sixth child born (a son: Patrick).
± 1984	The third 'husband' dies. Francisca returns to what is left of her family house. This is the onset of a period of hardship. There is no man in the house to prepare the land for sowing; there are three children to feed and send to school, and help from relatives and neighbours is very limited. Francisca tries to 'manage' by engaging in several non-farm activities, but she doesn't succeed in escaping from abject poverty and chronic food insecurity. This situation continues to date.
± 1997	Francisca's mother dies.
± 1998	Francisca's senior brother (Lawrence) dies. This was a heavy blow to Francisca because he was the only brother who had helped her from time to time.

Figure 8.1 Genealogy of part of Francisca's patrilineage



Family situation

Francisca Mweyang[1] is the female head of a small household in Gyengegangn, the first village west of Nandom on the way to Napaale and the Black Volta. She is a widow and 59 years old. She gave birth to four sons and two daughters with three different husbands. Presently, her household consists of herself and the three children of her last marriage. Francisca had four brothers, of whom three are still alive. She has no sisters.

The eldest living brother, George, is 'in Kumasi'. This has to be interpreted as 'somewhere in southern Ghana'.[2] Initially, Francisca said that she didn't know where he was exactly, or what he was doing. Later she told me that he used to clean public toilets and that he is now pensioned. He left the village 25 to 30 years ago and he rarely ever comes home. Francisca visited him some years ago. George is married to a Dagara woman. His children, Francisca says, have never come to the north. Francisca's two junior brothers, Rudolph and Hypolyd, are also in southern Ghana. About 30 years ago, Rudolph started going on seasonal labour migration. After some years, he decided to stay down south permanently. He settled in the Afram Plains, an isolated and sparsely populated area on the west bank of the Volta Lake. Rudolph became a yam farmer and a fisherman. He is not married, and to Francisca's knowledge, he doesn't have any children.

Francisca's other junior brother, Hypolyd, went to the police school and became a policeman in Accra. Some years ago, however, he was sacked and he started working as a watchman, still in Accra. He married a Fanti woman and has one daughter. The latest news is that he also lost his job as a watchman. Just like George, these two brothers don't come home regularly.

Francisca's late senior brother, Lawrence, was educated up to University level. He was a teacher and the headmaster of a senior secondary school in Wa for many years. From Wa, he was transferred to Tamale where he worked in the Education Office. His wife (Agatha) was also a teacher. They had six children together who all went to school. The firstborn (Clement) is a Reverent Father in Damongo. The second (Cosmos) is presently in Canada where he studies law; he was working as a customs officer before he went abroad. The third son (Charles) is a soldier, based in Accra. The only daughter (Catherine) married a teacher and lives in Tamale. The fourth son (Cletus) joined the navy and, at the time of the interviews, he was in Liberia as part of a peacekeeping force. The lastborn (Calbert) is a teacher who works in the same town as his most senior brother, Damongo (Northern Region). This branch of the

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[1] Francisca does not speak nor understand English. The in-depth interviews were carried out with a female interpreter: Ernestina Bagson from Nandomle, who works for an NGO that operates in the research area (Freedom From Hunger). Francisca's son (Francis) speaks English. He was present during the first two in-depth interviews, and he was as important as Francisca herself in describing the household's struggle to survive. During the third interview, Francisca's other son (Patrick) was present. In the text, Francisca's "quotations" are translations by Ernestina. "Quotations" of Francis and Patrick concern their own words. My questions are in *italics*. When I thought that certain "quotations" would not be understandable to most readers because of the 'Ghanaian English', I have modified them into more British English.

[2] Many people refer to Kumasi when they talk of southern Ghana. 'To *go* to Kumasi' usually means 'to go on seasonal labour migration: to work in the maize farms'. People who '*are* in Kumasi' are permanent out-migrants or people who stay in southern Ghana until they become old and come home (circular migration). All places are usually referred to as 'Kumasi'. Even when migrants go to the Ivory Coast, some people will say they go to 'Kumasi'. If one is interested in the exact whereabouts of Dagara migrants, one has to specify the question.

family is clearly well-to-do as local standards go. All have qualified jobs and a fixed monthly salary. The late Lawrence's wife Agatha lives next-door to Francisca in a big house with roofing tiles.[3] Her children had the house built for their mother in 1998.[4] Before Lawrence died, he was living with another woman in Tamale. He also had children with her. I did not get all the details, but it seems that the marriage conflict between Lawrence and Agatha divided the family into two camps. As we will see below, the repercussions of this conflict still affect Francisca's livelihood.

Francisca's father (Alfred) died around 1972. Alfred had one junior brother (Emilio) who built his own house next to the old family house where Alfred stayed with his wife and children. Francisca is presently living in the old family house, or what is left of it. Emilio died, but his wife Veronica is still alive. They had one son and four daughters who reached the age of marriage. The daughters have married and left the house. The only son, Damieno, married and stayed in his father's house. He still lives there with his wife, his three sons, two daughters and his old mother.

Francisca has been married three times. Her last marriage was not 'official' (see below). All three husbands died. Francisca does not have contact with the 'house people'[5] of her first two husbands. The two sons she gave birth to in those houses are living in southern Ghana. When they are in the north, they come to greet their mother but that is not very often. They do not support her in a structural way. Francisca's firstborn daughter Grace (from the second marriage) is married and lives in Nandom Town. They do not have much contact. Francisca's third 'husband' (Saamɛ) is the father of the children Francisca has been taking care of over the past twenty years (Magdalena, Francis and Patrick). Saamɛ was initially married to another woman, but they divorced (the bridewealth was returned). Saamɛ had three children with his first wife, including two sons who are still alive: Edward, who is an agricultural extension officer in Jirapa, and Joseph, who is a farmer in Nandom-Pataal. They are the half-brothers of Francisca's children. On several occasions, they have supported Francisca's children by paying school fees. They still maintain contact. Saamɛ had several brothers down south with whom Francisca's children also have good contact.

Francisca's childhood and adolescence (1941-1964)

When Francisca was a child, the family house was still big. Her grandfather (Nibebome) had already died by the time Francisca was born, but Nibebome's junior brother (Beforɛ, not in Figure 8.1) was still alive. He was the head of the house and controlled the family cattle. The other people in the house were Francisca's parents and siblings; Francisca's junior father (Emilio) with his wife and children (see Figure 8.1) and the sons of Beforɛ with their wives and children (not included in the genealogy). After Nibebome had died, the compound had

[3] A few decades ago, houses with iron sheet roofing were not very common in the villages around Nandom. In Those days it was a sign of wealth, and only wageworkers and people who had spent many years in southern Ghana could afford it. Nowadays, iron sheet roofing is quite common. Many compounds have at least one or two rooms with iron sheet roofing. Agatha's house is roofed with 'roofing tiles'. Very few houses in the Nandom area have this type of roof; it is a new status symbol.

[4] Agatha's firstborn is a priest in Damongo. Many Reverend Fathers build expensive houses for their parents and siblings in the village.

[5] 'House people' (yirdɛm) are paternal relatives.

been divided into two sections: The first section consisted of Beforɛ's group, and the second section consisted of the sons of Nibebome (Alfred and Emilio) with their wives and children. Later, Alfred and Emilio also separated, and after Beforɛ died, his sons separated their farms and granaries, too. Before that happened, Beforɛ's group had already moved out of the old house to build a new house at a small distance from the old house.

Of Francisca's siblings, Lawrence and Hypolyd went to school. The other two brothers (George and Rudolph) helped on the farm and looked after the animals. Francisca's father (Alfred) used to go on labour migration in the dry season. He never stayed in southern Ghana for longer periods. When he became older, he ceased going on seasonal labour migration, and started a dry season garden.

When Beforɛ died, Francisca was a small girl. It seems that part of the family cattle was inherited by a son of Beforɛ's sister (i.e. a nephew of Beforɛ) who had married in another village. In those days, cattle were still inherited through the maternal line. If this son of Alfred's aunt had taken all the cattle, he – customarily – also would have had to take all the children to his house and take care of them. That is why he only collected part of the herd. The remaining cattle came under the care of Alfred, and perhaps of Beforɛ's sons.[6] The descendants of Beforɛ are still cattle owners[7], and the descendants of Nibebome are not.

As a child, Francisca helped her mother brew pito and fetch water and firewood. She never went to school. In the rainy season, she helped on the farm, and one of her other tasks was to tether the goats. Besides the cattle, goats and poultry, they did not have other animals like sheep and pigs. Francisca's mother did not brew every week. The women of the house used to brew in turns. According to Francisca, her father was a very good farmer. He did not use bullocks or donkeys to plough the land. "That time, nobody knew that you could use bullocks in your farm," Francisca said. Besides the millet, guinea corn and maize that he grew in the compound farm, he used to cultivate rice in the depression between Gyengegangn and Nandom Town (within a distance of one km from the compound). There, he also cultivated yams and sweet potatoes. He had a third farm near the Black Volta where he mainly cultivated millet (at about six km from the compound).

From that time, Francisca does not remember any crop failures caused by either drought or floods. Initially, she told me that when she was a small girl, grasshoppers or locusts had destroyed their crops one year. In a later interview, when I wanted to ask some additional questions about this event, she told me that she wasn't born when that happened; her parents had told her about it. From her childhood she only remembers one year in which certain insects destroyed the rice farms in the area. "You don't find these animals around the houses, only near the river they come and chop the rice." I do not know exactly to what types of insects Francisca referred. The fact that only rice farms were affected indicates that the impact must have been limited.

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[6] What exactly happened to the family cattle is rather vague. Francisca doesn't remember all the details. What I have written down is a combination of what Francisca remembered and what I think most likely happened, based on what I know of the composition of Francisca's family and the inheritance system of that era. It should be noted that the customary laws concerning the inheritance of movable properties are subject to a lot of debate (see Tengan 1994 and Dery 1987). What Francisca knows for sure is that her father still owned cattle, and that there is no family cattle left, at least not in her branch of the family. The cattle of Beforɛ's grandsons' are no help to Francisca in any way.

[7] Two descendants of Beforɛ's were in my survey sample.

In some years, the rainfall was too heavy. In those years, some crops failed. *When that happened, was there hunger?* "Some crops would do well. If there is plenty water, the groundnuts, the beans, the rice, they do well. The millet and the guinea corn, we don't get it much because of the rain. It is not really a hunger because there are other crops."

When you were a child, did it often happen that your parents had to buy food in the market? "Sometimes we had to buy, but not very often. We usually had enough and there were many years, too, that at the time of the new harvest, part of the old harvest was still lying down. My father sold it or he gave it to the women to brew. Every year, he would give guinea corn to my mother to brew for the people who came to work on our farms."

Alfred was not in a farming group himself. He sometimes killed a goat or a dog to get labourers on his farm. Eight men would share the meat and come to work on his farm two or three times.[8] Alfred's sons were members of farming groups. When the group would come to their father's farm, he had to provide the pito. Francisca was not in a girls' farming group; she sowed and harvested with her mother. It is only now, she says, that women also have their farming groups. Although the father occasionally had workers on his farm (when he killed a goat), they were mainly dependent on household labour.

In those days, Francisca usually ate three times a day. Only in the farming season would they eat less. Occasionally they didn't eat all day, but according to Francisca, this was not because the food wasn't there; on those days, Francisca's mother (Lydia) just didn't have time to prepare a meal because one of the farms was far away, near the Black Volta. They would come home late and just go to bed with empty stomachs. On other days, heavy rainfall could hinder food preparation. *Why did you go all the way to the Black Volta to farm?* "We did not have much land here, so my father went there to ask some people's land to farm the millet." *The women in the house, were they not rotating the cooking tasks so that some women go to the farm and other women stay in the house to cook?* "They didn't do that. Every woman in the house has her own cooking pot. After the work on the farm, they have to come home to cook."

When Francisca was about eleven years old, she moved to Kokoligu[9] where her senior brother Lawrence and his wife Agatha were working as teachers. Francisca looked after their children, cooked for them, fetched their water, cleaned their house, etc. After some years, they moved to Ko[10] where Francisca had the same domestic chores. Francisca stayed with Lawrence and Agatha until she married at the age of approximately 23. During these years (1952-1964), they never suffered for food. With their double salary, Lawrence and Agatha always had money to buy food, and Lawrence had a farm in addition. They ate three times a day all year long, she says.

In 1963, heavy rainfall and floods destroyed the family house in Gyengegangn. In those days, Francisca was still with her brother Lawrence in Ko. Their house had an iron-sheet roof and concrete walls. It was not affected by the heavy rainfall. From what her relatives told her, Francisca does remember more or less what happened in the family house in Gyengegangn. Most of the house was damaged, including the granary. Not much grain was lost because the

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[8] The workers don't come on two or three *consecutive* days. There are usually some weeks in between the labour parties.

[9] Kokoligu is a village at approximately 8 kilometres north of Nandom.

[10] Ko is a village at approximately 9 kilometres south of Nandom.

flood occurred just before the harvest, when stocks were low. Moreover, the house people were able to take out the grains before the granary collapsed. Francisca's relatives had to move to the school building. They carried the food that they had saved from the granary to the school. They did not harvest all their crops that year, but some crops yielded well. Francisca doesn't remember whether any animals drowned during the floods.[11]

In the dry season after the floods, Francisca's father did not go to Kumasi to work in the maize fields (as a coping strategy). He had to repair the house and he cultivated his dry season garden. With the money he made, he could buy food. That year, the garden did well because there was water until the next rainy season. They also sold some goats to buy food, but according to Francisca her father did not sell cattle that year. With his salary, Lawrence also helped his father to buy food. At that time, they didn't have other close relatives who were working down south and who could help them. Although they were able to get food, Francisca thinks that they had to reduce their food intake that year, especially in the months prior to the next harvest, after the money from the garden had been spent.

Three weddings and three funerals (1964-1984)

When Francisca was approximately 23 years old, she married a man in Goziire[12] named Nestel. He was more or less of the same age as Francisca. He was a farmer and he used to go on seasonal labour migration to southern Ghana. Nestel was the youngest of three brothers who were still living and farming with their father. Nestel's two senior brothers were already married. The wives cooked together or in turns. Farming was the mainstay of this family, and in the four years Francisca stayed with them, they always harvested enough. They would eat three times a day in the dry season. When the farming started, they would eat twice daily. This was not because the food was not there; it was rather because they didn't like to eat before going to the farm. Francisca used to brew pito and mould pots to sell at the Nandom market. The wives of the three brothers brewed pito in turns, using the mother-in-law's utensils. They brewed the whole year through, but less in the farming season. The pottery was purely a dry season activity.

In the third year after the wedding, Francisca's husband left for southern Ghana again. He got involved in a fight. His 'enemy' said: "You will never fight with anyone again." That evening, Francisca says, he took his bath and when he put on his trousers, he felt something itching in his anus. Later, whatever he had felt went deep into his body, to his stomach. He went home to Goziire because he was experiencing a lot of pain. They sent him to the hospital but nothing could be done for him, and a week later he died. It was agreed that his enemy had used 'juju'[13] on him. This must have happened in 1966/1967. Francisca had given him one son (Bernard). She stayed in her late husband's house for one year before she went back to

[11] I have never heard of cattle being drowned in floods. Neither have I heard of animals dying because of drought. Several survey respondents did tell me that their animals had died of cold (hypothermia) in 1999. This was an indirect effect of the heavy rainfall that year; the rain had destroyed the livestock pens.

[12] Goziire is the first village northwest of Nandom Town.

[13] 'Juju' is witchcraft or black magic. In the francophone countries surrounding Ghana, this practice is called 'gris-gris'.

her father's house.[14] She took her son, Bernard, with her to the family house in Gyengegangn. When the boy was about four years old, the late Nestel's brothers came to collect him. He grew up in the father's house, and later he became a teacher. He is now living and working in a small town near Techiman.[15]

About one and a half years after her first husband died, Francisca was courted by a man from Kentuo.[16] His name was Felix Wayiri. He was about 15 years older than Francisca, a farmer who also engaged in butchering. Francisca became pregnant, and in 1968 a daughter (Grace) was born. One year later, Felix and Francisca officially married at the St. Theresa church in Nandom Town. The bridewealth was paid to Francisca's father, who passed it on to the family of the first husband. Felix had first been married to another woman who had given birth to six children before she passed away. They were living in one section of the family house. Felix farmed separately from his father and brothers. Francisca cooked for Felix and the children. One of Francisca's stepdaughters used to help her. Just like the husband in Goziire, Felix was farming well. Besides millet, guinea corn and maize, he always harvested a lot of rice and most years, she said, he would sell part of the rice at the market. His work as a butcher was also fruitful. If someone wanted to sell a pig, they would call Felix. He would bargain until they agreed on a price. Then he would kill the pig to sell the meat under a tree in the village. With the revenue he paid the pig owner, and whatever he was able to get on top was his profit.

In Kentuo, Francisca brewed pito, sold bean cakes and moulded pots for sale. Initially, she used her mother-in-law's brewing utensils, but soon there were conflicts. According to Francisca, Felix' parents were jealous because she was engaging in all types of crafts and trades while their own daughters were lazy and idling around the house. The mother-in-law didn't allow her to use the brewing pots anymore. She said: "with all your business, you must be rich, so you should be able to buy your own pots." When Felix came home from the farm and was informed of the conflict, he asked his father why they had said this. An argument ensued. The father started insulting his son and told him that he didn't want to see him in the house again, so Felix decided to build his own house.

Felix and Francisca only lived in their new house for a short while. Francisca conceived again, but before she delivered, Felix died. Francisca thinks he died of an untreated hernia.[17] This happened around 1971. His brother, with whom Francisca was on friendly terms, told Francisca that she should move back to their family house, but the father-in-law did not agree. He sent Francisca back to her paternal house in Gyengegangn where she gave birth to a son, Gervacio. The firstborn (Grace) stayed in Kentuo with her late father's family. Later, when she had grown up, Grace married to a man in Nandom-Pataal. Gervacio stayed in Francisca's family house for about seven years. One day, his paternal uncles from Kentuo came to claim the boy and take him back to their house.

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[14] Francisca said that in the olden days, it was the tradition to stay in the husband's house for three years after his death. "But now that Civilisation has come, you can go home any time you want, even directly after the funeral. Or if you want, you can be staying in the husband's house until you also die."

[15] Techiman is a big market town in the Brong-Ahafo Region (in Ghana's middle belt).

[16] Kentuo is a village at about 6 kilometres northwest of Nandom Town, towards the Black Volta.

[17] In the Ghana Living Standard Survey 3 (Ghana Statistical Service 1993: 25) hernia is reported as *the* major health problem in 30% of the communities in the Upper West Region (50% malaria; 10% measles; 10% other).

Some years before, around 1972, Francisca's father had died. After her husband's death, Lydia (Francisca's mother) couldn't go back to her family house in Kogle because she didn't have any direct brothers who were living there. "There was no place for her", Francisca says. The old lady stayed in the family house. Her sons were elsewhere in Ghana. Lawrence supported her financially. Initially Francisca stayed with her mother.

One or two years later, Francisca was courted by Saamɛ, a man from Nandom-Pataal. She became pregnant and gave birth to a daughter, Magdalena. This happened around 1974. She moved to Saamɛ's house, initially leaving Gervacio with the grandmother, Lydia. Later, after Gervacio had been taken to his late father's house in Kentuo, the grandmother was left alone. In 1977, Francisca gave birth to her third son, Francis. About three years later, her last child was born. It was another boy, Patrick. In all, Francisca gave birth to four sons and two daughters. Francisca and Saamɛ never married officially.

Pataal is a section of Nandom Town. It is different from the rest of town in the sense that most people are still farmers. It is different from the other villages in the Nandom area because of its proximity to Nandom Town.[18] Saamɛ was a farmer who worked as an off-loader[19] to supplement his farm income. In Pataal, Francisca lived with Saamɛ and the children of his first wife in one section of a large compound. All Saamɛ's direct brothers were down south. He was farming alone, but he didn't farm as much as Francisca's first husbands, because he spent much of his time in town for his other job. In the farming season, he used to go to the farm in the early morning. After some hours of work on the farm, he would come home, take a meal and go to town to see whether there were any trucks to be off-loaded. In the dry season, he spent most of his time in town. He had two farms: one around the house and one in a depression near the Kopare River (a tributary of the Black Volta) between Nandom-Pataal and Burutu. Saamɛ was never able to harvest enough to eat until the next harvest. *Was the food situation as good as with your first husbands?* "The difference was that we had to buy a lot of food, while in Goziire and Kentuo, we always had enough food from our own farm. But with Saamɛ too, we always had enough because he makes more money. There was no hunger at all." *Are you very sure there were no food shortages at all while you were living in Nandom-Pataal?* "No, nothing like that."

After reminding Francisca of what she said earlier,[20] she remembered that while she was living in Nandom-Pataal, there was a "hunger year" (see below for a reconstruction of which

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[18] See Schijf (forthcoming) who reconstructed the pathway and analysed the livelihood strategies of two men from Nandom-Pataal (Naanyil and John).

[19] An off-loader carries the merchandise, brought to Nandom by trucks, to stores, private houses or shops.

[20] I repeated this question because I knew that there *had* been food shortages. In fact, we had very briefly discussed this about 30 minutes earlier. It is a bit discouraging that people often seem to either forget, hide, or play down difficult times, especially because it is one of the main objectives of this study to find out what kinds of trigger events cause food stress in which way and what different people do to avoid and deal with such difficulties. If respondents do not mention these events themselves and you have to 'pull the information out of them', you are never very sure whether the information is reliable. Moreover, when you know that what they say might be untrue or incomplete, you have to be *suspicious* all the time – and I don't like to be suspicious. The truth is that you can't take answers for granted. You have to crosscheck information. I have to admit that sometimes I found dissimilarities not because of what *they said*, but as a result of what *I heard*. This is not because my ears were not functioning properly; it was a result of the outsider's incomplete understanding of the respondent's train of thought. In this light, it should not be forgotten that I used the services of an interpreter. Incomplete or erroneous translation is another source of

year this was). That year, they had to queue at the market to buy food. One day, she went there with Francis tied on her back. The people were pushing so much that Francis was almost squeezed to death. She had to go home without food. The following day, she went without the baby and she was able to lay her hands on one bowl of millet (2.5 kg).

The traders knew that food was in short supply, and they decided to hoard it in order to get a higher price for their grains. The men from town, Francisca says, became angry and tried to force the traders to open their stores to sell food to the people at affordable prices. According to Francisca, the 'government' and the soldiers chose the side of the angry men, rather than the traders. That's why the traders had no choice but to open their stores.

I had heard a similar account about the traders being forced to open their storerooms. I was told that it had happened in or after the drought year of 1983. After the interview with Francisca, I checked with some other people[21] who argued that it didn't happen in 1983 because that year, even the traders in Nandom didn't have any grains in store. The harvests had also failed or burnt in the south of Ghana. In 1983, grains were even 'exported' from northern Ghana to southern Ghana because higher prices were attained in the south.[22] The riots must have occurred two years earlier, in 1981, after the second coup of Rawlings. That year, there was a drought in the Nandom area and probably in the rest of the Upper West Region, too.[23] In the south of Ghana, harvests had been better. Economically, it made more sense for a northern trader to hoard in 1981 than in 1983 because in the latter year it was more profitable to 'export' grains to southern Ghana. The leftist revolutionary atmosphere after 'Rawlings' second coming' in 1981 may explain why soldiers backed the people rather than the traders. A friend (John Yirkuu) told me:

> When the traders were hoarding the grains, the soldiers did not only support the people [in a passive way]. The soldiers actually forced the traders to open their stores. They whipped the traders and rolled them on the ground like that. They were beating them. And then the grains were sold at low prices.

In those days, the soldiers also used to look for smugglers who were trying to sell goods across the border, in Burkina, where prices were even higher than in Nandom. John recalls an event of those days:

> The soldiers had discovered and chased a smuggler. They killed him and brought him to Nandom Town where they announced that 'control meat'[24] was going to be distributed. The people were not aware of what had happened. Everybody came and when there were enough people, the soldiers threw the corpse on the ground. Everybody screamed and ran away.[25]

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confusion. I do not blame my interpreters for this because it is a difficult task for which none of them has been formally trained. In fact, they did very well.

21 Among others: teacher Rufino and John Yirkuu (Nandom Town, 27 September 2000).

22 If this is true, it is very symbolic for the 'inferior' economic position of northern Ghana. Even though there was a food shortage in the north, people would sell their grains to the south because the southerners were able to pay high prices.

23 The annual rainfall measured in Nandom Town was 579 mm. In Lawra, Babile and Wa, the figures were 353.2; 566.1 and 673.9 respectively.

24 'Control meat' is a popular term for food sold at subsidized prices.

25 Perhaps needless to say, this was a warning to the people of Nandom that if they tried to smuggle goods out of the country, this could happen to them.

Whatever the exact year, Francisca remembers that the farmers were not able to harvest enough. Saamɛ did not harvest much either but according to Francisca he was able to buy food with the money he earned by off-loading the trucks. They were not rearing smallstock that time, not even poultry, so they had no small animals to sell. Saamɛ may have sold one cow of his first wife's bridewealth to buy food. Francisca does not clearly remember whether or not he did that. She thinks he did. *Saamɛ had several brothers who were working down south; did they send money or food to Saamɛ?* "No, they never sent anything at all. They never helped us." That year, there was often no food to eat. "Some days we would get something, other days not." She also had to go to the bush near Tanyaga to look for vegetables and leaves. In this respect, she had an advantage over many other women in town; she grew up in the village and knew where to find edible wild foods. *If you compare that year with your food situation this year (2000), which year was better?* "That year was a bit better. We are suffering a lot now." If this is true (and it is not unlikely; see below), it is illustrative of the dramatic decline in Francisca's food and livelihood security. In the early 1980s, an area-wide trigger event (drought, partial crop failures and sky-rocketing food prices) caused a less severe food shortage than last year without such an event. *Let's assume that this did happen in 1981. What happened in the following years?* "That was the only year we were suffering for food in Pataal. It was only after my husband died that we started suffering again. The difference is that this time if you have the money, you can buy the food in the market. That time, even with money, there was not much you could buy. My problem now is that it is difficult to get the money to buy food."

It seems very unlikely that Saamɛ and Francisca did not experience any food stress in 1983. She says that the year in which they had to queue for food was an isolated year. She doesn't remember a *sequence of years* in which crops failed because of drought (which could be expected from the climate data presented in chapter four). She insisted, and I didn't want to spoil the atmosphere of the interview by repeating the question again and again from different angles. There is a moment at which one has to accept that people either don't remember or don't want to talk about certain events. Another possibility is that 1983 indeed was not really a crisis year for Francisca and her household.

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In 1984, fate struck a third time; Francisca's third and last husband died. According to Francisca, he died because a jealous family brother had practised 'juju' on him. It is difficult for a 'matter-of-fact' Dutchman to understand the logic and motivation behind such practices or suspicions. It is worth a try, however. A summary of Francisca's version is as follows: One of the daughters Saamɛ had had with his first wife married. The groom's family paid the bridewealth to Saamɛ. After Saamɛ's first wife left him, her parents returned the bridewealth to Saamɛ and she married another man. It seems that after receiving two bridewealth payments in a short period, some 'house brothers' put pressure on Saamɛ to use the cattle to acquire a wife for one of the brothers. Saamɛ wanted to pay the bridewealth for Francisca first, so he refused and a conflict arose. Not long afterwards he died without a clear death cause. Francisca holds that the jealous brothers practiced 'juju' on him.

Since Saamɛ did not perform the marriage obligations for Francisca, her daughter and two sons do not 'belong' to their father's house. Francisca, Magdalena, Francis and Patrick moved

back to the old family house where the grandmother was still living alone. Francisca's brothers were all in the south. Magdalena was about ten years old and attending primary school. Francis and Patrick were seven and four years old. Francisca herself was forty-three years old and the chances of finding a new husband were negligible. After three husbands had died, no man would want to marry her. Many people look at her with suspicion.[26] This may partly explain why – as we will see later – she cannot count on much support from her neighbours and relatives.

After 1984: Struggle to survive

Since 1984, Francisca has stayed in the old family house in Gyengegangn. It was not easy to get Francisca to describe what *happened* in the past 16 years. We talked about her livelihood strategies as a widow. There have been extremely difficult years; other years were "somehow better".[27] Although farming has not been the mainstay of her livelihood, Francisca said that bad years were the years in which she did not harvest much. Relatively good years were those years in which the harvest was better. According to Francisca, there have been years in which she has been able to harvest enough to feed her household throughout the year. This seems almost impossible because she only farmed a very tiny area (less than an acre) around the house and a small rice farm in the valley (see below).

In the next section, I will describe Francisca's farm activities. After that, I will try to find out how Francisca has been able to fill the omnipresent food gap and send her children to school, by looking at her non-agricultural income generating activities. From there, I will move on to Francisca's social network. It will become clear that although she has well-to-do relatives (especially the widow and children of her late brother), the support she receives is negligible. From the first three sections, it has to be concluded that Francisca's sources of food and income are absolutely inadequate. In the fourth section, I will try to uncover how the household has 'adapted to hunger'. Despite their abject poverty, Francisca has managed to keep her three children in school. Two of them have finished SSS and they will even further their educational careers. In the penultimate section, I will try to find out why and how they aim at *future* livelihood security (through education), even if this means that they have to suffer more in the present. In the last section, I will analyse Francisca's relationship with a micro-credit NGO ('Freedom from Hunger') to find out whether this organisation can facilitate a sustainable improvement of Francisca's livelihood.

The farm: 'One acre, six chickens and a goat'

Francisca's farm activities have been marginal because there has not been an adult man in the house, and the children are attending school. In fact, it has been a bit better this year (2000) because the eldest son, Francis, graduated from SSS in December 1999, and has been able to farm the whole area around the compound (about one acre) and a quarter acre in a valley approximately 500 meters from the house. In most of the previous years, the area they farmed

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[26] Evil tongues say that *she* is the one who practiced 'juju' on her late husbands. They accuse her of witchcraft. This makes life even harder for Francisca.

[27] 'Somehow better' can be interpreted as 'not very bad'; 'manageable'.

was even smaller than this. Since Francisca and her children returned to the family house, it has happened only a few times that they were able to farm as much as they did this year.

When I asked Francis which crops he had sown on his farm, he responded: "Guinea corn and beans, that's all." When we went to look at the farm, I 'discovered' a variety of 14 crops. I really hope that the other answers – which are far more difficult to crosscheck – are more reliable. So, which crops did I encounter? There was guinea corn, early millet, late millet, beans, maize, sweet potatoes, groundnuts, bambara beans, yams, biir, okra, gyamboro, pumpkin[28] and tomato. Francis has done most of the land preparation and weeding. His junior brother Patrick has helped him a bit, but he is still attending school. Francisca has done the sowing. She will also do the harvesting.

(To Francis) *Is your farm fertile?* "Okay, if you sow early, you'll be able to get something, but if you're late, you don't get it." They sowed most of their crops in June. That is not very early, but still on time. Nowadays, some people sow their last crops as late as early August. Francisca owns very few animals, so they can't manure their land adequately. Only the household waste and the free ranging animals in the dry season fertilise their land.[29] The land that they farm is their own,[30] but if Francisca's brothers return from the south, they will customarily have the right to claim it. It is not much anyway because Francisca's village is next to Nandom Town and the area is densely populated. Francisca's father already had to go to the Black Volta fifty years ago in search of farmland. Since then, the land has been divided among relatives. In the lowland farm (about a quarter acre), they have sown maize and rice.

In earlier years, when they farmed even less, Francisca often went to other people's farms to sow and harvest. These people were mostly the people living in her direct vicinity. They used to give her some food in return to cook for the children. She says that she has never received any *money* for working on other people's farms. When it is time to harvest groundnuts, poor women can go to help on other people's farms 'without an invitation'. Depending on the time invested and the generosity of the farmer, they will usually get one or two bowls of groundnuts in return.

This year, Francis has formed a small farming group with three age-mates from the village. They work on each other's farms in the morning. In the afternoon, they work on their own farms. When the group comes to Francis' farm, he has to buy one rubber of pito to share with his friends.

The land preparation and weeding are male tasks. Francisca used to get some men to do the work for her. She always had to pay them. She said that nobody ever helped her for free, as a friend or a relative. *And can you, as a woman, do the weeding yourself?* "Okay, when I didn't have the money, I weeded small myself, but I couldn't do the whole farm, so some parts would do well and other parts where I didn't weed would yield very poorly." Francisca insists that there have been years that she has had "a great harvest that could feed us until the harvest of the following year. If the food runs short before the next harvest, I know it is a bad year for us." *So have there really been years that you didn't have to buy food at all?* "It happened, but

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[28] Pumpkins are grown both for the fruits and the leaves. The leaves are used to prepare soup (stew) to accompany the T.Z..

[29] Just like most farm households in the research area, Francisca doesn't have a toilet. The human faeces end up on the farm and so contribute to the fertility of the soil.

[30] Note that among the Dagara, women officially cannot *own* land. Francisca could *use* the land as long as her brothers were not around.

the past years, I always had to buy." Bearing in mind the size of the farm and the yields usually achieved, the only explanation I have is that even in good years they must have eaten very little on a structural basis.[31] In other words, they must have adapted to a permanent state of reduced food consumption.

(To Patrick) *Do you think that this year the food will be enough for you, or will you have to buy food in addition?* "Okay, we don't know because some of our relatives who stay down south, if anything happens to them, they come here and we have to give food to them. In that case, later we have to buy." *But if they come and eat your food, they will also help you, won't they?* "They will not help us. They will just come and eat our food. They will solve the problem that brought them here and then go back." *Even if they know that you don't have much food?* "In fact, they don't always know that. They don't ask us and we don't tell them because when they come here, there is usually a problem for them to solve. If we say that they have to buy food for us, they will say that they also have problems and we are forcing them to buy food for us." *What kind of problems brings them here?* "If anything happens like sickness, a funeral, or when they come home to perform marriage obligations, they will come and stay here and we cannot leave them to stay like that. We have to cook for them. After solving the problem they will go back and they will not have anything left to give to us."

When Francisca came back from Nandom-Pataal in 1984, she did not own any livestock. At the time of my first visit, in January 2000, there were no animals either, they said. At the time of the in-depth interviews, in early August 2000, Francisca had one goat, two hens and some small chickens. Two years ago, she owned a bit more livestock, but last year, two goats were stolen and the chickens died of Newcastle disease. In October 2000, when I visited Francisca to say goodbye, there were nine hens, no chicks, one goat and two piglets (see below how she was able to get the piglets).

Francisca has been selling goats and poultry to buy food and in some years also to get labourers on her small farm. The highest number of goats they have ever had was six. The poultry once amounted to 12 grown fowls and some chicks. In most years, they can sell one goat. *Can you sometimes chop a chicken?* (a wry grin emerges on Francis' face when he answers) "We kill a hen twice a year, during Christmas and Easter, but there have also been years that we had no fowl to slaughter at all." However few animals they have, and however little income it generates, the animals are very important for them, Francis says.

Adapting to ultra-poverty: Livelihood diversification à la Davies? [32]

The main question of the interviews with Francisca was how she had managed to feed her children and send them to school in the difficult situation that started when her third husband died in 1984. Her strategies to achieve this aim have probably changed over time, so I first tried to uncover the events in the aftermath of Francisca's third husband's funeral: "When I came back to Gyengegangn, I started to farm this small portion around the house and I used to

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[31] With a farm size of 1.25 acres (approximately half a hectare) and an exceptionally good harvest of, say, 1200 kg/ha, the six hundred kilograms could feed three 'consumer units' or 'adult male equivalents' on a very meagre diet. For Francisca, her mother and her three children (app. 3.7 consumer units, see appendix), even an exceptionally good harvest seems not enough to attain food self-sufficiency. But then again, the composition of the household has also varied over time.

[32] According to Davies (1996), livelihood diversification is often a forced adaptation to deteriorated conditions by vulnerable households or livelihood systems rather than an improvement of livelihood strategies.

go to the bush to gather the 'gyamboro' and baobab leaves.[33] I would sell the leaves in the market. With the money, I bought 'gari'. That was the cheapest food you could get. I would prepare the 'gari' with the 'gyamboro' for the children. Besides the vegetables, I was selling firewood in town. You see, I wasn't doing these things when I was married. My husbands were taking care of me. They always harvested enough." When Francisca was married, she also engaged in income generating activities, like pito brewing and pot moulding, but she did not have to use the income from these activities to buy food or to pay school fees. Moreover, these activities were more respected than gathering leaves and firewood to sell in Nandom Town.

For the firewood, Francisca usually goes to the banks of the Black Volta. At times, she goes to Napaale or Tanyaga. That is nearer. But sometimes she even has to cross the Black Volta into Burkina Faso. There is one advantage in crossing, she says: "On the other side you can find more edible leaves and vegetables." So she combines the gathering of firewood and wild leaves. In the dry season, Francisca goes to search for firewood several times a week. She cuts the wood it in the morning. By the time she returns, it is usually almost noon. When she feels strong or when she really needs the cash urgently, she will take the sticks to town to sell the same day. If not, she will do it the following day, early morning. In the rainy season, there are weeks in which she doesn't sell firewood at all. Other weeks, when there is less work on the farm, she takes it up again. I had expected a seasonality in the prices of firewood because most women told me that in the dry season, they sell much more often than in the rainy season. When the supply decreases, I imagined that the prices would increase. In the dry season of 1999-2000, the price per head-load was 1,200 cedis. In the rainy season of 2000, the price was 1,400 cedis. This is not a sharp increase, especially because prices of other goods increased more sharply in the same period.

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When you came back to Gyengegangn, did you start brewing pito straightaway? "I started brewing even before I married. But that time I was only assisting my mother. While I was married I always brewed. And I still brew. Last week I brewed but it rained so there were no customers. I couldn't sell. Now I don't have money to buy guinea corn so I can't brew again." When Francisca brews, she does it in a 'byɛnyɛ' or 'hotel'.[34] That is a place where women brew in turns. They pay an amount of money to the owner of the place, equivalent to one rubber of pito. She brews in the 'byɛnyɛ' because that way she is more likely to sell all the pito she has brewed. If she brewed in the house, people would first go to a 'byɛnyɛ'; only if the pito there were finished would they come to her house. The problem is that in the dry season many women want to brew, so Francisca doesn't get the chance to brew as often as she wants. She has to wait for a so-called 'vacancy' in the 'byɛnyɛ'. In the farming season, there are more vacancies but by then she doesn't have much time to brew and there are fewer customers, too.

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[33] Gyamboro is a vegetable that grows both in the bush and on people's farms. Baobab trees carry edible leaves. All are used as soup ingredients.

[34] A 'byɛnyɛ' is a pito-bar. Some people call it 'hotel' in English. 'Byɛnyɛ' literally means 'branch and see'. Customers can 'branch and see' whether they want to drink some pito. By the roadside, a forked stick with a pot on it indicates that there is pito.

Twenty years ago, Lawrence (senior brother) gave Francisca a metal pot to brew pito. That pot got spoilt and she has not been able to buy a new one.[35] Nowadays, Francisca has to borrow a pot from another brewer. Every time, she pays the lady 500 cedis. Often, Francisca doesn't have the money to buy guinea corn and/or millet for the pito. If she still wants to brew, she can go to a grain trader in town who will sell the guinea corn to her on credit. When Francisca buys on credit, however, she pays more than the market price. If the market price is 2,000 per bowl, she says, this trader will charge 2,200 or even 2,400 cedis. If, for some reason, she is not able to pay back, the trader will never remit the debt. [36] "Even after a year, they will not forget and they'll be chasing you." Francisca's customers, on the other hand, often do not pay in cash, either. She has to sell her pito on credit. That is a service you have to give; otherwise, you will lose your customers, she says. Only the best brewers can afford to demand instant payment. Customers often don't pay. "You have to press them, but some are wicked, they will not pay. You can tell his brother or his father, but they will say that it is not they who drank the pito. If after two months you don't have your money, you have to forget about it. The only thing you can do is not sell to him again. But then you also lose a customer."

At the time of the in-depth interviews, a bowl of guinea corn cost 2,200 cedis. With ten bowls (22,000 cedis), Francisca brews 22 rubbers (gallons). In Gyengegangn, a rubber presently costs 1,200 cedis, so the earnings of one 'blow' are 26,400 cedis. The difference between earnings and costs is 4,400 cedis. From this amount we have to subtract the costs of grinding the guinea corn (approximately 1,000 cedis); the 'hotel' costs of 1,200; and the iron pot rent of 500 cedis. Francisca fetches the firewood herself. For the use of the borehole for clean water she pays a small annual fee, but we will leave that one out. The profit she thus theoretically makes is 1,700 cedis for three days' work. If she has to buy on credit or if two customers don't pay, she will not make a profit.

Francisca possibly gets one, two or more extra rubbers out of the 10 bowls of guinea corn. It is unlikely that she structurally brews at a loss or for only 1,700 cedis, an amount that she can almost earn by selling one head-load of firewood, which would cost much less time and involves less marketing risk. To brew good pito, the ratio between input and output has to be high. Therefore, few women like to admit that they dilute their pito: that they sell 25 instead of 20 rubbers of pito with 10 bowls of guinea corn. Another strategy to increase the profit margin or to minimise loss is to add unsold rubbers of old pito to the new brew. Again, few women would admit that they do this, but everyone knows that it happens. It is clear that the profit margin is not wide, especially if you consider how much work it involves. It takes three days to brew the pito and before a woman can start brewing she has to prepare the malt.[37] This also takes a few days of – less intensive – labour.

The problem with pito brewing is that virtually every Dagara woman knows how to brew. The investment capital is not large, although for many women, like Francisca, it is problem-

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[35] A metal brewing pot cost about 40,000 cedis at the time of the interview.

[36] Other women mentioned a much smaller difference (or even none) between buying with cash and on credit. As I have indicated earlier, I often had the impression that Francisca made things look worse than they in reality are. I might be wrong, however. In the case of buying guinea corn on credit, it is known that the more credit-worthy a client is, the smaller the margin will be. And Francisca will always have to struggle to pay for the grains.

[37] The malt is the basis of pito. In short, you soak the guinea corn in water; allow it to germinate; and dry it.

atic to come by. The strong competition between brewers results in low prices, making pito brewing a low yielding activity. It is worse when the price of guinea corn is high; if you have to buy the guinea corn on credit and/or if you don't have your own equipment. There are some brewers in Nandom Town for whom pito brewing is quite a good business. They have new pito almost every day; they have reliable customers; their prices are higher (1,500) even though the price of guinea corn is the same. Moreover, with their business capital and access to bigger loans, they can buy the guinea corn in bulk when the prices are low. The only disadvantage for brewers in town is that they usually have to buy the firewood and water, but they can make higher profits. See Schijf (2004) for a more detailed analysis of the brewing activities of women in Nandom Town.

One thing that strikes me is that there is a very clear seasonality in guinea corn prices (see chapter five), while the seasonality in pito prices is much less pronounced. Like all other items, the price of pito gradually increases due to inflation. But it doesn't go up and down in a seasonal cycle, like the guinea corn. When guinea corn prices are low, the small brewers, like Francisca, are not able to buy guinea corn and millet in large amounts for the rest of the year. They probably make reasonable profits when the guinea corn price is low, but when the grain prices are high, brewing no longer seems profitable. *Why doesn't the price of pito move just like the price of guinea corn?* "The people who drink pito, the customers, they don't allow us to raise the price. If we do that, they will refuse to buy pito from us. Only if all the brewers increase together, it is possible. But some people will not increase so that they get more customers. That is the problem." (my interpreter Ernestina continues) "Some brewers in Town, they buy a lot of guinea corn at low prices. They store the bags. They are the people who don't want to increase because they have bought the grains at low prices. They don't feel it when the guinea corn price is high. They are still using the low prices."

It is the women who brew the pito and mostly the men who buy the pito. Would you say that it is the women against the men in the fight for higher pito prices? (Ernestina answers) "It is. If a woman wants to increase the pito price, the men will refuse to buy and the woman will be left behind with her pito. She will run into losses. That is why she doesn't increase the price." *Are the men stronger in this struggle?* "The women they also have a weapon. If the price is too low for them to make a profit, they can dilute the pito so that they sell more rubbers with the same amount of guinea corn. And those women who like money, they still dilute when the pito price has increased (laughs). They are the 'money-conscious' women. But their pito is not as sweet. So if they are not careful, they will also lose customers."[38]

Francisca also fries bean cakes on Sundays. This is a very low yielding activity. Some weeks ago, Francisca realised that she was running her business at a loss. She stopped because she didn't have the money to buy the beans, the oil (sheanut butter) and the salt and pepper. *Do you sell bean cakes during a certain period of the year?* "When there is food in the house, I can use the money I earn with the firewood to buy beans so that I can sell bean cakes. In the rainy season, there is usually no food so I have to use my firewood money to buy gari." Francisca talks about it as if it *costs* money to fry and sell bean cakes. Selling bean cakes is indeed not very profitable. A friend (John Yirkuu) told me: "these old women don't sit there

[38] For more elaborated analyses of the 'political economy' of beer brewing, see Tellegen (1997) and Ouedraogo (1995).

to make money, they just sit there to be together and chat." I don't know whether that is true, but I do know that Francisca cannot afford the luxury of running losses. I asked some of the elderly women in Nandom Town, who are always sitting on Mission Road to sell bean cakes, how rewarding their business was. They agreed that the money they make is always little, but it enables them to buy soup ingredients, clothes, etc. They estimated that on a normal day, their profit would be between one and two thousand cedis. This is just as much as selling firewood. Selling bean cakes demands less physical effort, but you need some small capital to start with. "It is better than idling in the house. Where would you get your money," one of the women said.

Francisca's last income generating activity concerns pottery. Francisca used to mould pots and carry them to Burkina to sell. *Did you do this every year or only in years that your food situation was worse than normal.* "I did it every year, in the dry season. This year I haven't been doing it because I'm getting old." *Did you always carry the pots to Burkina yourself?* "Yes, but now I'm too old." *Can you still make them and let someone else sell them?* "I don't do that, I'm too old." *To carry a head-load of firewood all the way from the Volta River to town, don't you need much more strength for that than for moulding pots?* "Before I can start moulding the pots, I have to go out to look for the sand and the clay. When I do that, in the night I get pains in the waist, so that's why I stopped."

Besides these income generating activities, Francisca doesn't have any other jobs. She doesn't process sheanut butter or 'dawadawa'[39] for sale. There are no dawadawa trees on Francisca's land. At times she gets some pulses when she assists a tree owner in harvesting the trees. It seems that there are no area-wide rules concerning the entitlements to these natural resources. In some places, anybody can pluck to fruits of the dawadawa and especially the sheanut trees. In other places you have to ask permission from the landowner. There is a distinction between trees that grow in the bush and trees that grow on people's farms. I had the impression that sheanut trees are seen as a common property resource more than dawadawa trees. When Francisca gets some dawadawa or sheanut, she only uses it for home consumption; she doesn't sell because what she gets is not enough.

To date, Francisca's children have always attended school. They haven't had jobs yet. They have only been helping in the farm and in rearing animals. When Magdalena comes home from school for holidays, she usually assists Francisca in her income generating activities. She has occasionally brewed herself. Francis graduated from SSS in December 1999. I asked him whether he had been able to make some money before the farming campaign started. He told me that their house was in a deplorable state after last year's rainy season. They had not repaired it properly for some years and the heavy rainfall of 1999 spoiled some walls. Some rooms were leaking. Francis spent some months working on the house because he had to do everything himself. Only his junior brother helped after school. Francis had to collect cow dung, sand and wood (beams). He moulded the bricks. He mixed the cow dung and sand to plaster the walls. Since he only used local materials, he did not have to spend much money to repair the house; he only had to buy two beams because in their own farm there were no suitable trees left. This did not cost much. *Is your house in a good*

[39] The 'dawadawa' (Parkia biglobosa) is one of the most important economic trees in the area. The seeds are processed into soup condiments for home consumption or for sale in local markets.

condition, now? "Somehow… it's manageable (laughs)." When he finished the maintenance work, the first rains had fallen and it was time to prepare the land for sowing.

At the time of the first interview, I talked to Francisca's daughter Magdalena. She said that her mother, after losing her third husband, had to go round 'begging' for money and food.[40] I first understood that, because of poverty and a lack of other opportunities, Francisca had been forced to beg for food and money in the streets of Nandom Town. That was not the case, however. Francisca helped other people on their farms and they gave her food to take to the house and feed her children. Some people refer to this as 'begging'.[41] Francisca has never gone to town to beg in the streets.

If you want to work on somebody's farm, do you have to go to him and ask whether he has work for you? "That is possible, but sometimes he will rather come to you and ask." *Some bigger farmers told me that it can be difficult to find people to sow on their farms, but that it is always easy to get people to harvest...* (Ernestina answers) "When you are sowing, somebody can pass by and he will not come to help you. But when it is time for harvesting, especially groundnuts, they will join you and when the work is done you give them some." (To Francisca) *Is this an important source of food for you?* "This year, I haven't been doing it yet. They haven't started to harvest the groundnuts yet. And there is a lot of work to do on my own farm. But if I go to fetch firewood or baobab leaves and on the way I see that they are harvesting groundnuts, I will put down my things, enter the farm and help them. Sometimes, when you're lucky, you get plenty to take to the house and prepare the soup. Sometimes it is very small and you can only chew it on the way to your house."

The absence of a safety net

In Francisca's family situation, the most obvious relatives to turn to for help are her brothers. Francisca says that, besides Lawrence, her brothers never helped her with anything, however. I tried to find out *why*, because it is clear that Francisca's household is very poor and they could certainly use some help from relatives or neighbours. This would relieve the household from the worst food and livelihood stress. Francisca doesn't have any conflicts with her brothers. "I just think they are enjoying so much down south that they have lost interest in their people in the north," she said cynically. I have reason to believe, however, that perhaps they have been helping her and that she doesn't like to admit it, or that when I asked her about helping, she perceived this word in a different way.[42] (To Ernestina) *What is the Dagare word for 'to help'?* "We say: soŋ." *Does it mean exactly the same as 'to help'?* "Yes, I think so." (To Francisca) *What does 'soŋ' mean to you?* "It means that if you don't have something and somebody has it and he gives it to you, he has helped you. If I don't have food and someone gives me food, he helps me; if I am in need of something and somebody gives it to me, he

[40] Magdalena speaks English and she helped to fill in the questionnaire in January 2000, three months after my arrival in Ghana. That time, I did not realise that in the research area, 'to beg' means more than just begging for food or money in the street.

[41] See also pathway of Philibert Maaniasie (Van der Geest 2002a).

[42] Francisca often said: "nobody has helped me at all." If that is true, it is very sad, but I think it is not *entirely* true. Approaching the issue in a different way, or asking her son, Francis, usually produced a different picture. She said for example: "I have always had to struggle to send my children to school, nobody ever helped me at all." Later, it became clear that the relatives in Nandom-Pataal and her brother Lawrence have been paying part of the school fees. Francisca's social support networks are weak, but it seems that she makes them look even weaker than they are.

helps me." *Let's say you don't have pepper and you go to your neighbours to ask for it. If they give the pepper, are they helping you?* "They are and I have actually gone to them for such help." *What if you don't have any gari or other food?* "I have never asked for anything like flour or grains." *And what would happen if you would do it?* "I can't go." *Why? Would it be an embarrassment?* "You see, if they know that you have nothing, they will be the first ones to complain to you that they have nothing either. They do that to prevent you from coming to them. Then there is no use for me to go to them to ask for help."

(To Ernestina) *Is there a Dagare word for 'pride'?* "Yes, there is." *You know, sometimes I feel that Francisca doesn't want to ask help to other people because she is a bit proud or because she would feel embarrassed to beg for food to somebody…* (Francisca answers) "It's always embarrassing. If it is in the farming season, you can go and help somebody on his farm and he will give you food. But if it's not in the farming season, I don't know how to express myself to them. I would feel shy to tell them I need food." *And if it's a close relative, is it easier?* "If I would have close relatives here, I would go and ask them. They have the duty to help. But they are not around." *When your brothers come from the south, can you ask them for something?* "I could but they are far away." *Is it also possible to inform them if you really need something?* "It's possible but my brothers have been complaining that they are not having money. Hypolyd for example, he first was a policeman. Then he was sacked and he became a watchman. He also lost that job and they say he is now roaming around. He lost everything, including his wife. She has run away from him. You know, a woman wants a husband with money. If there is no money, she will leave him (laughs). Now he is roaming and drinking, that's all. When he lost his job, he came back to the village and he helped us on the farm. After the harvest, he wanted to go back to the south. He sold part of the harvest to buy his ticket and his drinks."

Francisca's brothers only come home for short visits. In the past twenty years, they have never stayed in the village for longer periods. *Do you think they will come home when they are old?* "I hope they will come, but I don't know. They haven't been talking about it yet." *If they come, will they live here, in the family house or will they build a house in Nandom Town?* "They will come here. If they come with money, they will put up a nice building, but sometimes I think that they will not come: that they prefer to stay down south. They should have come home when my father died, when my mother died, to stay in the house. If not because my own husband died and I am staying in the family house, nobody would be staying here and the house would be abandoned. George should have come home because he is the eldest brother alive."

Bernard, Francisca's son from her first marriage, is a teacher in a town near Techiman. He sometimes comes home for funerals in his father's house. During such visits, he usually comes to greet his mother. But Francisca says that he doesn't help her in any way. This year, she has sent him two letters to ask for help but she hasn't heard anything from him. The fact that they actually wrote the letter might suggest that he has helped Francisca in the past. Initially, she denied that. Later she said that two years ago, she visited him in the south. She stayed with him for about a month. He gave her a half piece of cloth and paid her lorry fare back. The youngest son, Patrick, was alone in the house. The other two children were in (boarding) school. Such 'help' does not solve Francisca's problems, but it would not be correct to say that Francisca, Magdalena, Francis and Patrick are 'alone in the world'.

The people who live in the direct vicinity of Francisca's house are all relatives. Besides the houses of Damieno and Agatha, there are the offspring of Nibebome's junior brother Beforɛ. Francisca says that she can't go to these people for help; they wouldn't give anything to her. Even in the time that she used to help them on their farms, they would only give her a very meagre amount of food. The only one who used to help her was her brother Lawrence, who died in 1998. He was living in Tamale and he did not come home often because of a conflict with his first wife, Agatha. Whenever she was in dire need, Francisca used to travel all the way to Tamale to request his help and he would give it to her, including the bus fare to return to Nandom. Lawrence's help had already become less after their mother died in 1997. Lawrence's children are all working outside the area. Most of them have good jobs. They often come home to visit their mother, who is living in the house next to Francisca's. Francisca says that these people have never helped her either.

"When I harvested my corn I sent some to Agatha to roast. She's my sister-in-law and she doesn't farm so I thought it would be good if I send her some. But she refused to accept the corn and sent it back. When I harvested my groundnuts I also sent some to her, but she refused again. She said that I should give it to my children to chop. This means that she doesn't want to help me. Because if she would accept it and later I come to her it would be more difficult to refuse me."

Hospital bills are always a problem, especially when Francisca is sick herself and she can not brew or engage in other income-generating activities. The relatives from Nandom-Pataal who have been helping with school fees do not help to pay hospital fees. "We have to try and get the money ourselves. If you can't buy the medicines, it means you have to go home and wait till you get better. Or we can go for local treatment. But that one also costs. You have to give fowls or something else to the herbalist." *Is there nobody else who can help you when you are very sick?* "You may think that they will help you, but when you go and ask them, they will say that they don't have it either." *Your sister-in-law Agatha who lives next to you, she has wealthy children and she receives a pension. Why can't you go to her for help?* (Patrick answers) "We don't know why she doesn't want to help us." *Have you ever gone to her and asked her for help?* "Okay, I think we have never done that. But sometimes we come home from school and Agatha sits here with my mother. When we talk about school fees or hospital fees, she will not say anything. She doesn't offer to pay." (Francisca continues) "You know, my brother Lawrence left her for another woman. Agatha complains that he left her with all the children to take care of. She says that a woman should take care of her own children. That she cannot take care of my children." *But nowadays, her own children are grown-ups and they have jobs. They are actually taking care of her, aren't they?* "That is true, but I think there is something else. When my brother went and married another woman, we all liked that woman. And Agatha was not happy about that. I think that is why she doesn't want to help us now."

In the hospital, there are five groups of people who do not have to pay for treatment. One of the groups is what they call the 'paupers': very poor people. If you go there and say that you are very poor and you can't pay the bill. Will they not treat you? "They won't treat me. You know, every person will say that he can't afford to pay and everybody will go for free treatment. Anyway, I am almost 60. That means that next year I don't have to pay anymore."

Indeed, the elderly also get free treatment. Besides the 'paupers' and the elderly, the three other groups are civil servants, pregnant women and children under five.

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Family cattle can be an important source of livelihood security. Whereas most security endowments are owned by and accessible to individuals or households, family cattle are under the custody of the family eldest, who is supposed to use the cattle for communal and ceremonial purposes. In theory, family cattle can be sold to buy grains for the different households in times of food stress. During my time in the field, I often inquired about the role of family cattle. It always remained sort of a blind spot, however. The role of family cattle is changing fast. In fact, many families in the research area no longer have family cattle, and those who do seem to have varying 'rules of the game' concerning the use of these cattle. It is unclear what exactly happened to the family cattle after Francisca's father (Alfred) died in the mid 1970s. Alfred's junior brother (Emilio) claimed the right to the cattle. Francisca doesn't know whether Emilio claimed the entire herd or only part of it. Presently, Emilio's son Damieno is a cattle owner. He has probably inherited his father's cattle. In the old inheritance system that was guided by matrilineal principles this would not have happened, because father and son are from a different 'bello' (matri-lineage). When Emilio died in the 1980s, however, the practice of maternal inheritance of movable properties had been abandoned. That is how Damieno could inherit the cows of his father. To own the family cattle entails certain responsibilities: 'a man who owns cattle can take care of people'. Damieno, who is Francisca's direct paternal cousin, should in that sense feel responsible for the well-being of Francisca and her children. They are from the same patrilineage. According to Francisca, however, he has never helped her in any way.

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Francisca's in-laws have never helped her, either. Initially, when I asked Francisca whether she came home from Nandom-Pataal 'empty-handed' after her third husband (Saamɛ) had died, she answered: "I had nothing. The Pataal people never gave me anything. I had to struggle to feed and cloth my children, to send them to school. They never helped me, nothing." Later, this statement had to be qualified on one important point. Although Francisca may not have received any help herself, the children can go to their late father's brothers and the sons of their father's first wife (Edward and Joseph) to ask for help. These relatives have been paying most of the children's school fees and other expenses related to education. The fees for primary school and junior secondary school are relatively low (between 3,000 and 15,000 cedis) and affordable to most households. The fees for senior secondary school, however, are quite high. In the questionnaire survey, we recorded an annual income of 422,000 cedis for Francisca's household in 1999. The fees for senior secondary schools varied, but in the north, 250,000 cedis was quite average. More than half the household budget would be invested in education if Francisca paid one child's Senior Secondary School fees herself. When other costs, such as books and uniforms are added, it is even worse.

Francis emphasised that his paternal uncles and cousins only help with school expenses, that they have never helped them with food. In times of extreme food stress, Francis sometimes had to deceive his uncles. He would go to them and ask for money to buy pens or note-

books. Instead of buying these items, he would go to the market to buy gari for the house. The money Francis, Magdalena and Patrick get for their education comes from different paternal uncles, half brothers and cousins. They have to go around and beg them for money. If what they give is not enough, Francisca has to try to fill the gaps. Francis' half brother (Joseph), who is a farmer in Nandom-Pataal, has been helping with small amounts, for example to buy pens. The other half-brother (Edward), who is an agricultural extension officer in Jirapa, has been paying larger amounts for school fees. One year, when Francis had to pay his SSS fees, Edward did not have the money to help him. Fortunately, Francis' cousin Gladys who is living in Bolgatanga paid. Her father was a medical doctor, but he lost his job. "He was dismissed from work because he operated someone and the fellow died," Francis grinned. Gladys is a pito brewer. *Can a pito brewer make so much money that she is able and willing to pay the school fees for her cousins?* "It is possible. Some brewers can make a lot of money. Look at Akuleman in Nandom Town here. They can build big houses. Anyway, she didn't pay the whole amount. Lawrence also paid."

One evening, I discussed the relation between Francisca's in-laws and Francisca's children with my landlord, Mr. Kontana. He explained to me that the reason why the in-laws prefer to help with *education*-related expenses is that when the children are well educated, they might get good jobs and if that happens, they will 'remember' who helped them to further their education. So for those relatives, it is also an investment. This explains why they don't help with food and why they are not interested in helping Francisca herself in any way. I asked Mr. Kontana more in general about the obligations and responsibilities of a late husband's relatives toward the widow. Mr. Kontana answered that if the bridewealth has correctly been paid to the wife's parents, she belongs to the late husband's 'yir' (house/patrilineage). This means that they can ask her to come and help on their farms and in any other activity if the need arises. On the other hand, it also means that they are responsible for her and that if she is in need, they have the obligation to help her.

In the case of Francisca, however, no bridewealth payment had taken place in her last marriage and according to Mr. Kontana, Saamɛ's relatives customarily do not have any obligations or responsibilities towards Francisca. If Saamɛ's relatives help Francisca's children, they do so 'voluntarily'. It could be argued that the relatives of Francisca's second husband in Kentuo, who had paid the last bridewealth for Francisca, have certain responsibilities towards Francisca because she officially belongs to their house. As we have seen before, however, Francisca's relation with her in-laws in Kentuo was not good. After the funeral, Francisca's father-in-law sent her back to her family house in Gyengegangn.

Since the relatives of Francisca's third 'husband' in Nandom-Pataal customarily don't have any responsibilities towards Francisca's children, I asked Francis why his late father's relatives have been helping them. *These people who have been helping you with your school fees, do you think they expect anything back later, if you have a job?* "If I manage to get a good job, they know definitely that I will help them. For example, if their house is rundown, I will definitely put up a new building for them. And then, my brother's children, if something is lacking in the field of education, I will also help."

The position of widows in Dagara society is difficult. When they are still young, they usually return to their father's house because the chances of being courted by another man are smaller in her late husband's house. If the bridewealth has been correctly paid, the children

belong to the husband's house. They usually stay with the mother when they are still very young, however. Later, the brothers of the late husband can 'claim' the children when they grow up. If the widow does not find a new husband, she will be part of her father's and/or brothers' household. If there are no brothers in the house anymore, the widow has to take care of herself and her children. That can be very difficult, as we see in the case of Francisca.

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When asked about food aid from the state, the mission or other organisations, Francis replies: "We have never received anything at all. You know, the CRS,[43] they always give the grains to the headman of the village. He has to distribute it, but they don't give it to us." *Why is that?* "Because they say we're not from this area, that we are from Pataal where our father is from. We are excluded. They decided to share without us." When Francisca's mother was still alive, they used to get some food aid from an organisation with a Catholic background called 'Vincent de Paul'. "But since she died, we don't get it because they say that Francisca is not old, that she is strong enough to farm."

Francisca is a member of a women's group organised by the Catholic Church, called St. Monica's Widows Group. The group has monthly meetings and provides loans to its members. Initially, Francisca denied that the widows are sometimes helped in other ways. "They just console us with the word of God," she said. Later, it seemed that in the year 2000, the organisation received a donation from "the white men". It was a full truck, she said. There were all kinds of items, like maize, sugar, beans, cups, baskets, clothes, blankets and mattresses. Francisca says that the people of 'the board'[44] had shared all the good things among themselves. At one meeting, the leftovers were shared among the widows. Unfortunately, Francisca did not attend that meeting. Later a fellow widow came to bring her a shirt. That was all they gave her. Francis and Francisca have never heard of NADMO.[45] Francis doesn't know of any organisation that helps poor students pay their school fees.

One day, after the last interview, I visited Francisca's house just to greet her. Some harvest was drying on the roof. I climbed up together with her son Patrick. From the roof I saw two piglets in an abandoned room. I asked Patrick about the piglets. He replied that they got the piglets recently. Francisca was able to get the piglets trough an organisation called 'Catholic Action'. The animals were not given to her for free. She had saved some money with a group of women and with the money they bought a pig together. When the sow delivered, the piglets were shared among the members of the group.[46]

Adapting to hunger

In the research area, reduction of food intake is a common response to seasonal and *un*seasonal food shortages. If in 'normal' years people can meet food requirements throughout the year, eating less can be labelled a *coping* strategy that is only employed in times of 'unusual' stress. If conditions worsen and the same household has to deal with a food gap almost every year, eating less has become an *adaptation* to 'normal', seasonal food shortages. When in a

[43] CRS stands for Catholic Relief Services
[44] According to Francisca, the board consists of Reverent Sisters, the Catechist and some group members.
[45] NADMO is the National Disaster Management Organisation.
[46] For more information on 'Catholic Action', see Schijf (2004).

certain year the harvest is much below what now has become 'normal', or when the household is faced with another unusual stress, this adaptive strategy can be intensified by eating *much* less. This again could be called a coping strategy. But what if a household's agricultural production is minimal, and the other sources of livelihood, including social support mechanisms, are insufficient to fill the food gap? Such a household is faced with food shortages every year, and not only in the lean season. By force, they have to 'adapt' to a situation of chronic hunger that is intensified in the lean season. This seems to be the case in Francisca's household.

When I asked Francisca to describe a normal day in the rainy season, she responded: "I get up early dawn; I fetch water; I sweep the compound and I go to the farm. From there, I come home and cook food for the children. If there is no food, I'll just heat some water, take my bath and go to sleep." She said this before we started talking about reduction of food intake. The indifference in the way she pronounced the last sentence struck me: "If there's no food I'll just heat some water, take my bath and go to sleep." To Francisca it is no longer strange or exceptional not to eat.

Does it often happen that you have nothing to eat all day? "Yesterday, we didn't eat anything at all and today we haven't eaten yet either." *Does it happen that you don't eat for two days?* "It happens. We don't have food in store and there is no money to buy it." *Those days that you don't eat T.Z., do you prepare vegetables or leaves instead?* "In fact, we haven't eaten T.Z. in months. Since our harvest got finished in March and we started buying food, we have been eating 'gari' or 'konkonte'.[47] But yesterday, for example, it was late when I came from the farm and so I didn't get any vegetables to prepare either." There is no traditional granary in the house. The small quantity of grains they harvest is stored in a room. *Is there anything left at all; did you save a 'kadjin'*[48] *for emergencies, like disease?* "No, we haven't done that."

Is gari cheaper than konkonte? "Maybe the konkonte is cheaper.[49] But the gari, when you soak it in water, it becomes plenty and you get satisfied. That is why we buy it when there is not much money. We also buy the gari when we are in a hurry. You can prepare it very quickly. You just soak it in water and you add some sugar if you have it. We call this 'gari sawɛle'. In the rainy season, you make a soup with bean leaves or gyamboro. If you have salt, pepper, dawadawa, you can add it. It's good. You drink plenty water." *Why do you drink plenty water?* "If you take gari, you drink water for it to soak. It will fill your stomach, that's how we do it." *If you don't have money to buy soup ingredients, do you eat plain gari?* "At times, if we don't have it, we can beg salt, pepper or sheanut butter from our neighbours. And if you don't get it, you just soak it in water and eat."

Although my eyes are not trained to recognise malnutrition, I could easily notice that especially Francis doesn't eat sufficiently. He is tall, but extremely lean. His movements are slow, his cheeks and eyes are sunken. Francisca looks quite healthy. I guess it is more detrimental

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47 Konkonte and gari are cassava products.

48 For description of a 'kadjin' see pathway of Egidius Dugyi.

49 According to a friend, John Yirkuu, the gari used to be very cheap as compared to other types of food. Nowadays, it is becoming more expensive. Moreover, he says, there are different 'grades'. The grade A gari comes from the Volta Region and is expensive, because it is of high quality. The grade C gari is cheap but it is very rough. "To make gari is not easy. You have to peel the cassava, dry it, grind it and fry it. It's a lot of work. That's why it can be expensive."

to an adolescent than to an old woman to eat less. It should also be noted that I met Francis in August, at the peak of the lean season and just after the peak of male agricultural work.

Francisca's cash income opportunities are concentrated in the dry season. During that time of the year she sells more firewood and brews more often; the bean cake selling on Sundays is also more frequent in the dry season. During most of the dry season, they still have food from the harvest, however little it is. Francis estimated that last year, it was in early March that they finished the last food from the storeroom. In the farming season, when that food is gone, Francisca's income from other activities is minimal. I wondered whether Francisca accumulates some money in the dry season in order to combat the food shortages of the farming season. *Are you able to save some of your income from the dry season to buy food in the farming season?* "No, we haven't been able to do that. Even in the dry season, the money doesn't stay." One seasonal coping strategy is that Francisca sells animals to buy food in the lean season, while in the dry season, the number of animals can increase.

I also asked Francisca to describe a 'normal' day in the dry season: "When I get up in the morning, I fetch water and sweep the compound. When it's about 7 a.m., I go to the bush to look for firewood. Sometimes I go and cut plenty wood and heap it somewhere. I take only part of it to the house. On those days, I come home late, in the afternoon. But the next day, I only have to go, pick the wood and walk back. Then I can be home around noon. If I'm not tired, I will go to town to look for somebody who wants to buy my firewood. When I'm tired, I wait until next day. After that I cook food for the children and then I also eat, take my bath and go to sleep." Obviously, Francisca's day looks different when she brews pito.

In the dry season, are you able to eat twice a day? "Occasionally, when there are leftovers from the previous evening, we eat twice. But usually, we eat only once a day, or not at all, even in the dry season." *Before your food got finished in March, were you already buying food in addition?* "No, we did not buy food that time, only the soup ingredients." *So in the dry season, you have more income and you don't have to buy food. Do you always put some money aside for later on in the year?* "Like I said, it is not possible. The money doesn't stay."

(To Francisca) *In the past two weeks (in early August), have you earned any money?* "Two weeks ago I sold the bean cakes but I ran at a loss. Last week I brewed, but it rained and there were no customers. I also ran at a loss. I only sold firewood twice." *In the past two weeks, have you been eating every second day, or...?* (Francis answers) "At times we get the money and we buy the gari and prepare it with vegetables..." *with the money from the firewood?* "Okay, if we happen to contact our brothers at Pataal and they give us anything to use for papers and pens, we spend it on food, gari." *Can you not just go to your brothers to say that you are hungry?* "Oh, they know we are suffering but we can't force them." Francis cannot go to his brothers in Pataal for 'pen and paper money' anymore because he finished SSS in December. Before that, he went there quite often. At present, only Patrick can go there for school-related money. Francis received 20,000 from an uncle some weeks ago. This sum was to buy a passport. Francis wants to go to the 'Polytechnic'[50] in Tamale or Sunyani. He needs the passport and he also needs money to buy the forms.[51] This year, he was too late and he will try to organise everything for next year. He used part of the 20,000 to buy gari.

[50] The 'Polytechnic' is a school for higher technical education.
[51] In Ghanaian universities and polytechnics you have to buy forms to register.

The hunger season of 2000 is more severe for Francisca's household than in other years. This is because in previous years, she has been sowing more on other people's farms. This year, they have prepared a larger farm because Francis does not have to go to school. Francisca has to sow and harvest on her own farm so she has less time to sow on other people's farms. In other years, she would get food to cook for herself and the children *during* the farming season, when she worked on other people's farms. This year, they have to wait until September, October before they reap what they have sown. On the positive side, their food situation after the harvest is likely to be better than in other years.

It is early August now. When do you think you can harvest your first crops? "That should be by the end of this month." *So between now and then, how do you think you're going to pass these weeks?* "We probably have to go back to Pataal once more or when there is anyone who can help us..." Here, Francis gave me a hint that he would appreciate help from my side. I gave them some money (20,000 cedis) and one week later, when I came for the last interview, I asked them what they did with the money. (Francisca answers) "I used part to buy food and I will use the rest to buy guinea corn so that I can start brewing again. That way I will get more money to buy the food." It is Francisca who administered the money.

Investing in future livelihood security through education

When I first interviewed Francisca's household, I talked to Magdalena, Francisca's daughter. When I asked her how they have been able to pay their school fees, she told me that they often didn't pay at all. She said that the teachers usually allow them to stay and also pass on to the next class at the end of the year. Trouble arises when examination fees have to be paid and when you need your diploma. They won't award it until you pay your accumulated debt.

(To Francis) *Do you know why your mother sent all her children to school?* "Yes, I do. You know, if we don't further our education, we have to be farmers and my mother knows that the land is not fertile and moreover, the land is not ours, it is for her brothers. If some day they come back, they can take the land. We cannot resist. I could probably get some small piece of land from my brothers in Pataal, but my mother saw that there is no future in farming here." *But there are always food problems in your house. Have you never thought about temporarily quitting school to make sure the food would be enough next year?* "Hmm, the food problem is always there, but you know, I went to school when I was 10. If I had gone to school earlier, when I was 6 years old, by now we wouldn't be like this. I would have been in the Polytechnic or I even would have finished by now. I could have had a real job already. Then I would have been able to support my mother. Anyway, no, I never thought of quitting school."

The reason to go to school, does it also have something to do with the help you get from your brothers in Pataal? "Okay, yes. They pay our school fees and they don't pay our food." *And in SSS, did you get food in the school?* "Yes, but my sister went to school in Eremon.[52] That is a day school and she had to take care of the food herself. My mother usually gave her some of our farm produce, but that was never much. When she was there, she had to contact some kind people to help her. There are people from our village there." *Did your brothers at Pataal also help her?* "No, it is my brothers' belief that when you send a girl to school, all of a sudden she'll be pregnant and drop out. So for that reason, my brothers haven't paid much

[52] Eremon lies about 25 km south of Nandom.

attention to her education." *But who paid her school fees?* "The other relatives." *Which relatives?* "Okay, they are also our relatives from Pataal, but they are living down south. Magdalena would travel to Kumasi to contact this uncle and he would pay her school fees. He has his own farm and there, they get a lot from the farm."

Francis himself went to Nandom Senior Secondary School, which is a boarding school. They get three school meals a day. The first year (1997), Francis' uncle Lawrence paid his school fees, but the following year, this uncle died. Francis could get only half the money together (mainly from his cousin Gladys in Bolgatanga). Fortunately, payment could be postponed. In the final year, this sum was added to the total bill. Gladys paid the whole sum. When he was in school, he couldn't often visit his mother in the house. "Our lives were separate. Only in the holidays, I would come and help in the farm or around the house. Sometimes, when my 'sister' (his cousin Gladys) had paid the fees, my 'brother' (his half-brother Edward) would give me some pocket money. That one, I also used it to help in the house."

In January 2000, Magdalena went to Tamale to follow a 'Business and Management' course, which takes 3 years. After that, she wants to attend an additional 6-month computer course. Then she will try to get a job. The school fees were 150,000 cedis this year. Another relative from Nandom-Pataal paid the fees: Commander Yaw's wife.[53] Commander Yaw is a 'family brother' who is now an army man, living in Accra. Magdalena travelled to Accra to contact the wife.[54] She gave her the money for the first year. It is unclear whether she will pay again next year. The school provides accommodation, but she has to pay a fee for it; she also has to provide her own food. "I don't know how Magdalena is managing in Tamale," Francis said. Patrick is in JSS 3 now. Next year, he will try to go to Lawra SSS.

To summarise, Francisca has been able to send all her children to school. Two have finished Senior Secondary School and one will go there next year. Magdalena is furthering her education in Tamale and Francis (who is an intelligent young man) wants to go to Polytechnic next year. To be able to go to school, they had to ask a wide array of relatives for financial assistance. The relatives who assisted were predominantly Francisca's in-laws, especially after Lawrence died. Francisca's role in this has become less important over the years; the children now have to go round themselves. Francisca could have decided to keep Francis in the house when he was a bit older and strong enough to work in the farm. By not doing so, she has endangered the household food security for some years. It will still take a few years before they will be able to reap the fruits of their collective sacrifice. But if one, two, or all of them can get a salary income in the future, they will do better than they ever could have done by farming their limited land in the village.

'Freedom from hunger'

Francisca is a member of a micro-credit NGO: Freedom from Hunger. This NGO has been operating in the research area since 1995. Francisca is a member of the first hour. She takes a loan and in the following four months she has to play back the loan. The first week she doesn't have to pay. That is the so-called 'grace period'. Every Tuesday, the women gather

[53] Note that these relatives are not included in figure 8.1 because they are from another patrilineage.

[54] On several occasions, Francisca, Magdalena and Francis have travelled to Bolgatanga, Tamale or southern Ghana to call on their relatives for help. During the interviews, I never specifically asked them about the trade-off involved in making such a trip; the transport fees to southern Ghana are comparable to the price of a goat, and there is always a risk of going home empty-handed.

for meetings and for courses. The women groups are educated in subjects like hygiene, baby feeding, family planning, sexually transmitted diseases, etc. Francisca uses the loan as 'business capital' for her pito brewing and beancake selling. The last loan she took was 100,000 cedis, in early April 2000. The Tuesday before our last interview, she finished paying it back. For the next period (August-December), she will not take a loan because there is too much work in the farm. "I would find it too difficult to find time to brew." After the farming season, she will take a loan again. The loans are taken with a group of women called 'solidarity groups'. Together they are responsible for the money to be paid back. The groups have four to seven members, usually from the same village.

(To Ernestina, my interpreter who works for Freedom from Hunger) *Do the women have the freedom to use the loan to buy food when they are hungry?* (Laughs) "We advise them not to do that because later they'll not be able to pay back. We advise them to invest the money in their income generating activities and if they make a profit, they can use this money to buy food. (To Francisca) *Are these loans helping you?*[55] "It helps me, it's better than before. I always had difficulties to buy guinea corn for brewing pito and to pay school fees, too. If I use the money to help with the school fees, I have to work hard to pay it back." *So you also contribute in the school fees?* (Francis answers) "Yes, we go to Pataal and see how much they'll give us. If it is not enough, my mother will try to pay the rest." (To Francisca) *Have you ever used the loan to buy food directly?* "I have been doing it, but not often." Francisca has always been able to pay back her loans. *Before you started taking loans of Freedom from Hunger, did you also borrow money in town?* "No, my brother Lawrence used to give me money to buy guinea corn to brew." *Did you have to pay the money back later?* "No, it was a gift. I never took a loan before Freedom from Hunger came." (To Ernestina) *Is it true that most Dagara don't take loans?* "Yes, they are always afraid to borrow money. When we brought this program, they were afraid. They thought that we would put them in prison if they couldn't pay back. Most of them are even still afraid now, but it is changing because they see the benefits, too."

Photo 15
The harvest of the year 2000 is drying on Francisca's roof

[55] I asked Ernestina to explain to Francisca that she should not be afraid to tell the truth if this question had to be answered negatively.

Egidius Dugyi

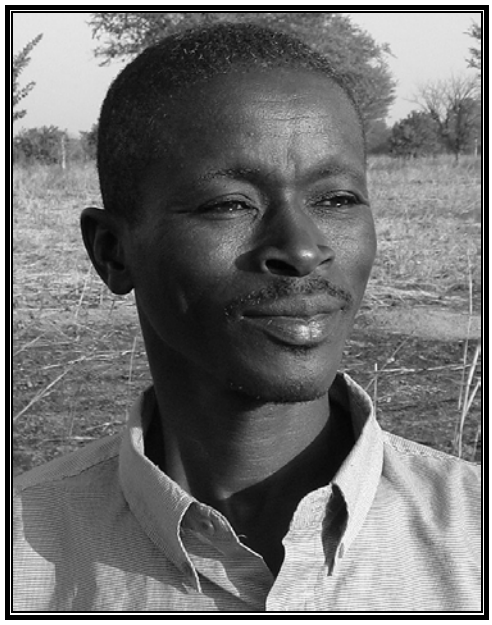
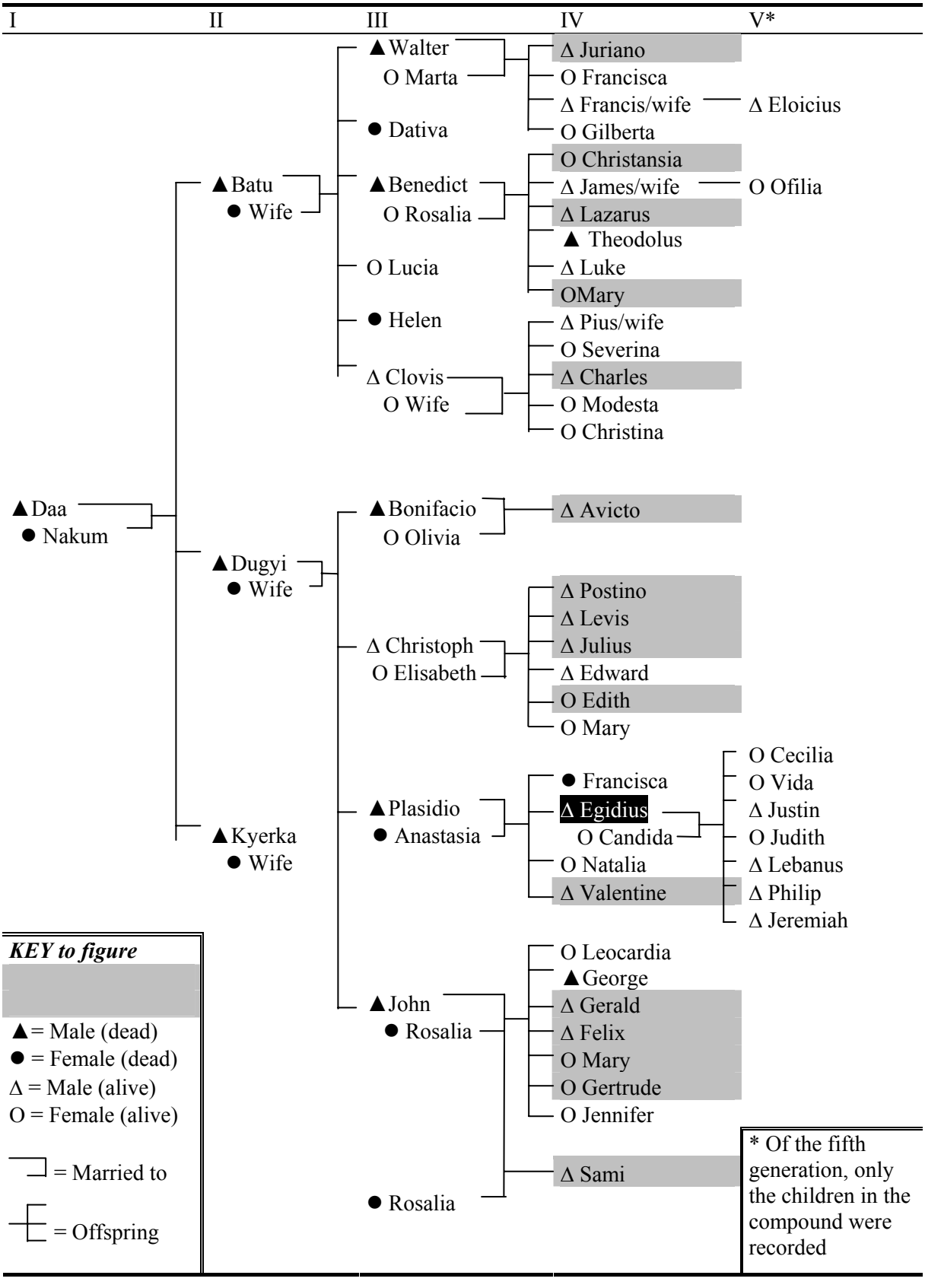


Table 8.2 Summary of Egidius' life history

1954	28 July 1954: Born in Naapale. Dagara and Roman Catholic.
± 1957	Egidius' father (Plasidio) goes to Tarkwa in southern Ghana to work in the gold mines. Egidius and his mother stay with Egidius' senior father (Christoph).
1960	Egidius goes to primary school in Nandom Town.
1963	Heavy rainfall and floods.
± 1965	Egidius' father returns from the Tarkwa mines. He farms together with his senior brother (Christoph) for about two years.
± 1967	Christoph builds a new house. Plasidio and Christoph separate their farms and granaries. Egidius joins his senior father, instead of his biological father.
1968-1980	Egidius drops out of school. In the rainy seasons, he works on the farm and looks after the animals. In the dry seasons, he does a little fishing and hunting, but not on a commercial level.
1981	January-April: First trip to southern Ghana. He works in a chicken feed factory. 22 August: Egidius marries Candida. He moves back from Christoph's house to his father's house and starts farming with him. In the 1981-1982 dry season, almost all the family cattle are stolen.
1982	4 July 1982: Egidius' first daughter is born (Cecilia). Egidius' mother dies.
1983	Drought causes partial crop failure and food shortage.
1984	14 December 1984: Second daughter is born (Vida).
1985-1988	Farming and seasonal labour migration. Around 1986, Egidius buys fishing nets.
1987	11 February 1987: First son is born (Justin).
1989	(Unpaid) appointment as Community Water Organiser. He can no longer go on seasonal labour migration. He starts fishing more seriously. Third daughter born (Judith).
1992	13 March 1992. Second son born (Lebanus).
1995	Third son born (Philip).
1997	Egidius' father dies. Egidius 'officially' becomes the head of the household.
1998	Fourth son born (Jeremiah).
1999	Egidius starts to work as a catechist. He now has less time for fishing.
2000	Egidius starts a catechist course in Kaleo.

Figure 8.2 Genealogy of part of Egidius' patrilineage



Family situation

Egidius Dugyi[1] is the head of a medium-sized compound in Napaale, the penultimate village before the Black Volta River, approximately six kilometres west of Nandom Town. He is 46 years old, married to one wife and father of four sons and three daughters, aged 2-18. He is a farmer and a catechist. In the dry season, he also fishes.

The 'yir': The patri-house

(For a schematic overview of part of Egidius' patrilineage, see Figure 8.2)

Egidius' compound has three sections. Besides Egidius' own section, the other two sections are occupied by James and Francis[2], who live there with their wives, children, and mothers. Initially, Egidius told me that Francis and James were his brothers. Later it seemed that they were cousins and finally, after thoroughly analysing the patrilineage, they appeared to be second cousins (see Figure 8.2). Egidius' great-grandfather (Daa) can be considered the founder of this lineage. A section of the village is called after him (Daa-teng). He lived in the second part of the 19th century and the first two decades of the 20th century. He had several wives, and they all lived together in one large compound. One of Daa's wives (Nakum) gave birth to three sons: Batu, Dugyi and Kyerka. When Daa saw that the house had become too crowded and that the fertile land around the compound was too small to feed all of them, he told the sons of Nakum to go and build a new house for themselves, about 800 metres from the old family house. This probably happened around the turn of the century. Daa and Nakum's three sons built their new house on the place where Egidius is living now. Daa was a farmer, like almost all Dagara in those days. What follows is a description of this patrilineage. Figure 8.2 shows the genealogy of the paternal side of Egidius' family. It starts with Daa and Nakum. Daa's other wives and offspring are not included.

The most junior son of Daa and Nakum (Kyerka) married a wife who delivered a daughter. Soon afterwards, Kyerka's wife died and he never remarried. His daughter married outside, so Kyerka's line ended. Daa's two other sons (Dugyi and Batu) did have sons, and their descendants now inhabit Egidius' compound and two other compounds that were built later. Dugyi and Batu were the fathers, grandfathers and great-grandfathers of the present compound dwellers. One of Dugyi's sons (Christoph[3]) and one of Batu's sons (Clovis) are still alive; both are about 80 years old now. Dugyi was the grandfather of Egidius. Dugyi had four sons: Bonifacio, Christoph, Plasidio and John. The third-born (Plasidio) was Egidius' father. Dugyi's sons received their Christian names after they were baptised as boys and young men. This happened in the early 1930s, shortly after the foundation of the Catholic Mission in

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1 Although Egidius went to primary school, his English is not very good. He understands it quite well, but he doesn't really speak it. The interviews were carried out with an interpreter (Abraham Navele) who is from the same village. The "quotations" in the text are Abraham's translations. My questions are in *italics*. When I thought that certain "quotations" would not be understandable to most readers because of the 'Ghanaian English', I have modified them into more British English.

2 Both James' and Francis' households were in my survey sample.

3 I did a separate interview with Christoph because there were several episodes of Egidius' early life that were not very clear to me. With his eighty years of age, Christoph is still a very lucid man. In the text I have indicated when certain information comes from him.

Nandom.[4] Egidius' parents were both Christians. Egidius' grandfather (Dugyi) was baptised on his deathbed, 'in periculo mortis'.[5] Although Dugyi was not a Catholic during his life, he only married one wife.

Presently, the patrilineage consists of three compounds. Initially, Kyerka, Batu and Dugyi lived together with their wives, children and grandchildren in one compound. They farmed together. Dugyi was the first one to pass away. After his death, Dugyi's sons still farmed with their junior fathers Batu and Kyerka. After Batu and Kyerka also passed away, the cousins still farmed together for some time. When all cousins had married, they split into two sections: Dugyi's sons and Batu's sons. This happened in the late 1950s. When Egidius was born, in 1954, they were still farming together.

Egidius was his parents' second-born. He had two sisters and one brother. His senior sister (Francisca) died of yellow fever as a child. Some years after Egidius was born, his father (Plasidio) started going on seasonal labour migration to southern Ghana, where he worked on maize farms. In the first two years, he returned for the farming season, but in the third year, he did not return for the farming campaign; he stayed away for about 7 or 8 years, working in the gold mines of Tarkwa. He never sent home any food, money or even a sign of life. Egidius, his mother and his sister were taken care of by Plasidio's senior brother, Christoph. When Plasidio returned, he and Christoph farmed together for about two or three years. Plasidio's eldest brother (Bonifacio) had by then already died. The junior brother (John) was working as a catechist in Fielmuo[6]. Two or three years after Plasidio returned, Christoph built a new house for himself, about 100 metres from the old house. Egidius' father (Plasidio) stayed in the old house with his wife and newborn daughter (Natalia). Batu's sons also stayed in the old compound, but they had separate farms. Egidius moved with his senior father Christoph to the new house. This must have happened around 1967. A few years later, when Egidius was about 16 years old, his only brother was born (Valentine).

Valentine, who is about thirty years old, has been living in southern Ghana for over a decade now. He first went on seasonal labour migration. In the second year, he did not return for the farming season. He initially worked on other people's maize farms in the Ashanti Region. After a few years, he migrated to the Afram Plains[7], where he initially cultivated yams. Later he found a job in a petrol station and stopped farming. He is not married and he has no children. He just comes home for short visits and funerals. Egidius' sister (Natalia) married in Kentuo,[8] but she returned to the parental house because of marrital problems. Egidius has no other direct brothers and sisters. Between Natalia and Valentine, another baby was born, but it died before its first birthday.

Christoph is presently still the head of the second house. Three of his four sons are living and working elsewhere in Ghana and one (Edward) is farming with him. His first-born

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4 The Catholic Mission in Nandom was the third to be founded in Northwest Ghana. This happened in 1933 (McCoy 1988: 189).

5 See Hawkins (1997: 74-76) and McCoy (1988: 95, 139) for this type of baptism and the role of medical treatment in the conversion process of the Dagaba/Dagara.

6 Fielmuo is a small market town in Jirapa/Lambusie district, approximately 15 kilometres Northeast of Nandom.

7 The Afram Plains is a sparsely populated area in the Eastern Region, on the west bank of the Volta Lake.

8 Kentuo is a village approximately four kilometres north of Naapale.

(Postino) is a priest and teacher at the Catholic Seminary in Kaleo[9]. His second-born (Levis) works in the Obuasi mines. The third-born (Julius) lives in Tiasi, on the Afram Plains. Christoph also has two daughters. The first daughter (Edith) is a Reverent Sister and a nurse. She is presently living in Kenya. The other daughter (Mary) has married in Dabagteng.[10]

Dugyi's first-born (Bonifacio) only had one son (Avicto), who lives in Kumasi. He worked for a chicken feed company for many years and is now a pensioner. Dugyi's fourth son (John) was a catechist. He lived and worked in Fielmuo until he died. One of his sons died young, and his other two sons are farming on the Afram plains. Two of his four daughters (Mary and Gertrude) married in other towns of the Upper West Region: Tumu and Fielmuo. John's first-born daughter (Leocardia) works as a caretaker in Saint-Theresa's Guesthouse in Nandom Town. Her junior sister (Jenny) is staying with her. After his wife died, John remarried.[11] With his new wife, he had one son before he died himself. This son (Sami) lives in Kumasi, together with Avicto, his most senior cousin.

Batu, the senior brother of Dugyi, had three sons: Walter, Benedict and Clovis. The only son of Batu who is still alive (Clovis) lives in the third house with his son (Pius)[12], his daughter-in-law and his grandchildren. Clovis' sister, who married in the village, is also living with them; she returned to her parental house after her husband died. Clovis has one more son (Charles) who has a farm in Kumawu in the Ashanti Region.

Francis and James, who live in the same compound as Egidius, are grandchildren of Batu. They have different fathers (Walter and Benedict) both of whom have died. Their mothers (Martha and Rosalia) are still alive and staying with their sons. James has two brothers. His junior brother (Luke) has lived in southern Ghana for some years, but at present, he is living and farming with James. The other junior brother (Lazarus) lives near Accra, where he works on a palmnut farm. James' senior sister (Christansia) is married and lives in the Afram plains. James' unmarried junior sister (Mary) is staying with her. Francis has one brother (Juriano) who is farming on the Afram Plains.

This short review of the patrilineage shows that in Egidius' generation, eleven out of seventeen males have migrated to southern Ghana. I did not record the whereabouts of *all* the female members of Egidius' generation, but at least five of them have married Dagara men who also migrated. In the section on family networks, I will describe how the migrants help their relatives at home.

Egidius' household

Egidius is presently taking care of 8 people: his wife, two of his three daughters, four sons and his sister. His 7 children are between two and eighteen years old. The eldest daughter (Cecilia, 18 years old) is in Jirapa, attending Senior Secondary School.[13] Since last year, the third daughter (Judith, 11 years old) has stayed in Nandom Town with a teacher (Andrews) and his wife (Dorothy). Judith looks after their baby and helps in the domestic chores. She does not attend school. Andrews and Dorothy feed her, but there is no financial arrangement

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9 Kaleo is a town in Wa district. It is a centre of catholic mission activities.

10 Dabagteng is the next and last village on the way to the Black Volta when you are coming from Nandom Town.

11 Both his wives were called Rosalia.

12 Pius was also in my survey sample.

13 Jirapa SSS is a boarding school.

involved. Dorothy's mother comes from Napaale and is related to Candida, Egidius' wife. Dorothy approached Egidius with the request of 'lending' her his daughter. Egidius agreed to send his daughter to Nandom Town because this means that he has one fewer mouth to feed, and her labour was not really needed in the house. Judith never went to school. According to Egidius, this is because he was already paying school fees for his first three children, and could not afford more. Judith is likely to stay with the teacher and his wife for several years. According to Egidius, "we can't just go and ask her back like that, unless they punish her: if they beat her or if they treat her very badly." Egidius' other children are at home, and have never lived anywhere else.

Egidius' one junior sister (Natalia) who married in Kentuo, is not staying with her husband anymore. The husband travelled to southern Ghana about six years ago (1994). She initially joined him, but soon realised that he was not taking good care of her. Therefore, she decided to return to her parental house in Naapale. She is now part of Egidius' household. Her two children are with the husband's family in Kentuo.

Egidius' father died of an untreated hernia. This must have happened in 1997. In 1996 he was still alive; we found his voter's registration card issued in that year. When he died he was about 80 years old.[14] The mother died of a snakebite in 1982.

Egidius' wife Candida is also from Naapale. Just like Egidius, she is a Dagara. Her parents are still alive and she has four full brothers and four full sisters. A fifth brother died last year. Candida is the third-born. Of the brothers, Charles is the eldest. He went to Middle School and is working in Kumasi, in the Star beer factory. The second (Francis) has a maize and yam farm in the Ashanti Region. He never went to school. The third (Geitin) is in Jirapa. He went to Nandom Vocational School to become a mechanic, and has his own workshop. He is linked to the Producer Enterprises Promotion Service Centre (PEPSC).[15] The fourth brother (Danis) is at home. He went to Junior Secondary School, but he decided to become a farmer. Two of Candida's sisters are married, both within the village. One sister is still at home. The youngest sister is presently in Bolgatanga; having finished SSS, she is now following a 'Post-Sec.' training in typewriting and computer skills.

After her first child was born, it was found that Candida's mother had breast cancer. Both breasts were removed. Candida's father got a job as a compound cleaner in the hospital. He stayed there for many years, working his way up to be a foreman of the hospital labourers. He probably has a small pension now, but Candida is not sure about that. Candida only went to school for one year. "I had to help in the house because my mother did not have breasts," she said. She had to prepare food for her junior siblings because the mother was a full time pito brewer.

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[14] According to a Ghana Citizen Identity Card, Plasidio was born in 1924. Another card however states that he was 57 years old in 1973. If that is true, he must have been born in 1916. In the reconstruction of life histories, it was often very difficult for the respondents to place events in time. Official documents like baptism cards, voter registration cards and even receipts of purchased goods can be of great value. As this example shows, however, official documents can contain considerable inconsistencies, too.

[15] PEPSC is a non-governmental organisation (NGO) that supports small-scale industry. It was founded by Catholic Brothers (FIC) from the Netherlands (see chapter three).

Egidius' childhood (1954-1970)

Egidius was born on 28 July 1954 and baptised some days later. When he was 6 years old, he was sent to primary school in Nandom Town. When Egidius was in primary 6, he had to leave primary school; today he can read and write. He understands basic English, but he does not speak it very well. When Egidius was a small boy and his father was working in the gold mines of Tarkwa, he lived in the large family compound. Egidius' mother (Anastasia) also stayed in the family house. She did not return to her father's house, even though she had not heard anything from her husband for many years. Before Egidius went to school, he looked after the family cattle, together with some of his cousins. It seems to me that a boy perhaps four years old is a bit young to herd cattle, but when I interviewed Egidius' uncle, he confirmed that the boy was a shepherd before he started going to school. He didn't look after the cattle alone; he was together with his cousins. In the years that Egidius attended school, he also assisted on the family farm.

The time that you were a small boy, was it a happy time for you? "That time I was not happy because I did not have time to rest, and the reason too, that I was not happy, was that my father was not there. Nobody was there to buy a school uniform for me. The other boys in the class teased me. I was chased out of school before I completed. They sacked me because I did not have the school uniform." Still he went to school up to p6. In fact, Egidius dropped out one year *after* his father returned from the mines.

When Egidius was about 11 or 12 years old, his junior father (John) went to Tarkwa to ask Egidius' biological father (Plasidio) to return to his wife and two children in Naapale. Plasidio was not happy to come because he realised that he wouldn't be able to get a job back home, but he finally agreed to come back and take up farming again. Egidius does not know why his father never asked his wife and children to come to Tarkwa to stay with him. Egidius' junior siblings (Natalia and Valentine) were born after the father came back from the mines. This explains the large gap between Egidius and his junior brother and sister. *When your father came back, how did it change your life?* "When my father came back, that time when he would call me, I would not come because I don't know him. I don't know that he is my father. Later on, I was happy." *When he came back, did he start farming for himself or together with his brother Christoph?* "They started together, but later they separated. Christoph built a new house for himself and my father stayed in the old house." Surprisingly, Egidius moved with Christoph to the new house instead of staying with his real father. "I was working with my senior father and only if my father really needed me, I would have to help him in his farm." I have not found a satisfying answer to the question why Egidius didn't stay with his real parents. According to Christoph, Egidius was always in his house because he wanted to be with his cousins (Christoph's sons), especially Levis who was his age-mate. Christoph: "After school, Egidius was here the whole day with Levis until he sleeps. If we tell him to go back to his house, he won't go, so we allowed him to stay here. That's why he was eating and farming with us."

Christoph did not have a dry season occupation; he was a full-fledged farmer. After the harvest, he used to make mounds of crop residue and earth on his farm so that the land preparation was easy when the first rains had come. "You just break the mounds and you can sow." He also kept cattle, goats, sheep, and poultry. Egidius' real father farmed and he kept poultry and goats. Besides that, in the dry season he used to dig wells and he made hoe handles,

pestles and mortars (wood carving). He never owned cattle. About his mother, Egidius said: "She was not a [pito] brewer. The only job I remember her doing was making the sheanut butter. Sometimes she sold it in the house and sometimes in Nandom market."

'Saa lob yie': The rain destroys houses (1963)

From the time that you were a child, do you remember whether there were very bad years in terms of harvest? "I know a year, but I can't exactly tell which. That year, we call it 'saa lob yie'. It means: the rain destroys houses.[16] The rain fell very heavy and we didn't get a good harvest." *Did your house also collapse?* "Yes, we all had to move to the chapel and they had to rebuild the house." *So that year, 1963, how did the crops do?* "That year, in the lowlands, there was nothing. Only in the high area we could get something." *And the granary?* "Okay, the house was partly destroyed but the granary was in the middle of the house and it survived. That time there was only one granary for the whole house." *You were only 9 years old when this happened. What do you still remember?* "Okay, there was more hunger than ever." *Do you remember what your family did to get enough food to survive?* "That time, we had cattle, so we called the butchers to come and buy, so that we can buy the food." *Was it possible to get food in the market?* "Okay, that year it was there but not much as these days in the market. Other people didn't harvest well either." *Have there been other years that you were in the same situation, that you didn't get anything from the farm?* "Yes, there is a year: last year. We didn't get much. There was a lot of water: floods." It is not very likely that between 1963 and 2000, the only 'bad year' was 1999. As we will see below, there was a very bad year in the early 1980s, too, but Egidius doesn't remember many bad years. This does not mean that they always have food in abundance; what they harvest is never very much and seasonal shortages are common, also in 'normal years'. According to Egidius, they often eat less in the farming season.

When I interviewed Christoph, I hoped to get a more detailed and reliable account of the events in 1963 because he was the head of the house, the decision-maker, in those days. His story is quite different from Egidius': "Our house did not collapse. The catechist went around the village to look at all the houses. When he came to our house, he said: 'You people are very lucky. All the houses have collapsed and yours is still standing.' People came to our house to seek shelter." *That year, how did your crops do?* "The millet and the groundnuts did well, but the millet fell because of the rain and so they were full of mud. Some were even germinating on the ground." *Did you suffer for food that year?* "Okay, the food situation was difficult that year because my sister's husband's house and granary had collapsed and we also had to feed them. They brought the children, too. The harvest was not very good and we had extra people to feed." *So that year, what did you do to get enough food, for the other people, too?* "That year, we still had the old food from 1962. I always tried to store one year's amount of food." *Did you also sell cattle that year?* "No, I didn't sell cattle to buy food. The food I stored was enough." *Did other people also store food in their granaries like that?* "Most people always sold what they had left or they used it to brew pito." *For how many years were you able to store your grains?* "No, not years. What I did was this: At the time of the harvest, I take out the old grains and I clean the granary. I put the new grains inside first and the old grains on top. So I start eating the old grains and maybe round about this month [July ending],

[16] Literally 'saa lob yie' means: 'the rains falls houses' or 'the rains make houses fall'.

the old grains are finished and I start to eat the new grains. That is my plan. I never sell grains. Other people do sell their old grains because they think they have enough. But you don't know how the rain is going to be next year so it is better to store it."

Egidius as a young man (1970-1981)

As I mentioned above, Egidius stayed with his senior father after his real father had returned from the Tarkwa gold mines. As a teenager, Egidius says, he was looking after the family cattle.[17] In those days, the cattle of Dugyi's line and Batu's line were together. The number of cows oscillated between 30 and 40. (To Christoph) *When the cows were plenty, did you often sell cows?* "Yes, we would always sell the oldest cows. We would call a trader or butcher from Nandom Town to come and buy it." They used to keep the cattle in a kraal that was surrounded by a wooden fence. In the farming season, Egidius would work on the farm in the early morning. Around nine o'clock, he would release the cattle from the kraal. To avoid crop damage, Egidius would pasture the animals in areas where no farms had been established.

In the morning, Egidius did not usually take food in the house. He used to gather and eat wild foods in the bush, while he was herding the cattle. "I always looked for 'saan liɛne'. That is a root that looks like cassava, but it is sweet and there is more water inside. We also ate the 'bata', a yellow fruit. And another one: 'orɛ' (a sour yellow fruit). When there is hunger, we still eat these things." *When was the last time you have eaten this?* "As for the bata and the orɛ, I still eat them. When I go to the farm and I see it on the way, I will stop to take it. It's good. But the 'saan liɛne' I have never eaten it again since I am a grownup." Egidius also used to mix cow milk with the yellow powder of the 'dawadawa' pulses. He used to stay out with the cattle all day and in the evening he returned them to the kraal. After he returned, he would get food in the house.

In the dry season, Egidius would release the family cattle in the morning. Egidius didn't have to follow the cattle because in those days, cattle theft was not rampant, he says. Every day, Egidius went to the Black Volta in the late afternoon to collect the cattle. The animals always stayed together and it was easy to find them because they liked to go to a certain place by the river. The cattle slept in the kraal every night.

In the dry season, there were several other things to be done during the day. After the harvest, the rice farms had to be prepared for the next farming season, and they had to clear the millet and guinea corn farms. "After harvesting, you have to go and remove the whole plant from the farm. Children usually do that. They lay them down like that (makes sign of two parallel sticks). We usually do that around February." The houses also need maintenance and repair after the rainy season. Another dry season activity was fishing. "We did not have nets or anything. We went to a tributary of the Black Volta where we blocked the water on a certain place. We take some buckets or calabashes and remove the water like that. When it is dry, we take the fish and bring it to our houses. That time we didn't know you could sell fish

[17] I have the impression that when boys are old and strong enough to seriously work on the farm, they cease herding cattle. If there is no younger boy available to take over the job, a relatively grown boy will still do it, but this is considered a loss of labour power. It is very important for a household to have members of all ages and both genders. In 'my house' in Kogle, there were no boys of the most suitable age to herd cattle, so 19-year old Kwaku looked after the cattle. Instead of taking the cattle round, he used to tie the animals with very long ropes so that he could also work on the farm. This was done to avoid a waste of potential labour.

in the market, we just chop it." Egidius and his friends also used to go to the Black Volta River to look for shellfish. "That one we also brought it to the house. We never sold it."

Communal hunting ('yɛroŋ') was also practiced in the dry season. Egidius' father used to be the one who organised these hunts for Naapale. The hunting is announced and the men gather in a large group. They set fire to the bush and they use the 'dakora' (bent throwing stick) to kill the animals that try to escape from the fire. Those men who had bows and arrows or guns had to go in front so that they would not shoot their fellow hunters. The men from several villages would gather to hunt in different parts of the Nandom and Lambusie areas. The number of men could be over two hundred. They would line up and move forward. If a man killed an animal, he had to give a front leg to the man who had organised the hunting, like Egidius' father. Another part (the head or the intestines) had to be given to the man who reached the fallen animal first. They always ate a lot of bush meat in the dry season, Egidius says. Nowadays, this type of communal hunting is banned in order to prevent bushfires.

In December 1980, Egidius went on seasonal labour migration for the first time. He went to Tanasu (near Kumasi), where he worked for a company called "Agricare". The factory produced chicken feed. Egidius' cousin Avicto (the eldest grandson of Dugyi) was working in that factory. "He was in charge of employing the workers, so it was easy for me to get that job." Egidius was paid quite well, better than on the maize farms. He slept at his cousin's house. For the lunch break, the company used to provide a meal of kenkey every day. Avicto is still in Kumasi, but he is a pensioner now.

Marriage and increased independence (1981-1997)

Egidius married in 1981, on the 2nd of August.[18] *That is the middle of the farming season… the hunger season. Is it common that people marry in August?* "Yes. Why? Okay, That time the food was there. The whole time, people could eat. In the olden days there was a lot of food." *Did you go to Kumasi in the dry season of 80-81?* "Yes, I went to Kumasi in December 1980, to go and look for money to buy my wife's wedding cloth. So I came and married in 1981, in August. Next year after the harvest, I went back to Kumasi." *The year that you married, was it a drought year?* "As for that one, I can't tell. I don't think so."

In the dry season after Egidius married, almost all the family cattle were stolen. This happened on a day in the dry season when the cows were left to roam in the bush near the river. Only two cows returned. It was not only *their* cattle that were stolen; all the cattle of the village used to graze near the river, and there were over a hundred heads. The story goes that this cattle theft was a multi-ethnic conspiracy, involving Dagara, Fulani, and Mossi people. Some Dagara from the village acted as informants. The Fulani-men, who are very skilful with cattle, manoeuvred the cattle across the Black Volta River into Burkina Faso. They drove the cattle northwards, along the river. Near Hamale, at the border, they crossed back to the Eastern bank of the river. In Hamale, the Mossi cattle traders had some trucks ready in which the cattle were loaded. From Hamale, they went south again to Kumasi, passing through Nandom Town! The thieves were never caught. Even the boys from Naapale who were involved were never caught, although everybody knew who they were. "They moved to Nandom Town where they rented houses and married several wives. They could spend a lot

[18] Information retrieved from baptismal card.

of money," Egidius says. Luckily for Egidius, the bride-wealth for his wife had been paid the previous year. Family cattle had been used for this purpose. Not all the cattle were stolen that day, and the two remaining cows were kept around the house. Some people, whose cattle had not been stolen the first time, left their animals to graze unguarded at the riverside again, until one day, the whole operation was repeated, and the cattle were stolen again.

After Egidius married, he moved back from Christoph's house to the old house where his real parents were living. He started farming with his father. According to his uncle Christoph, this was because Egidius' mother was by then sick and his father was not very strong anymore, either. Egidius went on seasonal labour migration between 1980 and 1988. Only in the 1983-1984 dry season did he not go, since he couldn't get the money for the bus fare. This happened after the crop failures of 1983. This surprised me because I had expected that young men would have travelled to southern Ghana in search of money to buy food (as a coping strategy). In fact, I doubted whether Egidius and I were talking about the same year. Later I found out through Egidius' baptismal card that his second daughter (Vida) was born on the 14th of December 1984. This means that she was probably conceived in March 1984, so it is indeed likely that Egidius stayed in the village that year. Egidius usually went down south after Christmas, and most years he came home in April or May.

Egidius remembers the last year he went on seasonal labour migration very well, because that was the only year that he had to work on the maize farms. In the chicken feed factory, his senior cousin (Avicto) was no longer the one who employed the labourers. "The last year, I went there and after a month they said that I could only stay if I would come and work for them permanently, the whole year. I didn't want that and that's why they didn't employ me again. So they paid me my money for one month's work and I had to go and weed on the maize farms." Nowadays, the factory no longer employs people on a seasonal basis. Moreover, you now need a diploma to be employed. "This time, you need SSS, because they work with machines now."

In 1988, Egidius wanted to buy a bicycle with the money he earned. With the money he had made on the maize farms, plus the money from a month's work in the factory, he was not able to buy the bicycle. He borrowed money from a family brother who was also in Kumasi and bought the bicycle. We know this happened in 1988 because Egidius has kept the receipt all these years. Another reason why we can be sure that 1988 was his last year of seasonal labour migration is that from 1988 onwards, he was appointed a 'Community Water Organiser'. With this responsibility, he could not travel to Kumasi for several months.

In 1985 or 1986, he used the money that he had earned in the factory to buy fishing nets. For some years he fished while still going on seasonal labour migration between January and April. In 1989, when he had accepted the (unpaid) appointment as a Community Water Organiser, he decided to take fishing more seriously. He registered with the Fishing Division of the Ministry of Food and Agriculture in Lawra to get an official fishing permit. Since that year, he has always fished in the dry season. He does not have a canoe; instead, he enters the Black Volta at shallow places to cast his nets.

Drought and hunger in the early 1980s

I have heard that there were some very dry years around the time that you married, in 1981. People told me it was a very difficult time with hunger… "Since I got married, it was only last

year that was difficult about the food." *Okay, I want you to think very deeply. In 1983, it seems the whole of Ghana was suffering and only you did not suffer (laughs)?* "Aha eighty-tree, it is true, that year we find it very difficult. That is why my small brother went to Kumasi. My cousin Avicto, who worked in the chicken feed factory, took him in the house. He was actually a big man in that factory." The brother (Valentine) was about twelve years old. He was too young to work in the factory. And if this happened in 1983, there was probably no work on the maize farms because in southern Ghana, bush fires and drought had also caused crop failures. Valentine only helped his cousin Avicto in the house. In return, Avicto sent money and food to Naapale. *Do you remember whether he actually helped 'big'?* "It was just a help, not like a month salary or so. He knew that there was hunger. That's why he took the boy and fed him and sent some money to the house." *The money he got, was it enough to buy a bag of maize?* "In fact, that time he buys the food straight from Kumasi. You couldn't get food here in Nandom.[19] Anyway it was not a full bag, maybe half a bag." The junior brother returned to Naapale the same year.

That time, were there several years in a row that harvests were poor? "No, it was only that year." *What caused the problems that year when they sent your brother to Kumasi?* "For the wedding, I had spent a lot of food. I had spent a lot of money. Then after that there was no food, I had nothing." *Okay, I want to make sure we talk about the same year. You married in 1981. These problems happened in 1983. That year, the whole of Ghana was suffering. I don't think they were suffering because of your wedding (laughs)...* "Okay, no, I was thinking about my own situation. I married in 1981 and I had my firstborn in 1982. It was difficult. The other reason was the problem of rain. It did not come in time. It was getting to August, no rain. That was the main problem. It never came."[20] *So in that year were you able to harvest anything at all?* "Those in the low area, close to the river, you'll get small, but like this area (points at the area around the house, which is a bit high), you get nothing." *What did you sow at the river-side that year?* "That time we only did rice and yam, no guinea corn there." *Were you still farming with your father that time?* "Yes, that time, I was the strong man in the house to weed on my father's farm. My father was sick." *So what did you do to get food?* "It was the animals that were helping us. We were selling the animals in order to buy food." *What kind of animals?* "Goats, fowls, we had it, because in the previous years we had used the grain surplus to buy animals. So that year we resell it to buy food." *Did you have cows to sell that time?* "There were cows, but they were not for me. It was the family cattle. So I couldn't sell them. I could only sell my goats and chickens." Probably the cows were not many, either, since almost all were stolen in the dry season of 1981-1982. Another possibility is that the crop failure Egidius is talking about occurred before 1983. The exact timing of this event remained a bit of a mystery.

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[19] Later, I found out through other informants that 1981 was a year in which the food situation was very precarious in northern Ghana or at least the Nandom Area, while it was relatively good in southern Ghana. The other 'disaster year' (1983) seems to have been the other way around. In the north, farmers were able to harvest some millet and guinea corn while in many areas in the south, crop failures were very severe and the situation was further complicated by rampant bush fires. If the year that Egidius describes is 1983, then it is strange that they bought food in the South rather than the North. So it is more likely that he is talking about 1981.

[20] And finally, after 10 minutes of carefully putting the words on Egidius' tongue, he says that 1983 (or 1981) was a drought year. It should be clear from the above that 1983 is not a year that remains stamped on Egidius' memory as a hunger year.

Apart from Avicto in Kumasi, were there any other people who helped you? "My senior father (Christoph) was a very good farmer. He always organised people to work on his farm and he used fertiliser. He still had enough food from the previous year because his farms were big and he did not have a lot of people to feed. He helped us with some food." *Was he able to store his harvest? Did he have the technique?* "Really, he had some bitter leaves, for the insects who spoil the crops. So he put that one under the grain before he stored the food." Do you also use this technique? "As for us, we don't have it much, the food. We finish it before we can store anything. We don't have the harvest like that."[21] *Was Christoph a bullock farmer?* "No, no, but he could always get people to work on his farms."

Were there still other ways to get food that year? "Apart from these relatives, the mission people also knew that there was hunger. They brought a little food to share among the villages." *And did the Ghana government send any food aid?* "Yes, they sent some to the villages, but very little and the people were many. It reached us once: two bowls. The one from the mission was three or four bowls." *So with the animal sales, the help from Avicto and Christoph, the help of the mission, the help of the government, with these things were you able to save yourselves or did you still do other things?* "That time the women also sold firewood in town and sheanut butter to the government. They sold it to the government because nobody had money to buy it. So that way, we could get money and we buy some food in the market." *Were there still other things?* "I can't think of anything." *Maybe you sold some properties like smocks, your 'wireless'*[22]*, a bicycle?* "No, we didn't do that. Only last year I did something like that. I sold the old frame of a bicycle." (To Candida, Egidius' wife) *Did you do any other things to get food or money?* "We went out to look for vegetables and other wild foods. We can chop it in the house or sell it in the market." *Did you go to your father's house to beg for some grains, or was your father's food situation also difficult?* "He was better, because he was working at the hospital. He gave us some food."

So that time were you able to eat every day? "No, some days we don't get it." *What, T.Z.?* "Yes". *So those days that you don't get T.Z., did you eat other things?* "Yes, these days we would take vegetables, especially with sheanut oil." *In a dry year like that, can the sheanut actually yield well?* (my interpreter Abraham answers) "Yes, that year the sheabutter helped people a lot because when you have the vegetables or tree leaves, you add a lot of oil and you'll be able to eat it without your T.Z. The women process the sheanuts into butter for sale, but they also really want to have it in their own house."

When I asked Christoph something specific about the droughts of the early 1980s, he did not answer my question, but he said something interesting about the weather. "From that year up to now, the rain has been coming late. Before the drought the rain was always better."

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[21] Note that he earlier said that in the olden days, they always had enough food. When talking of the 1990s, he says that it is only in the last two years that he had to buy food (see below). His account is not very consistent. I have the impression that although the past two decades were *more* difficult, there have always been difficult years. On these occasions people would eat less without necessarily going hungry. It seems that this was quite normal to them.

[22] A wireless (pronounce: wallace) is a transistor radio.

The present (1997-2000): Farming, fishing and catechism

Since his father died in 1997, Egidius is officially the household head. In the rainy season, he farms and in the dry season, he fishes. He doesn't have any other paid jobs. His only other sources of money are the sale of animals and gifts from relatives. Candida and Natalia have their own sources of income (firewood and sheanut butter selling). None of the children has income generating activities. This year (2000), Egidius virtually didn't fish because he went to a catechist course in Kaleo for three months.[23] The full course takes 3 years (3 months every year). He has finished the first year. Since last year he has been working as the village catechist. His main activity is to teach the children the word of God and prepare them for the First Holy Communion and for the Confirmation. The lessons for the First Holy Communion start on the 15th of August. This takes about two months. In October, the children receive their First Holy Communion. The Confirmation lessons take less time. They start in March and in April the Confirmation takes place. The lessons are daily: Monday to Saturday from 8 to 12 in the morning and from 2 to 4 in the afternoon. Between October and March the catechist has several tasks with increased intensity around Christmas (December). Between April and August there is not much work for the catechist. It is the time for farming. The catechist tasks in August and September interfere with Egidius' own farming activities. That is the time of the second and third weeding and the first harvest. *How do you organise your farm work in those months?* "I get up early dawn to go to the farm. When the people from the village see that there is plenty grass in my farm, they organise themselves to come and help." *Is that because you are the catechist?* "Yes." *Do you also get a salary for this work?* "I have just started. They haven't given me anything yet." *Will you get anything later?* "As for that one, I don't know." *Other catechists, who have been working for some years, do you know whether they get anything?* "Okay, they sometimes get food because they don't have time to farm, but I never heard that they get paid." *This year, have they given food to you?* "No." *Do you think they will give food to you next year?* "I can't know." *What is the reason for you to do this work?* "The village people have chosen me." *You have always had some job besides the farming. It seems that you need this money. Will it be possible for you to make ends meet when you don't have this income because of your catechist work?* "Okay, I hope that I can still do the fishing when I'm a catechist and I want to take the livestock rearing more seriously. The problem is that the animals always die."

For 11 years (1989-1999), Egidius has been the Community Water Organiser of the village. He had to collect contributions for water provision. If the borehole got spoiled he had to go to the people of the Water Health Integrated Program of the Ministry of Health in Lawra to inform them and send for a repairer. The village people used to pay an annual fee, a fixed amount, to the program. By now the borehole has been paid off and the community just has to pay for repairs. They have a fund to which they pay 2,000 cedis every year. If the borehole needs repairs and the bill is too high, the people add guinea corn, millet, maize, etc. The grains are sold at the market to raise money for the bill. They have to pay both for the spare parts and for the workmanship. Egidius did not get paid for his function as Community Water Organiser. In fact, he complained to me that it was not an easy or nice task because the people never like to pay and they would accuse him of "chopping the money" while in reality it was

[23] Kaleo lies about fifteen km north of the regional capital (Wa).

impossible to take any money. “I did it for the village, because the water matter was really a problem in the past and the borehole gives us clean water.” When Egidius was chosen to be the village catechist, he resigned from his office as Community Water Organiser.

The 1999 floods

“Last year, we didn’t harvest much. There was a lot of water, floods.” *Which farms got spoiled?* “The farms by the riverside where I had sown rice, yams, and guinea corn. Only from the rice field, I could get something. And in the high areas I could also harvest. As for the riverside farm, in one part I had raised yam mounds with rice in between. That one got totally spoiled. On the other side, I had sown some rice separately. There it was a bit higher and I could get something. It was not in the middle of the water. The water could run away.” *So between the yam mounds, were the rice plants washed away?* “No, but they stood in the water for too long. The rains started the 14th of July[24] and it was after October that the water started running away. All the time in between, there was water. The water did not wipe the crops away, but it stayed there for a long time: July, August, September, and October. That was the problem.” The compound farm yielded up to expectation, however.

The harvest of 1999 was not enough to feed the household until the next harvest. Egidius already started to buy food in March. “Since that time, when I have a little money, I go and buy food because I know that what I have won’t take me through the whole year. Sometimes I have to sell animals to buy food.” *Do you have to buy food every year?* “No, it is since two years that I’m buying.” *So the harvest of 1998 was also insufficient?* “I had to buy, but not a lot, like this year.” *What caused the harvest of 1998 to be insufficient?* “The harvest was not very bad, but I had to sell food to pay school fees and there were plenty funerals in the ‘house’.[25] Every time we have to contribute millet or guinea corn.” *Did you manage to pay Cecilia’s school fees by selling food?* “Okay, I paid half. Someone else paid the other half.” *Who helped you?* “It was my cousin Postino, the priest in Kaleo.” *And your junior brother Valentine, does he also help you with school fees?* “Not with the fees, but he sends money to buy books, uniforms and soap.” *When your father died in 1997, did you have to pay for the funeral costs?* “My senior father Christoph provided the smock, but I had to provide the food and pito for the guests from far away and for the grave diggers.” *And the coffin?* “No, we didn’t bury him with coffin. It is too costly.”

So all the years before 1998, you didn’t need to buy food in the market? “No, but sometimes I bought food or pito when the farming group would come to my farm.” *This year and last year, you sold animals to buy food. Do you have any other sources of cash?* “This year, I didn’t do a lot of fishing, but I usually sell fish. There isn’t any other way.” *Do you not have any relatives down south or elsewhere who sometimes send money?* “Okay, only this year because last year my farm did not do well, I sent the message to my brother to help me with money. He sent 20,000 cedis. But this wasn’t even enough to buy half a bag of maize.” *Was this the first time ever that your brother sent you money?* He sent money before but that one was concerned with the children going to school, not for food. This is the first time for food.”

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[24] It is quite interesting that he mentioned this date so convincingly. According to the rainfall data of Nandom Town (at six km distance), no rain fell on the 14th of July, but July was indeed a very wet month in 1999 (303 mm against the 1980-1999 average of 176 mm).

[25] ‘House’ here refers to the patrilineage.

The 2000 farming campaign

What follows is a description of Egidius' farm activities in the year 2000. Egidius cultivated five different fields. Four fields are located in the direct vicinity of the compound, within a distance of approximately 600 meters. The fifth field is located near the Black Volta River. In the first compound farm, Egidius has sown guinea corn, late millet and maize. In some parts, the grains were intercropped with beans and soybeans. Besides the cereals and the legumes, Egidius' wife has sown vegetables: okra, biir, pumpkin[26] and yankboro. These vegetables are for home consumption. The women dry the vegetables so that they can be eaten in the dry season when wild soup ingredients are less abundant. Egidius has also nursed sweet potato seedlings next to the house. He transplants the seedlings to mounds on his farm near the Black Volta. Between the mounds, he will sow rice. This first compound farm lies directly behind the house. It measures approximately 1.5 acres. The maize is sown near the homestead where the land is more fertile. This is because maize needs more fertile soils than millet and guinea corn. Egidius cannot afford to buy inorganic fertiliser[27] and the use of animal dung is limited because Egidius doesn't own much livestock. Besides the part of this farm that is located very near to the house, there are some other small fertile areas in this farm where they sowed maize. On most of the farm, Egidius has sown the guinea corn and millet on flat land. It is only after the second weeding that he makes very small mounds around the stem. This operation is called 'to earthen up'. It is done to prevent the wind from blowing the high crops down. On some places, however, Egidius has sown the guinea corn and maize on larger mounds. There are usually twelve plants on one mound. *Why have you done that?* "It's because of these two trees (points at two leafless trees). They make the land fertile because they bear leaves in the dry season and they lose their leaves in the beginning of the rainy season. So we can sow maize here." *But why do you put them on mounds?* "As you can see, the land is a bit lower here (I didn't directly see it, but it is indeed lower). When the rain falls plenty, the water will stay here. The maize doesn't like that so we have to make the mounds."

Right behind the first compound farm, there is a second compound farm of approximately one acre. On this farm, Egidius has sown a 90 days variety of groundnuts called "China", intercropped with a traditional variety of bambara beans. These crops were both sown in the beginning of July. The groundnuts will be harvested in the beginning of October and the bambara beans will be one of the last crops to be harvested, even after the late millet in November.[28] Within this farm, an area of approximately 20 by 20 meters (0.1 acre) is reserved for an early maturing and high yielding variety of bambara beans. Egidius has raised low mounds for the bambara beans and between the mounds he has sown 'dorado', an early maturing and high yielding variety of millet. This plot is surrounded by a closed ridge or earth wall of about 40 centimetres' height. This ridge prevents the water from flowing off. According to Egidius, this variety of bambara beans "likes the water" and the 'dorado' can resist water better than the traditional millet variety. If the water is too much, he can break the ridge so that the water flows off.

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[26] Note that pumpkin is grown for the *leaves* just as much as for the fruit. This also applies to beans. The leaves are used to prepare soup for the T.Z.

[27] Instead of stating that Egidius cannot *afford* to buy inorganic fertiliser, one could argue that Egidius does not want to *take the risk* of investing in fertiliser.

[28] Yams can be harvested even later, usually around December-January.

The third compound farm is a small (0.1 acre) but very fertile field in front of the compound. This area is reserved for maize. Candida has sown pumpkin and okra in between. With two acres, the fourth compound farm is the largest. The principal crop in that farm is late millet, in some places intercropped with beans. A small area is cultivated with guinea corn. On this farm, there are three small depressions where Egidius has raised yam mounds (approximately 0.05 acre each). In two of these fields, he has sown rice between the yam mounds and in one he has sown maize on the foot of the mounds. Lastly, there is a small area where he has sown maize. Again, this is a place that is more fertile because of the presence of certain trees. On his fifth farm, near the Black Volta, Egidius has raised yam mounds and some mounds for sweet potato. Between the mounds he has sown rice. The size of this field is approximately one fourth of an acre.[29]

Egidius 'owns' all the land that he farms. In other words, he has not borrowed any land from relatives, friends or neighbours.[30] He has fallowed approximately 2 acres of farmland because the soil was exhausted and the yields had become very low. Moreover, a relative asked permission to use part of Egidius' compound farm to sow groundnuts and bambara beans.

Egidius estimates that the total area he has farmed this year is a bit larger than what he did last year, and he thinks that it should be enough to feed his people for a whole year. I would like to 'test this hypothesis' with a small mathematical exercise. The aim is not to produce a conclusive statement on the food self-sufficiency rate of Egidius' household in the year under analysis; the assumptions on which this calculation is based are too ambiguous and uncertain for that purpose. The objective of this exercise is to assist in interpreting land use data by relating these data to land productivity in this specific environment and to household consumption needs.

Table 8.3 shows the acreage Egidius cultivated with cereals, legumes and root crops. Egidius has cultivated 3.3 acres (1.32 hectare) with cereals, 1.15 acres (0.46 hectare) with legumes and 0.4 acre (0.16 hectare) with yams and sweet potatoes. Egidius' household has nine members. When expressed in 'consumer units' or 'adult male equivalents', the household size is 6.6.[31] Assuming a minimal daily food requirement of 2,800 kcal for an adult male and an average energy value of 3,600 kcal/kg for maize, millet and sorghum,[32] Egidius' household needs about 1,873 kilograms of cereal equivalents for a healthy life.[33] Assuming

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[29] I did not visit this farm. The acreage is Egidius' estimation while for the other farms I measured the acreage.

[30] See chapter six for a description of the land tenure situation in the research area.

[31] It is debatable whether the eldest daughter (Cecilia) should have been included (as I have). She is in a boarding school in Jirapa and only eats from the granary during holidays. But as Egidius mentioned before, he sometimes has to sell food to be able to pay the school (and boarding) fees. The third daughter (Judith) on the other hand is excluded because she is now part of another household. The household thus consists of one adult man (1.0); two adult women (1.5); two daughters aged between 13 and 19 (1.4); one son aged between 13 and 19 (0.9); two sons aged between 5 and 12 (1.4) and one baby (0.4). This gives a total of 6.6 consumer units.

[32] Adapted from Runge-Metzger & Diehl (1993: 198). I used slightly different figures in my analysis in chapter 6 (2900 kcal/adult male/day and 3500 kcal/kg grain equivalents). See appendix.

[33] Calculation: 2800 kcal divided by 3600 kcal/kg is 0.777 kg of maize/millet/sorghum for an adult man per day, multiplied by 365 days is 283 kg/year, multiplied by 6.6 consumer units. This results in an annual food need of 1874 kg grain equivalents for Egidius' household. According to FAO's "the state of food security in 2000", the minimum energy requirement for Ghana was 1,830 kcal/capita/day, i.e. about half a kilogram of grain equivalents per day (personal communication with Dr. Barbara Burlingame, Senior Officer of FAO's

20% percent post harvest loss and seed requirements,[34] this means that they have to harvest 2,341 kilograms of cereals, i.e. 1,774 kilograms per hectare.[35] It is extremely unlikely that they will be able to harvest that much; six hundred kilograms per hectare is more realistic.[36] If the cereals yield 600 kilograms per hectare, Egidius can get 792 kilograms. Again assuming a food requirement of 2,800 kcal/day per consumer unit and 20% post-harvest loss and seed requirement, the cereals can feed the household for 123 days, i.e. about four months. But of course, they still have their other crops.

Table 8.3 Egidius' acreage cultivated with cereals, legumes and roots and tubers in the 2000 farming season (in hectares)

field no.	*cereals*: millet, maize, guinea corn	*legumes*: groundnuts, beans, soybeans, bambara beans	*roots & tubers*: yams and sweet potatoes with *rice* between mounds.	*Total*
1	0.56	0.04	-	0.6
2	-	0.4	-	0.4
3	0.04	-	-	0.04
4	0.72	0.02	0.06	0.8
5	-	-	0.1	0.1
Total	**1.32**	**0.46**	**0.16**	**1.94**

Egidius cultivated a much larger acreage with yams than the survey average (more than 8% of his total farm size against a total survey average of less than 2%). When compared with cereals, yams have much higher yields in terms of weight, but the caloric value per kilogram is much lower.[37] Assuming a yam yield of 5,000 kg/ha[38] and 20% post harvest loss and seed requirement, Egidius can get about 640 kilograms, i.e. 908,000 kcal.[39] Assuming that one adult male needs 2,800 kcal a day, the yams could provide Egidius' household (6.6 cons. units) with adequate food for 49 days.[40] If the grains can provide Egidius' households with food for 123 days and the yams for 49 days, this leaves a food-gap of 193 days.

The groundnuts, beans, soybeans and bambara beans are important providers of protein. The energy per kilogram is a bit higher for legumes (especially groundnuts) than for cereals. Assuming a yield of 600 kg/ha, Egidius can harvest about 276 kilograms of legumes on the

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Nutrition Assessment and Evaluation). Note that this figure is per average person, not per adult male equivalent. With nine household members, these figures suggest that Egidius' household has a consumption need of about 1,670 kg instead of 1,874 kg.

34 This is the percentage used by the Ministry of Food and Agriculture.

35 Calculation: minimal required grain production (2,341 kg) divided by the acreage cultivated with grains (1.32 ha).

36 See chapter six for an elaboration of crop yields.

37 According to Runge-Metzger and Diehl (1993: 198), the energy content of yams is 5,940 kJ per kilo and that of maize, millet and sorghum between 15,000 and 16,000 kJ/kg.

38 Note that this is substantially below the regional estimates of the Ministry of Food and Agriculture. Between 1986 and 1999, the average recorded yield was 9,273 kg/hectare. In chapter six, I explain why these figures are most unlikely to be valid for the Nandom area.

39 Calculation: 640 kg * 5.94 MJ/kg = 3801.6 MJ = 907,953 kcal (1 kcal = 4.187 kJ).

40 Calculation: 908,000 kcal/2,800 kcal/day/6.6 consumer units.

0.46 hectare. Assuming an energy content of 4.655 kcal/kg[41] and a daily requirement of 2,800 kcal per consumer unit, the legumes can feed the household for another 70 days, leaving a food-gap of 123 days.

Between the yam mounds, Egidius has sown rice. Assuming that rice occupies about one third of the yam fields (i.e. 0.05 hectare) and that the yield of rice is about 800 kg/ha, Egidius should be able to get 40 kilograms of rice. The rice will feed the household for eight more days, leaving a food-gap 115 days, almost four months.

What does this mean? It certainly does not mean that Egidius' household will experience a food-gap of *exactly* 115 days. If one slightly adjusts the assumptions, the picture changes. I just want to indicate that even if the climatologic conditions are favourable, it is doubtful whether this household will be able to harvest enough from their own farms to sustain itself for a whole year. This does not necessarily mean that Egidius' household is food insecure. Besides their own production, they gain access to food through other channels.

It becomes worse when part of the harvest fails or when crops are sold to meet certain cash needs. Due to the shortage of labour (high dependency ratio) and the lack of capital, Egidius cannot farm a very large area. Due to the infertility of the soils and again the lack of capital needed to improve the soils, the yields are low on Egidius' farms, and on the farms of most subsistence farmers in the research area.

Farm labour

Since Egidius is the only man in the house, he cannot farm a very large area. His sons are still very young. The eldest son is thirteen years old, but when you see him, you would think he is only nine years old. Moreover, he attends school so he cannot help much on the farm. Labour is a major constraint. *In the farming season, do you get other people to work on your farms?* "Yes, I'm in a farming group of 13 man." All members are relatives and at the same time neighbours of Egidius. *Do you work with the farming group every day?* "Yes, we work every day, except on Sundays." The group comes to his farm once a fortnight. *Do you work at fixed hours?* "Yes, we always work together in the morning. In the afternoon everybody goes to his own farm." *Besides the group farming, do you sometimes work on other people's farms?* "Okay, some people come to beg me to come and weed for them. And if they really need me, I will go." *Are they relatives?* "Yes, or neighbours, or my wife's father. This year, I went to his farm twice. Women who don't have a husband also come and beg me to clear or weed their farms." *When you go to work for them, do they give you pito or food?* "Some people are very poor. They cannot afford anything like that. So I just do it free of charge. It is a help to them. Some other people, they will buy the pito."

Your wife, Candida, is she also in a farming group? "Yes, the women have their own farming group. They weed each other's groundnut or rice farms. Today they will farm on this one's farm, tomorrow on that one's..." *So does Candida have her own rice or groundnut field?* "No, some women have their own fields, but Candida doesn't have it." *So when it is her turn, what do they do?* Okay, since I married her, she will bring the women to my farm." *Does she not want to have her own farm or do you not allow her?* "No, she doesn't have her

[41] According to Runge-Metzger and Diehl (1993: 198), the energy content of groundnut is 25,020 kJ/kg, soybean 17,650 kJ/kg and bambara bean 15,810 kJ/kg. The average of the three crops is 19,490 kJ/kg or 4,655 kcal/kg (1 kcal = 4.187 kJ).

own land. All the land is for me and we farm it together." *Does Candida have animals for herself?* "No, all the animals are combined."

Besides the farming group, do you sometimes get other helpers on your farm? "The only time I get people on my farm is when I do catechism with the children. Their fathers or brothers come to help me." *Do you have to give them pito?* "I have given them pito only once, but they understand. There is nothing. I have nothing. Sometimes we just grind the roasted corn and put it in water and drink. We call that 'zoŋ kuo' (flour water). If I want, I can beg other people to help me. When I do that, I know that I have money to buy pito or I have pito to give them. You know, if I beg somebody, I have to give him something." *Do you also have to give them money or food?* "Sometimes we'll prepare the food, but as for money, I have never given money to farm labourers." The last time Egidius had labourers on his farm was three years ago.

Animal husbandry

Three months ago, Egidius' poultry became sick and many fowls died. He didn't sell them because it is not accepted to sell sick or dead animals. He gave them to the children to chop. It started in the beginning of the rainy season. Four guinea fowls remain. "They are good, I am sure they won't die." *This year, have you been able to sell any poultry?* "No, nothing, only the guinea fowl eggs." *Are you going to sell your remaining fowls to buy food?* "No, there are not many and they will help me later on. I will let them hatch."

After the harvest of 1999, Egidius had four big goats and three small goats. In early August 2000, there were three big goats and five small goats. The three small goats had become big; two big goats had delivered five small goats; Egidius had sold one big goat to buy Christmas dresses for the children; they killed one big goat to eat for Christmas and in June, he sold two more goats. He used the money to buy hoes; to buy food and to buy pito for when the group comes to his farm. Egidius has never had sheep. He did have some pigs. Three years ago, he bought a piglet. He raised it and a year later it gave birth to nine piglets. Three died and he sold the other six. The sow did not deliver again and he sold it. With the money he did not buy new piglets.

Between today and the new harvest, there are still about two months and the food is not there. Do you think you will have to sell more goats? "I wanted to sell, but my three goats are all pregnant, so I can't sell them." A goat can deliver one year after birth. People also use goats to get labourers on their farm. They kill a goat and divide it in eight pieces. One man takes a piece and this compels him to come and work for two days. The last time that Egidius did this was three years ago.

Egidius' family still has cattle. After the cattle theft in 1981, the herd has grown from two to thirteen heads in the year 2000. Since last year, the family cattle have been separated between the two family branches. Christoph is taking care of eight heads of cattle and Clovis five. Apart from these family cattle, no one in the (three) compound(s) owns cattle personally.

Does Christoph nowadays still sell a cow every now and then? "The same as in the olden days: when the cows are old, they are sold, but he doesn't sell very often, not every year." *Do you see some part of the money when he sells a cow?* "No.[42]" *If your senior father dies, will*

[42] The rules about the use of family cattle seem to vary from one family to the other. I have the impression that people who are not the custodians of the animals (usually the family heads), rarely ever directly benefit from

you get the cows? "Okay, our tradition is that if he dies, his sister's sons have the right to these cows. They are from the same 'bello'." *So when Christoph dies, the cows will be lost from his house?* "Okay, if Christoph wants, he can give cows to me and his sons now, before he dies. But when he dies, I will get nothing." It seems to me that the inheritance rules that Egidius describes here are 'of days passed'; when Christoph dies, the cows are more likely to go to his sons.

Female income generating activities

Egidius' sister (Natalia) processes sheanut butter for sale and she wants to start brewing pito. She has begged money from her brother (Valentine) in the Afram plain for the investment, the starting capital. He hasn't sent her any money yet. She sometimes goes to sell firewood in Nandom Town, just like Candida. According to Egidius, "they don't sell firewood in the farming season because with the farming it is very difficult to find time to go to the bush to look for firewood and sell in town." *They go to Church in Nandom every Sunday. Don't they use this opportunity to also carry the firewood to town and sell?* "No, they will not do that. We don't work on the day of the Lord."[43]

(To Candida) *The firewood that you sell, do you get it from your own land or also from other people's land?* "I go to across the [Kopare] river[44]. That area, the land is for nobody. We can just go there. There are dry trees[45] and we don't have to ask permission to anybody." After she has gathered a head-load of firewood from the bush, she brings it to the house and from there she walks to town to sell it (app. 6 km). In the dry season, she sells firewood almost every day. In the rainy season, she also sell, but less frequently.

(To Candida) *The money you get, do you have to give it to your husband?* "No, but I have to show him how much I get. I have to report, but he won't take it." *What do you buy with it?* "In the dry season, I buy soap, salt, these things. But this time (late July), if I sell it, I buy food for the family. In the dry season, there is food, but this time of the year, we don't have it." *So both your husband and you buy food?* If Egidius has money, he will give it to me to buy food in the market, but if he doesn't have it, I use my own money." The same applies to the money that Egidius' junior sister (Natalia) earns by selling firewood and sheanut butter.

Candida used to brew pito, but she has not brewed for about two years now. Even for the farming group, she doesn't brew, she says. "We don't have the guinea corn. I need money to buy guinea corn to brew, but when I have the money, I have to buy food for the children."

Family networks

In the description of the patrilineage, I have indicated how the family has spread geographically. Several of Egidius's cousins, and his brother too, have migrated to the Afram Plains.

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the cattle. Only when bride-wealth payments are concerned can younger brothers or cousins of the custodian of the cattle benefit. When the family head sells a cow, he may or may not share the revenue with his relatives.

[43] Note that when I interviewed Candida personally, she said she did sell firewood on Sundays, before she goes to Church. Perhaps Egidius is embarrassed because it is a sign of poverty when your wife sells firewood (see John Yirkuu's remark in the section on female non-farm income in chapter seven). It means that you, the man, are not able to take care of your wife and children. It becomes worse when your wife also has to sell firewood 'on the day of the Lord', especially when you are a Catechist yourself.

[44] The Kopare river is a tributary of the Black Volta that passes South of Nandom Town and Napaale.

[45] 'Dry trees' are dead trees.

There are a lot Dagara farmers in this new settlement area. Many Dagara have also migrated to the western part of the Northern Region (the area around Sawla) and to the eastern parts of the Upper West Region in search of more fertile land. None of the people whose 'pathway' I have studied have relatives in those areas, however. Within Egidius' family, the men have probably influenced each other to migrate to the Afram Plains. When a cousin or brother is already settled in a certain area, it is easier for a new migrant to go there, too. Within Egidius' patrilineage, the majority of those who migrated to southern Ghana are still farmers. Only two sons and one daughter of Christoph and the only son of Bonifacio salary jobs. They are also the ones who were able to further their education. Egidius' direct brother now also has a non-farm job (in a petrol station). Those relatives who no longer farm are furthermore the ones who have been helping Egidius in different ways. Avicto helped him to get a dry season job in the factory. He also took Valentine into his home during the crisis of 1983, and he sent Egidius half a bag of maize. Postino helps Egidius pay the school fees. Without this help, it would have been very difficult for Egidius to send his daughter to SSS. Levis has been helping Egidius buy fishing nets. Valentine helps him with school-related expenses like books and uniforms. These relatives do not assist in filling possible food gaps. In many families – but not all – there seems to be an understanding that the relatives who stay behind in the village have to provide for their own food needs, whereas it is generally accepted that it is difficult for them to take care of large non-food expenses. This is also the case in Egidius' household. Only in times of area-wide famine or in exceptional household situations is this unwritten rule abandoned. Egidius also has second cousins who are living and working elsewhere in Ghana. These grandchildren of Batu are the brothers and cousins of James and Francis, who have separate sections in Egidius' compound. These relatives have not been helping Egidius; they have been helping James and Francis, to whom they are more closely related. James confirmed this in a separate interview. Conversely, no inter-household transfers have occurred between Egidius' first cousins in southern Ghana and James' and Francis' households.

> "One son always has to stay here, in Napaale, to farm the family land. The other sons have to go down south to look for money so that they can help the ones who stay behind." (James).

On Batu's side of the patrilineage, this pattern is quite clearly discernible (see Figure 8.2). On Dugyi's side, the picture is a bit different. Out of Dugyi's ten grandsons, only two are still farming in the village. The other grandsons are in Kumasi, Obuasi, Afram Plains and Kaleo. One granddaughter is a Reverend Sister and a nurse in Kenya.

According to my interpreter Abraham, who has a good job as a steward to a Dutch embassy worker in Accra, it is expected of people with a salary to substantially help their parents and direct brothers in the house. One has to help one's cousins and more distant relatives too, but to a lesser degree. Indeed, Egidius' cousins have been helping their parents (Christoph and Elisabeth) and their brother (Edward) much more than they have helped Egidius. Postino, for example, who is a Reverend Father, has built a big modern house for them to live in.

Candida has two brothers who are in Kumasi; Charles is a labourer in the Star Beer factory, and Francis is a yam and maize farmer. Francis comes home every year, and Charles comes home approximately once every three years, or when there is a funeral 'in the house'.

When they come, they sometimes bring a small present for Candida, usually soap or second-hand clothes. Sometimes they say that they have not been able to buy anything for her. They have never given her money. "If they had given me money, I wouldn't be wearing these things," she says, showing me her poor dresses. *If there is a food problem in the house, is there a way that you can inform your brothers so that they help you?* "If there is a food problem, the only thing I can do is to go to my father's house and ask for some food. My other brothers are far away. They can't help me. They have never given food to me." *This year, did you go to your father's house to ask for food?* "I did, but they said that they didn't have it either. Other years they have been giving foodstuffs to me." *And with his small pension, is your father able to help you?* "You know, if he says that he can't give me millet, I cannot go back to ask for money." *This year did you go to help on your father's farm?* "I went to sow groundnuts once. I couldn't go more often because the work here is plenty, too."

Food habits

How many times a day do you usually eat? "Sometimes morning and evening, sometimes only evening. As for the evening food, that one is very sure." *Does Candida prepare new food every day or does she cook once for several days?* "If we have plenty flour, she prepares it big and we eat it cold. It can last two or three days. We heat the soup." (To Candida) *Do you use the 'miiru dogh'*[46]*?* "If there is enough food, we use it. But now, I have turned it upside down. The small grain we get, I use it and we can only eat from it once." (To Egidius) *When you say you eat in the morning, what time is that?* "We don't eat before we go to the farm. We will go and work and come and eat. That can be at noon or so."

Egidius' household started reducing their food intake in May 2000. *Does this happen every year?* "No, it's only this year." *So the other years, you can always eat twice a day?* "Yes." *Does the amount of food you eat per day change a lot over the year?* "Yes, after the harvest we can sometimes even eat three times a day." *There is something that is difficult to understand for me, since I don't come from this area: In the farming season, you need all your strength and energy. That time you eat less. After the harvest, when you don't have to work very hard, you eat more. Why is that?* (Egidius and Candida shrug their shoulders and Abraham answers) "It's because in the dry season time you have nothing to do and you always feel hungry." *So when you do nothing, you feel hungrier?* "Yes, you don't have any place to go. You are in the house and you want to eat. But in the rainy season, when you go to the farm, you work. You don't have to come to the house so you don't eat much. You have to get up very early and go to farm." *Then you are not hungry?* No, and anyway, you know the food is not there (laughs). But during the dry season, you see it plenty. You don't think it will finish very soon. So you eat."

If I took a look in your granary now, would I see that it is totally empty? "There is still a little bit left. We call it the 'kadjin': We tie the grains together and you can lift the whole thing from the granary like that. That one we keep it for if someone becomes sick. Then we can prepare proper food for him." *What type of grain is it?* "Guinea corn." (to Candida) *This time, when you go to market, what type of food do you buy?* "In this time of the year, the price of a bowl of maize and a bowl of guinea corn (2.5 kg) are the same (2,400 cedis)[47]. But the

[46] The 'miiru dogh' is a pot with fermented flour water used to store T.Z.

[47] In July and August 2000, one US$ was about 6,300 cedis.

guinea corn lasts longer, so that one is better. If the money is not enough to buy a bowl, I buy water yam for 2,000 cedis."[48] *About the guinea corn, do you only use it to brew the pito, or do you also eat it?* "When we finish with the millet, then we start with the guinea corn to make the T.Z." During my fieldwork I asked many people about the use of guinea corn in the T.Z. Most of them told me that you only use the guinea corn when you really have no other choice and that it is a sign of poverty or food stress. "When your T.Z. is red, you know you are not doing well," one of my interpreters (Festus Lankuu) told me. The guinea corn T.Z. is considered inferior to the millet or maize T.Z. Egidius, however, told me that in the *farming season* he prefers to eat the guinea corn T.Z. because the millet T.Z. is too soft. He likes the soft, white T.Z. in the dry season. When the farming campaign starts, he will send the guinea corn to the grinding mill. By then the millet has usually been depleted.

If, for some reason, one section in the house doesn't cook, they can usually eat with one of the other sections. "If we don't cook, they have to give food to us." *You are the head of the compound. Can you order James' and Francis' wives to cook for you?* (laughs) "No, I can't do that." According to Egidius, there is more or less an even distribution. Interestingly, the sections also exchange food when every section *does* cook. "If they cook rice at James' place and we make T.Z., they will send us some rice and we will also send them some T.Z., to cross." (To Candida) *The other sections, are they more or less in the same food situation this time?* "I don't know. I can't look into their granaries." *But are they still eating every day, or twice a day?* "At James' side, they are still pounding[49] the guinea corn every day, but on Francis' side, I don't see them doing it. I think James is doing a bit better." *If you don't have food and there is food in James' section, can you go to ask him?* Abraham answers: "If they see you're lazy on the farm, they won't give it to you. But if they see you work hard and still you don't get good harvest, they will help you."

In the past, when you sometimes harvested more than you needed, did you use to store the surplus grains? "No, if it is there, when the new harvest enters the granary, we give the old grains to the women to brew pito. With the money of the pito, we buy the chickens or goats, maybe pigs." *So, you never tried to store the grains for longer than one year?* "No, we don't have any chemicals to protect them to keep for something like two or three years." *Do you also sometimes sell the grains directly?* "No, we only use it for the pito." *What if it is maize?* (laughs) "As for maize, that one we don't have it much. We'll always chop it before the other crops."

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[48] The day after the first in-depth interview, I met Candida at the market. She was carrying a basin with some water yams inside. I thought that yams were much more expensive than grains so I asked her why she had bought the tubers. She said that she only had 2,000 cedis and that the market women didn't want to sell guinea corn for 2,000 cedis to her. They only wanted to sell her a *full* bowl for 2,400 cedis. That's why she had to buy the water yams, which don't last as long. Someone else told me that I shouldn't believe her, that she probably sells pieces of fried or boiled yam in the village. If that would be the case, of course, it should have appeared as an income generating activity in the questionnaire ("are you very, very sure that you don't have any other activities to earn money?"). I asked it again in the next interview and she said it is really for home consumption. I believe her. But often people do not tell you everything they do, either because they think it is not important or because for some reason they don't *want* to tell.

[49] They pound the guinea corn to separate the seeds from the heads. The seeds are then sent to the grinding mill to get flour, but this costs money; in times of dearth, people can use the traditional grinding stones to save money so that they can buy more food. Candida however can grind her grains for free. Her father operates a grinding mill that he bought after his retirement.

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Egidius' household is not suffering like Francisca's, but it is clear that they are also struggling from day to day and from season to season. Their poultry and goats play an important role in their seasonal coping strategies. A major reason for their difficult situation is the high dependency ratio. Egidius has to provide for seven young children who are not yet contributing much labour on the farm or money from other activities. He tries to send most of his children to school so that they may get a job later on. Assistance from relatives helps him to achieve this goal. Egidius has used his savings from seasonal migration on a bicycle and fishing nets. This gives him some extra income, but now that he has become a catechist, he will have less time for fishing. If this task doesn't 'pay off', Candida's income from non-farm activities will continue to be needed to feed the family.

Photo 16
Woman preparing T.Z. out of millet (photo: Arjen Schijf)

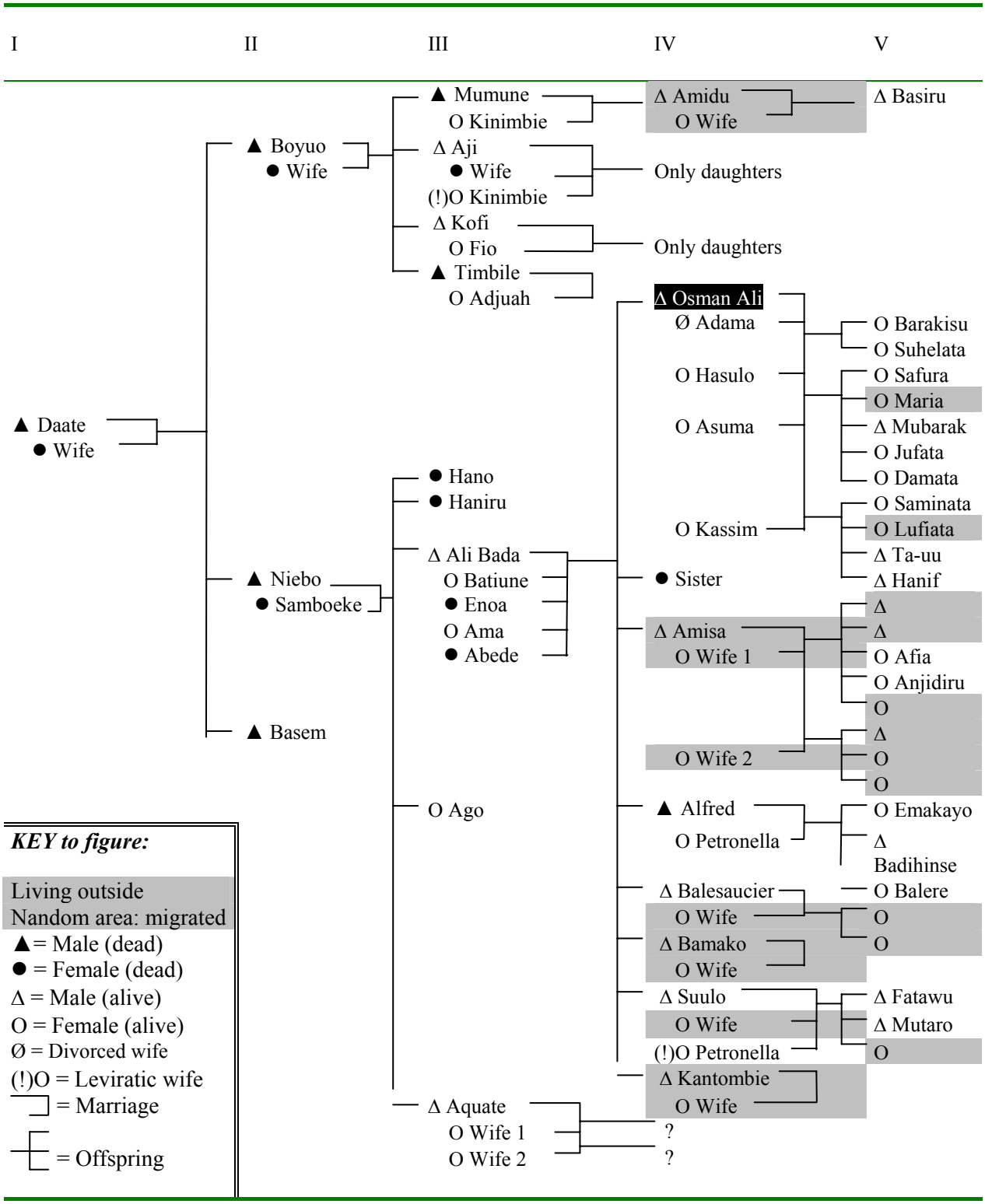
Osman Ali

Table 8.4 Summary of Osman's life history[1]

± 1945	Born in Lambusie. Sisala, Traditionalist (later Muslim).
± 1955	Several compound dwellers die. Osman's father (Ali Bada) decides to move the house to a new location, on the outskirts of Lambusie settlement.
± 1960	Osman starts helping his maternal uncle who is a commercial farmer.
1963	House partially collapses and some crops fail because of heavy rainfall and floods.
± 1965	First time on seasonal labour migration: Burns charcoal in southern Ghana.
± 1967	First marriage. The woman (Adama) remains childless.
± 1969	Starts working as a driver to Chief Baloro.
± 1971	Leaves the job with the chief. Starts operating his uncle's corn mill. He moves to Dahele with his wife. Later, the grinding mill is moved to Nandom Town.
± 1974	The operation of the corn mill is handed over to Bamako, Osman's junior brother. Osman concentrates on farming and starts a dry season garden. Osman and Adama divorce. Osman courts Hasulo whom he marries about two years later (1976).
1978	First child born (a daughter: Barakisu).
± 1979	Osman marries his third wife (Asuma) who gives birth to Osman's second daughter, Safura. By 2000 she has given birth to three more daughters and one son.
1981	Drought and partial crop failure.
1983	Drought, but Osman's crops do not fail because he cultivates short varieties.
± 1984	Osman marries his fourth wife, Kassin. She will give birth to two daughters and two sons.
± 1988	Osman starts farming with bullocks and plough.
± 1993	Due to ill health, Ali Bada hands over the leadership of the house to Osman.
2002	Osman dies unexpectedly at the age of 57.

[1] Due to his sad and sudden death in 2002, I was not able to make a portrait picture of Osman. The picture shown here was given to me by Osman's junior brother Balesaucier.

Figure 8.3 Genealogy of part of Osman Ali's patrilineage



Family situation

Osman Ali[2] is the head of a large compound just outside Lambusie settlement, 6 kilometres east of Nandom Town. He is a Sisala and is about fifty-five years old. His father (Ali Bada) is still alive. About seven years ago, Osman took over as head of the house because his father is very old (about 85 years), weak and almost deaf. Osman currently has three wives and eleven children.

The patrilineage

Osman's father (Ali Bada) married four wives, of whom two are still alive. All his wives were Sisalas. The second wife (Enoa) never delivered. The third and the fourth wife (Ama and Abede) only gave birth to daughters who married outside the house. Ama is still alive. Osman Ali's mother (Batiune) is Ali Bada's first wife. She is still alive. She is a classificatory sister of the late Chief of Lambusie (Baloro) and of the 'Acting Chief' of Lambusie[3] (Eduso Bamié).

Osman is the eldest of seven direct brothers. They don't have sisters. The firstborn was a daughter, but she died of an infant disease. One brother (Alfred Ali), who was the third-born, passed away about five years ago. He was a policeman, first in southern Ghana and later in Wa. His widow (Petronella), who is a teacher, is staying in Osman's compound with her two daughters and one son. The other five brothers are still alive. The second-born (Amisa) has a farm in Edjura, Ashanti Region, where he cultivates maize and yams. He married two wives and has eight children: three boys and five girls, two of whom (Anjidiru and Afia, 9 and 11 years old, respectively) are staying in Osman's compound, in their grandmother Batiune's room. The fourth-born (Balesaucier) is presently staying in the house. Last year he returned from down south where he had been living and working as a charcoal burner for nine years. His wife and two children are still in the south, but they are likely to come home to Lambusie soon. The fifth-born (Bamako) is a charcoal burner. He lives around Kintampo, Brong-Ahafo Region. He used to come back to Lambusie seasonally to work on the family farm, but a few years ago, he settled in the south 'permanently'. He is married, but has no children yet. The sixth-born (Suulo) is a charcoal burner in Atebubu, Brong-Ahafo Region. He still comes home every year for the farming campaign. His wife and one daughter are in the south permanently. Suulo's two sons are in Osman's compound. The seventh and last-born (Kantombie) is staying with his senior brother (Bamako) near Kintampo. He also burns

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[2] Osman Ali speaks little English, but he understands it quite well. The interviews were carried out with a Sisala interpreter (Victor B. Damian) from Lambusie. Osman always listened carefully to how Victor translated his answers and he was never afraid to interrupt. The "quotations" in the text are Victor's translations. My questions are in *italics.* Victor, who used to work for the Ministry of Agriculture, was quite active in the interviews, and at times answered my questions to Osman himself or explained certain things to me before asking the questions to Osman. In the text, I have indicated when a quotation concerns such a remark from Victor.

[3] After the death of the Paramount Chief of Lambusie (Baloro) in 1999, disputes evolved about his succession. For the time being, an 'Acting Chief' has been chosen. Osman and Victor told me that this was Eduso Bamié, Osman's maternal uncle. Later, I was told that there is also disagreement about who is or should be the 'Acting Chief' of Lambusie. I do not wish to choose sides in the Lambusie succession dispute. For the description of Osman's 'pathway', it is just important to know that Osman has quite powerful relatives.

charcoal and doesn't come home in the farming season. He is married, but he doesn't have children yet.

Of the seven brothers, Alfred was the only one who furthered his education after primary school. He went to Middle School in Burutu and to Secondary School in Tamale. From there, he moved to Accra where he stayed with his junior father (Aquate) who was a policeman. Alfred was recruited and trained to be a policeman, too. Osman was the only brother who did not go to school at all. "I never saw a classroom from inside," he said. The other brothers only went to primary school. Most of them dropped out before they completed.

Ali Bada's father (Niebo) married one wife (Samboeke) with whom he had five children. The first two were daughters. They married outside and are no longer alive. Ali Bada is the first son. He was followed by a girl (Ago) who married in Lambusie. She is still alive. The last-born (Aquate) became a policeman. He is still alive and surprisingly, he is still working as a policeman. He first worked in Accra, but later was stationed in Nandom. He should be at least 70 years old now. According to Osman, he doesn't want to stop working because then he will lose his salary. After retiring, he will receive a pension, but his income will drop considerably.

Niebo's father (i.e. Osman's great-grandfather) was called Baate. He had three sons. The senior son was Boyuo. Two of Boyuo's sons are still alive and staying in Osman's compound (Kofi and Aji, see figure 8.3). The history of Daate's third son (Basem) remains vague. In the different interviews, I was told two different stories. The first version is as follows: Basem left for Kumasi when he was a young man. Initially, he came home for a visit every two or three years. But after some time he stayed down south permanently and they never heard from him again. In the second version, Basem's wife only gave birth to daughters who married outside the house. In this last version, Basem grew old in the house until he died. Irrespective of which story is true, the result is that no offspring of Basem remains in Lambusie, at least not in the paternal line.

The people in the neighbouring, directly adjacent, compound are Osman's third cousins. Osman's great-grandfather (Daate) was born in that 'house'[4]. He was born out of what my interpreter Victor calls a 'penalty kick'[5]. His mother was deaf-mute and the father was 'unknown'. Daate grew up in that house and when he was old enough, his uncles decided to dowry[6] a wife for him. Since he was not a real son of the house, he was encouraged to go out and build his own house. It seems that this was and still is the normal procedure for children who are born out of wedlock. Osman and his house people are the descendants of Daate. The people in 'the old house' are the descendants of Daate's maternal uncles.

According to the oral history of Osman's patrilineage, his ancestors came from Bwo in the Jirapa Area to settle in Busie-Djaa, a section of Lambusie settlement. Later, his great-great-

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4 'House' here does not refer to the physical house, but to the patrilineage, the 'yir' (see Tengan 1994:2).

5 'Receiving a penalty kick' is a popular way of saying that the woman conceived with a man who is not her legal husband. The child will usually grow up in the mother's house.

6 In the research area, people who speak English use the verb 'to dowry' for the performance of marriage obligations according to the prevailing customs. The family of the husband has to pay a certain amount of cows, fowls, cowries and/or money to the family of the bride. Strictly speaking this should not be called a 'dowry payment' because a dowry is paid by the family of the bride to the (family of) husband. Bride price or bride-wealth are the more correct terms for the situation in the research area (see Levinson & Ember 1996: 359-361).

grandfathers moved from their paternal house in Busie-Djaa to Kimpa, the section of Lambusie where they are presently living. Osman and my interpreter Victor share a common descent that they can trace. Although Osman is more than ten yeas older than Victor, he calls him his father. They know that they are from the same paternal line and that Victor is one generation ahead of Osman.

The 31 household members

(For a schematic overview of Osman's household, see table 8.5)

Osman has married four wives. His first marriage ended in a divorce after some years. Osman's first wife did not give him any children. She married another man and died some years ago. To date, Osman's three other wives (Hasulo, Asuma and Kassin) have given birth to eleven children: eight girls and three boys. Two sons are still very young (two and six years old). Only one son (Mubarak) is old enough to work on the farm seriously. Osman's eldest daughter (Barakisu) is married in Bilaw. Two daughters are staying with relatives down south (Maria with Amisa and Lufiata with her mother's sister in Kumasi), where they assist with household chores. They do not go to school. Only two of Osman's children are presently in school. They are Taa-uu and Jufata, six and seven years old respectively. Most of the other children went to primary school for some years, after which they dropped out. Osman wanted to educate his children better "because it pained me that I couldn't go to school myself when I was a child." But his children don't like school, he says. "They drop out because they refuse to go." He hopes that Taa-uu and Jufata will do better. Only one of his children (Safuura) has finished JSS. She is awaiting her exam results and perhaps will continue to SSS. The children of Petronella, who is a teacher herself, are more likely to further their education in the future.

The fact that Osman has much more daughters than sons is no problem, he says. *In general, do people prefer boys or girls?* "It is better to have just as many boys as girls, but you not being the Creator, it is not for you to decide. You have to wait and see. Let's say, you have eight children and five are boys, you are just okay. The girls go out and marry and leave your house like that, but if you have boys, your house will grow and that is good. They will take their wives to the house. But if you have many boys, you have to pay plenty dowries. That can be difficult, too." Presently, there are nine girls and seven boys in the house. The boy-girl ratio is more in balance because some of Osman's daughters are staying with relatives elsewhere, and some sons of Osman's brothers have come to stay in Osman's compound. The composition of the compound is subject to constant change. If I visited the house next year, the situation I would encounter could be quite different.

Besides Osman's wives, there are six other adult women in the house: Batiune, Ama, Kinimbie, Fio, Adjuah and Petronella. Batiune is Osman's mother and Ali Bada's first wife; Ama is Ali Bada's third wife; Kinimbie is the widow of Ali Bada's late cousin (Mumune). After Mumune died, Kinimbie married his junior brother (Aji), who had lost his first wife. Fio is Kofi's wife. Adjuah is the widow of Timbile. Petronella is the widow of Osman's direct brother Alfred. After his death, she married Suulo, the junior brother. All the women occupy their own rooms where they live with some children.

Table 8.5 Osman Ali's household members

No.	*Name*	*Age*[7]	*Relation to Osman*	*Remarks*
1	Osman Ali	55	Ego	
2	Hasulo	45	First wife	In fact, Hasulo is Osman's second wife, but Osman divorced his first wife.
3	Suhelata	19	Daughter of first wife	Helps her mother in the house.
4	Asuma	40	Second wife	
5	Safura	20	Daughter of second wife	Finished JSS: awaiting results.
6	Mubarak	13	Son of second wife	Helps Osman in the farm
7	Jufata	7	Daughter of second wife	Primary 2
8	Damata	3	Daughter of second wife	
9	Kassin	39	Third wife	
10	Saminata	15	Daughter of third wife	Helps her mother in the house.
11	Ta-uu	6	Son of third wife	Primary 1
12	Hanif	2	Son of third wife	
13	Ali Bada	85	Father	
14	Batiune	75	Ali Bada's first wife; Osman's direct mother	
15	Ama	64	Ali Bada's third wife	
16	Balesaucier	45	Direct junior brother	His wife and children are down south.
17	Suulo	37	Direct junior brother	Stays in the south part of the year.
18	Petronella	45	Widow of Alfred (Osman's late junior brother)	Teacher; now 'married' to Suulo.
19	Emakayo	19	Daughter of late Alfred and Petronella	Finished JSS; awaiting results.
20	Badihinse	16	Son of late Alfred and Petronella	Lambusie JSS2
21	Balere	9	Daughter of late Alfred and Petronella	Primary 3
22	Fatawu	11	Son of Suulo	Primary 4
23	Mutaro	8	Son of Suulo	Primary 2
24	Anjidiru	9	Daughter of Amisa (brother of Osman)	
25	Afia	11	Daughter of Amisa	Primary 2
26	Adjuah	75	Widow of Timbile (brother of Kofi and Aji)	
27	Kofi	70	Junior cousin of Osman's father	
28	Fio	60	Kofi's wife	Only gave birth to daughters.
29	Aji	65	Junior cousin of Osman's father	Brother of Kofi.
30	Kinimbie	65	Aji's wife	Was initially married to late Mumune.
31	Basiru	18	Kinimbie and late Mumune's grandson (his father, Amidu, lives in southern Ghana)	Lawra SSS

Kofi only had daughters who have all married outside. The same applies to Aji. Both of them only married one wife. They spent most of their lives down south. They were already old when they came back to Lambusie. "When you are there, in the south and your relationship with your one wife is good, you don't think of taking a second wife. What are you going to do with several wives there? It is only here that you need plenty hands to do the work." Since they did not have sons, Kofi and Aji are alone with their wives. Their daughters are staying with their husbands in other compounds. If they had had sons, Kofi and Aji probably would have separated their farm activities from Osman, but now that they are old and alone, it is more secure to live 'under Osman'.

[7] The ages of most children are derived from birth certificates. The ages of all persons over the age of 25 are estimations by Osman Ali and other compound dwellers.

Osman's compound has two courtyards. The big courtyard consists of traditional mud and stick buildings. This section is occupied by 1) Ali Bada and his two wives; 2) Aji and his wife; 3) Kofi and his wife; 4) Adjuah; and 5) Osman's wives and children. The granaries are also located in this section. The other courtyard consists of two modern buildings made of cement blocks and an iron-sheet roof. One building has four rooms and the other has two. The first building was financed by the late Alfred, Osman's deceased brother who used his salary to put up the building while he was living and working as a policeman in Wa. That is a common way for salary workers to help their relatives back in the village and to make sure that they will have a quality dwelling in their old age. Alfred's widow (Petronella) is occupying two of these rooms with her children. My interpreter Victor says: "We don't chase away our wives, like the 'Dagartis'[8] do. In their tradition [of the Dagara[9]], when the husband dies, she has to go back to her father's house. We Sisalas, we keep our wives. She will marry one of the junior brothers within the house." Anthropologists call this a 'leviratic marriage'.[10] When Alfred died, his junior brother (Suulo) married the widow, Petronella. *But are they living together?* "When Suulo is home from down south, he has the right to be with her. But we taboo that when the junior brother dies, the senior brother takes her. He has no right to marry her." Suulo and Petronella do not have children together. Perhaps this case is special because Petronella is a Catholic. I can imagine she opposes the idea of being Suulo's second wife. As a salary earner, she has quite some authority in the house.

Besides the two rooms in the first modern building that are occupied by Petronella and her children, the other two rooms are Osman's bedroom and a common room. The second building in the 'modern' courtyard resulted from the joint efforts of Osman and Suulo. It was finished last year. After Alfred's death, Osman received a bulk payment of Alfred's pension. Besides the bulk payment, Petronella receives a monthly widow's pension for twenty years. Osman decided to invest the money in a new building for the compound. The money was not enough, however. He sold a cow in addition and Suulo also contributed. Presently, one room is occupied by Balesaucier and the other by Suulo when he comes home for the farming season. When Suulo is down south, his two sons and Petronella's son occupy the room together. Osman usually invites his wives to sleep in his room in turns for his 'nocturnal duties'. A wife usually stays with him for one week before they change.

Amidu, the son of the late Mumune and Kinimbie, is living in Accra. He used to be a charcoal burner and is now employed as a watchman. He comes home for funerals. Their relations are good. He has also been helping Osman with small things like clothes. Amidu is planning to put up a new building in Osman's compound after this year's farming campaign. He is planning to come back to the house to spend his old days in Lambusie. Amidu's son (Basiru)

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8 The name 'Dagartis' was given to the Dagabas by the colonial rulers. According to some people, this name is derogative. Some Dagaras and Dagaabas refer to *themselves* as Dagartis, however. The people in the research area most commonly call themselves Dagaras. Their traditions and habits are similar to those of the Dagabas around Jirapa, but they have some cultural characteristics in common with the Lobis (see Goody 1967).

9 Among most Dagara, the wife customarily returns to her father's house three years after her husband dies. Personally I wouldn't call this "to chase away our wives," as Victor does. The widows have the opportunity to return to their native houses. It is usually their own choice. If the woman doesn't have any close relatives like direct brothers in her patrihouse, she can decide to stay in her late husband's house. We saw this in the case of Francisca Mweyang's mother, for example.

10 See Dery (1987: 46-51).

is in Lawra Senior Secondary School. He travels to the south once a year to collect the school fees from his father. Basiru grew up in Osman's compound and still comes here in the holidays to help on the land.

Two classificatory brothers (third cousins) of Osman have separate sections in the compound. They don't belong to Osman's household. One of them (J.B. Weyto) is a government worker in Wa. He is a messenger in the 'House of Chiefs'. The other (Dodu Baboro) is a farmer. They farm and cook separately. Only when family issues are concerned are they 'under' Ali Bada or Osman. Some years ago, Ali Bada used two of his cows to 'dowry' a wife for one of these cousins. As a formal income earner, J.B. Weyto sometimes helps out when one of the compound dwellers is in need.

Osman's youth (1945-1964)

Osman Ali was born in Lambusie around 1945. He has no birth certificate. In the survey interview, he mentioned the same year of birth, so at least it is not an ad hoc statement. It seems to be a good estimation that is compatible with the rest of his life history. He never went to school. In the wet season, he worked with his father on the farm and it was his task to tie and untie the goats. In the dry season, he herded the sheep.

As a small child, Osman was living in the 'Old House', not far from the location of the present compound. One year, Osman's grandfather (Niebo) and Osman's great-uncle (Boyuo) both died. The junior brother (Basem), whose history is a bit vague as I mentioned earlier, seems to have taken over the official leadership of the house for some years. But Basem left the day-to-day decision making to Osman's father (Ali Bada), who could thus be considered the 'acting' head of the house. After some years, they decided to move the house to a different location. Osman was about 10 years old. The reason they moved was that "our people started dying in the house. Every day, one of our people died. We believed that there was a curse on this place, so we moved. Then the dying stopped." Victor says: "You know, according to us Africans, when your children are dying, we give suspicion to others: that there are witches. Then the best thing you can do is to move to a different place."

Farming in 'the olden days'

In Osman's childhood, the people in the house were not as numerous as they are nowadays, even excluding the relatives who are presently staying in southern Ghana. Osman estimates that when he was a small child, the number of house people oscillated around 15. It was already common for some men to go to the south of Ghana to burn charcoal. Osman's father owned quite a lot of cattle in those days, more than most other people. The herd size fluctuated around thirty heads, Osman estimates. A Fulani man used to herd the family cattle, but they had a kraal inside their own compound. The Fulani who looked after the cattle stayed in Osman's compound, rather than in a separate settlement.

To till the land, Osman's family relied exclusively on manpower. They used cow dung to manure their compound farms. Cow dung was not carried to the far-away bush farms; the bush farms were already fertile because of the long fallow periods and because bush burning was less rampant (see below). When Osman was a small boy, some household members used to stay in temporary bush farm shacks during the farming season. After the harvest, they

would heap the crops in the bush farms before they would carry the produce to the house. Sometimes animals would chop part of the harvest. "That was always a problem." Although Osman still cultivates bush farms, they no longer sleep there in the farming season; the use of bicycles has made it easier to go home every evening. Some people still have their farm settlements, however.

In the Lambusie area, the land is relatively abundant as compared to the Nandom area. A paradox emerges when one looks at the difference in farming systems. Since the Dagaras in the Nandom area have limited fertile land, one would expect them to have far-away farms on more fertile soil in sparsely populated areas. In reality however, they concentrate their farming activities around or at least near the homestead. The Sisalas in the Lambusie area, on the other hand, have access to fertile land, but they often have farms at relatively long distances.

Osman's compound is located about one kilometre outside of Lambusie settlement. This enables him to have quite a big compound farm (approximately six acres) whereas the people who live inside the clustered settlement have no, or very small, compound farms because there is not much space between the houses. *Most Sisalas seem to live in clustered settlements, in villages together. Do you know why they have settled like this?* (Victor answers) "Yes, you know, during the time of Samori and Babatu, the time of the slave raids, they were invading so many villages. But they have never invaded Lambusie.[11] When they would attack, we would come out together and defend ourselves. If you are alone, they will catch you." *Do you know why the Dagara did not settle in villages like that?* "The reason is that the Dagaras quarrelled among themselves, they didn't have trust for each other, unlike us Sisalas. We are united, we move in unity. They move alone and they will only listen to their family head."[12] *Before the colonial rulers installed chiefs in this area, did the Sisalas already have chiefs?* "Yes, every village had its chief."[13] *Nowadays there is no threat from slave raiders anymore. Why don't the Sisala adopt a dispersed settlement pattern?* "That one, I can't tell. I think we prefer to live close together."

The nuclear settlement pattern and the cultivation of shifting bush farms were a way to protect against raids and to maintain good yield levels. Another advantage of bush farms over compound farms is that the crops are less disturbed by domestic animals. In the past, wild animals, like monkeys and elephants often destroyed crops, but these animals are quite rare nowadays.

Farm labour in 'the olden days'

Group farming, uncle farming, in-law farming and friendship farming (see below) were already practised when Osman was a child. Only the contract farming for money did not yet

[11] See also A.B. Tengan (2000: 134) who – informed by Nandom elders – suspects that Lambusie was never raided because they had formed an alliance with the slave raiders.

[12] According to the colonial officers "this inability to unite (..) enabled the Lobi to be overrun first by the Dagombas and afterwards by Samora and Babatu." It seems that the Sisala were able to unite better at the village level. But *between* Sisala villages there was no unity. The slave raider Babatu recruited men from certain Sisala villages (especially around Sati Northeast of Tumu from where he launched his raiding campaigns) to raid other Sisala villages (see Der 1998: 20-21)

[13] Lentz (1993: 182) quotes a colonial document in which the "Isale", just like the "Dagari" and "Dagabaka" are counted among the "barbarous tribes" contrary to the "countries with organized government" such as Mamprusi, Dagomba, Gonja and Wa.

exist. According to Victor, that started in the 1970s. Before that, Dagara people already came to work on the farms of the Sisala, but they didn't receive cash; they were paid in kind. There was already a division of labour between Sisalas and Dagaras. Many Dagaras, who had more limited access to fertile land, worked on the Sisalas' land to supplement the harvest from their own farms. "In those days, they used to come and help on our farms and we prepare food for them. At the end of the day, we give them millet or groundnuts to take to the house. Nowadays we don't give them food. They come and work and at the end of the day you give them the money for their contracts."[14]

The group farming, uncle farming and in-law farming occurs mostly within the ethnic group. I tried to find out whether some houses *within* the Sisala community get more labourers on their farms than other houses, i.e. whether there were some kinds of 'class relations' between the families *within* the Sisala community: whether the poor people worked on the wealthy peoples' farms in exchange for food or livestock. According to Osman, to be able to invite and receive plenty of labourers on your farm, you have to be able to 'take care of them', i.e. to provide them with food and drinks. Big farmers are able to do that, and with the extra non-household labour they are able to harvest more so that the pattern repeats itself in other years, strengthening the position of the 'better-off'. Osman says that his father and grandfather always farmed a lot of groundnuts, and that people would come to work on their farms in exchange for produce. This included people from within the Sisala community and from the Dagara villages. They would come for land preparation, sowing, weeding and harvesting, i.e. all farm activities. Nowadays, Osman no longer hires people for the land preparation and the last weeding because he has his bullocks to plough and ridge his fields (when the plants are high enough, he can use a ridger to weed in between). Since he has expanded his acreage, he needs more labour for the sowing, the first weeding and the harvesting. But there are a lot of women in the house, and therefore he doesn't often hire labour for sowing and harvesting. Osman says that in his youth, they needed more non-family labourers than now.

Crop failures and hunger in the past

Osman: "Long time ago, before I was born, when there was a crop failure in the area, the Dagara used to come to us to sell their sons and especially their daughters. They knew that we have the food and we can give it to them. They will come to us as children and they will work as slaves in our houses. They will never return to their houses again. The girls, when they grow up, they will marry to a Sisala man. Not all the Sisalas here could buy people like that, only the well-to-do. We, the Sisala, never paid for these children with cattle, it was always with food, usually in times of hunger." Victor continues: "You know when we trace our history, most of us here, we are Dagartis. You know, the Dagarti man, he had five daughters and he could not feed all of them. He would sell two to a Sisala man. Later, they marry and that is how we also get mixed. My own grandmother, she was a Dagarti." *When you (Osman) were a small boy, did this still happen?* "No, it had stopped long ago. Nowadays the only

[14] Note that none of the four Dagaras whose pathway I have reconstructed told me about working on Sisala farms. This is not very surprising because three of them live on the other side of Nandom. The only one who lives nearer to the Sisalas is Suurib from Burutu. He has a large farm himself and he doesn't need to supplement his own harvest by working on Sisala farms.

thing we do is that those of us who want more wives sometimes have to go to the Dagaras to marry their daughters."

From the time that you were a small boy, do you remember any years in which crops failed? "That time, I was a boy and I did not care. They would always give me my food. No hunger. Later, when I married and I was a fully matured man and I could work for myself, that time I have to know it when there is hunger. In the time of the floods, there was hunger. In the time that J.J.[15] took over, it was hunger. Anyway, it was my father who told me that in the olden days when the woman goes to for example the Fielmuo market to buy food, the man has to arm himself with bow and arrows and follow the woman to the market. If not, strong men hide in the bush and they will seize the food. That was a time of hunger. That was in the olden days, the time of Samori and Babatu. There were some years that were very bad." *You say that as a child they would always give you food. When there is a shortage, are the children always given food first?* "That is it. The children need it most."

Did locust or grasshoppers sometimes spoil the harvest? "I myself have never met them like that. I have only heard of it, this locust and armyworms that come and destroy your crops. I have never seen it. You know, about two years ago the army worms came all over the Upper East, around Tumu side, but the 'agric'[16] people were able to control it and it never reached Lambusie."

Osman: "You know you don't get the same harvest every year. This year, your maize will do well and your rice is very poor. Next year your guinea corn spoils in the lowland farms and it is good in the door-mat farm. But those days, really, something will always do well and there is no real hunger. Most years you can sell your rice, groundnuts, perhaps some millet. Other years, it is not very good and you can't sell. In those days, maize was not yet cultivated on a large scale and we didn't sell it. It was our belief that maize didn't stay in your stomach very long. After you go to urinate, nothing is left. It was not our favourite food. This time, it is more common because when you are able to fertilise your farm, you can get a good harvest, much more than the late millet when you sow it."

The floods of 1963

At the time of the floods of 1963, Osman was staying at their farm settlement, about two miles away. In their house, some rooms collapsed. Some compound dwellers moved to the school building, others went to the temporary farm settlement. The shacks that they had erected there could resist the rains better than the mud and brick buildings of their permanent dwelling in Lambusie. The mud absorbs the water and becomes very soft and heavy. Eventually the building collapses. The huts on the farm settlement were made of wood and grass, and were more resistant to abundant rainfall. The granary in the compound house was not affected; the room was flooded with water, but since it had been built to be slightly elevated, the water didn't reach and the grain was safe. The harvest that year was not good at all. "Water collected most crops away. It was only in the hilly areas that the harvest was better." *When the harvest failed, did you manage to get enough food?* "Yes, we sent animals

[15] Osman Refers to Flight Lieutenant J.J. Rawlings, who first seized power in 1979. That same year, he handed power over to a democratically chosen Northerner: President Liman. In 1981, Rawlings made his second coup. This coincided with a time of drought and hunger, especially in the North of Ghana.

[16] 'The agric people' are agricultural extension officers.

to the Nandom market to sell and buy food. If we wanted to sell a cow, we would rather call a trader from Nandom Town to come and buy. But we also had food stored (see section about food storage). Anyway, that year, the food was not as much as usual."

Osman as a 'young man' (1965-1993)

Seasonal labour migration: Charcoal burning in Southern Ghana

Around 1965, when he was 20 years old, Osman started going on seasonal labour migration. He always burned charcoal; he never had another job down south. He didn't go to the same place every year. Except for the first year, he always worked for himself, even when he went to a place where other relatives were working. The first year that he went, he worked with a relative to learn the job. The second year, he went on his own. Osman went to the Volta Region and to the Brong-Ahafo Region. Everywhere in the south, one can find Sisalas who engage in charcoal burning. In any place where Sisalas are working, there is a so-called Sisala 'chief of the charcoal burners'. He is usually the first Sisala settler in the area. He makes arrangements with the chiefs of the host population. The charcoal chief pays the local chiefs for the right to burn their trees. He also negotiates if there is any trouble between Sisalas and Southerners. The charcoal burner in turn makes an arrangement with the charcoal chief and pays him a certain amount of money to gain access to woodland.

To produce charcoal, they fell trees; cut the wood in pieces; gather the logs; pile them; cover the pile first with grasses, then with soil; they leave a small hole to insert the fire, and later cover it again. The smoke and heat will dry the wood thoroughly. After three to five days, they will make some holes in the cover and after some time, the soil will fall down and stop the fire. The wood is still very hot and the wind can easily set the fire to it again. That's why they cover the pile with fresh soil several times to allow the wood to cool down. After some days, it has cooled down sufficiently and they put the charcoal in bags. They leave the bags – usually between 50 and 150 in number – on the farm to be picked up by a truck to convey the charcoal to the urban areas. In Accra, a bag of charcoal can be sold for approximately 20,000 cedis. Assuming a total of 100 bags, the consumer price of one production cycle would be about two million cedis. The profit to the burner is much lower and depends on many things, but Osman and Victor both agree that charcoal burning can be a very rewarding activity. It is hard labour, however.

The Sisalas usually control all the stages of the trade. At times, the family splits: the man burns the charcoal while the wife is in the urban area to sell it. They have to arrange the transport themselves. Some big burners have been able to buy their own lorries. Some Sisalas have abandoned the production of charcoal and fully concentrate on wholesale trading and/or retailing. The Sisalas are known throughout Ghana as charcoal burners. None of Osman's brothers owns a lorry himself. The brothers and their wives have not separated for the burning and selling. Once in a while, they hire a lorry and they go to the urban areas together to sell the charcoal. They either go to Kumasi or Accra, depending on the profits that are mainly determined by the local price for a bag of charcoal and the lorry fare. They sell directly to customers and when it takes too long, they sell the remainder to traders who further retail. In the wet season, they can usually sell everything directly from the truck. Osman's brothers who burn charcoal do not farm in the south.

When Osman's father was a charcoal burner, he always returned to Lambusie for the farming season. He never *walked* all the way to the south. In the era that he started going on seasonal labour migration, there was already public transport to southern Ghana. Osman's grandfather, however, used to walk to the south to burn the charcoal. Though it was far, he also did it on a seasonal basis, i.e. he always returned for the farming campaign. I wanted to find out whether in their more distant history, the Sisalas were already charcoal burners. Osman's father, Ali Bada, maintains that his father's fathers were already burning charcoal and not only locally. It has been their 'trade' for several centuries, he said. In the regional literature, I did not encounter any accounts of early migrations of charcoal burning Sisalas.

Are some compound dwellers also engaged in burning charcoal here in the Lambusie area? "No, there are not enough trees on our farms, and if you're caught felling trees in the bush, you will be fined by the 'Tendaanas'. Only when it is 'dry wood' (i.e. dead trees), you can cut them. But if it is a 'wet tree', you can't cut that one. In the south, it doesn't matter. As long as you get the permission from the chiefs you can chop any tree you like."[17]

Building a local livelihood

After he had seasonally burned charcoal in southern Ghana for about four subsequent years, Osman was asked to be a driver for the late Chief Baloro, who is his maternal uncle. Osman knew how to drive because he had been taught to drive a tractor. Another maternal uncle (Eduso Bamié), who is the present Acting Chief of Lambusie, owned and operated a tractor and Osman helped him as a mate for some years. "If you can drive a tractor, you can drive a car," Osman says. The chief bought the car when he was installed in 1969 and Osman got the job. Osman only worked with the chief for two years. He had to teach one of Chief Baloro's own sons how to drive so that this young man could take over. In the two years that he drove the chief, he had to take him to Lawra, Wa, Tamale, Kumasi, or Accra and come back. The chief was the National Chairman for Transport in the House of Chiefs. The car was only used to go outside the area. For travel within the area, the chief had a motorbike. Osman worked with his father on the family farm and whenever the chief needed him, he was sent for. He didn't receive a fixed salary. At times he was given money for his services.

When he was driving Chief Baloro, Osman had already married his first wife. The father customarily has the responsibility to take care of the bridewealth for his son when he reaches the age of marriage. If the son desires to marry more wives, he has to 'acquire' them himself. *You said you have always shared everything with your father. How did you manage to get enough of your own resources to dowry three more wives?* "You know, anything at all, you help your father. You don't run away and leave the old man in the house. If you always give your money to your father, he will be very happy with you and if he is well-to-do he will use the family cattle to dowry your second wives." This way, Ali Bada paid the bride-wealth for Osman's first three wives. It should be noted that Osman's first wife married a new husband after they divorced. The dowry was paid back to Osman's father, and this money was used to dowry the second wife. Osman paid the bride-wealth for his last wife with his own money, which he had earned with the revenue of his groundnut farm.

[17] I do not think this is true. For my new research about the environmental and economic consequences of migration from the Upper West Region to the Brong Ahafo Region, I spent about seven months in Wenchi District. Here, charcoal burners are only allowed to burn dead trees.

I wanted to find out to what extent it is a sign of wealth to marry several wives; whether one can only marry several wives when one's farming or other activities are going well. Osman actually turned the hypothesis around by saying: "To be a good farmer, you need many wives. If you have one wife, she will go to the farm early morning to sow. Who will then prepare the food and bring it to the farm? I have three wives. Two will come with me to the farm and one will stay behind to prepare a meal for us. That is what we do in the morning. In the evening time, each wife will prepare food separately. The only problem with several wives is that they quarrel among themselves. Anyway, my wives are not bad, they don't quarrel much." *But if you had been a poor man, would you have been able to marry four wives?* "You know, some men in Lambusie have seven or eight wives, but they can't take care of them. It doesn't mean that you are well-to-do. In Bilaw, there is a man with sixteen wives. His firstborn has twelve wives, too. But he can't feed them. They have to take care of themselves and he has no control over them. Someone who has ten wives and who can take care of them properly, he is a big man, he is well-to-do."

After leaving the job of driver, Osman operated a corn mill for his uncle (Eduso Bamié). He first moved to Dahele[18] to operate the mill. While Osman lived in Dahele, the uncle used to send him maize. Besides that, Osman received part of the profit. When they realised that business was not very good in Dahele, the uncle decided to move the grinding mill to Nandom Town. Osman moved, too. This time, Osman stayed in his own house in Lambusie. He used his bicycle to go back and forth to Nandom every day. The uncle no longer fed him because he now ate from the family granary. His monetary income increased, however. Osman was still operating the grinding mill when he and Adama divorced. This was around 1974. She later married into another house. By that time, Osman was already courting a girl he had met in Dahele. It took some years before he legally took her as his wife, around 1976. Osman's junior brother (Bamako) had taken over the job as operator of the mill. In 1979-1980, Osman married his second wife and in 1984 his third. All Osman's wives are Sisalas. The first wife (Hasulo) was already a Muslim when they married. The junior wives adopted the religion when they married to Osman. They were traditionalists before.

The time that you were a young man and working with your father, did you already have some farms for yourself? Initially Osman answered: "No, my father wouldn't agree. He did not allow me to have my own groundnut field. I have to work for him; I have to be with him." In a following interview I repeated the question because he told me that he had taken care of the bride-wealth for his last wife with the revenue from his groundnut farm. He answered: "I couldn't have a permanent groundnut field. But after I married my first wife, some years, my father allowed me to have a farm for myself. But the next year he can say: 'My son, this year you will not have your own farm.' This was mostly in years that we had increased the acreage of the family farm. You have to work in the family farm until the work is done. If you still have courage and strength you can go to your own farm. Anyway, the reason why my father didn't allow me every year was because he didn't want me to become too independent of him." In those days, Osman farmed groundnuts and rice. The size of the farm was usually a bit more than an acre. After selling the groundnuts, Osman says, he had to go and present the money to his father, who would take part of the money and give the remainder back to Osman. The father would inquire whether Osman had kept seeds for next year. If not, the

[18] Dahele is a village approximately 12 kilometres North of Lambusie.

father would save some money for seeds if he allowed his son to have his own farm next year. *In years that you had your own farm, did you always weed in it yourself?* "Okay, we also organised ourselves in farming groups to work on each other's farms. But we first have to go to my father's farm and only after that work is done, we can go to my own. My wife used to sow and harvest on my farm. She was not having her own farm yet."

In 1969, the Aliens Compliance Order, issued by the Ghanaian government, forced foreigners from neighbouring countries to leave Ghana. The Fulani were also expelled and sent to Burkina Faso. Osman's father lost all his cattle because the Fulani who was herding his animals left the country *with* all the cattle. Osman's father had entrusted all the cattle to one Fulani man and there was no way to get his cattle back. Later, Ali Bada was able to buy new cows and increase his stock through reproduction. Osman also had cows for himself. *How were you able to get cows for yourself if you didn't have your own farm and you gave the money you earned in the south to your father?* "That time, I used to work hard on my father's farm and when I got money with the charcoal burning, I said: "Father, this is the money I earned in the south" and he would collect the money. After some years, he will call me and say: "Look my son, this is what I have done with your money. This cow is for you." *When was the first time that you got your own cows?* "That was before marrying my second wife. You know, I had been working for my father and he first rewarded me by giving me a wife. Then, after some time, he also showed me a cow." *An unmarried son in the house, can he own cows?* "Oh yes, a son can buy a cow if he has the means or his father can give him a cow when he has deserved it." *So your father comes to you and says that he will dowry a wife for you?* "No, in our area here, your father won't tell you that he will get you a wife. You go out and look for one and tell your father: 'Now, when I go to sleep, I no longer like being alone.' When you get to the age of marriage, how you behave towards your father also changes. You start coming to the house late. He will ask you which girl you have been following. That's how it goes."

The dry season garden

After Osman handed over the job of operating the grinding mill to his junior brother, he didn't return to southern Ghana to burn charcoal. Instead, he started a dry season garden in Lambusie. "The only time I went back to Accra was after the death of my brother (Alfred). I had to go and collect his pension money." Seasonal labour migration has thus not been very important in Osman's own life. In the life of his family, however, charcoal burning has been very important and it still is. Several brothers are charcoal burners in southern Ghana, either 'permanently'[19] or seasonally.

Again it was his uncle Eduso Bamié who inspired, taught and helped Osman to start a garden. While Osman was working for Eduso as a young man, he learned how to grow vegetables in the dry season. Osman started his own garden sometime in the late 1970s. In those days, he says, dry season gardens were less common than they are nowadays. There was also less demand for vegetables on the local market. There were some 'White Fathers' from

[19] This type of migration usually doesn't concern *permanent* out-migration. Most charcoal burners will spend – part of – their working lives in the south and they will return to their hometowns or villages to spend their old days ('cyclical migration', see Bartle (1980) for a Ghanaian case-study). Because they know they will go home some day, the ties with their relatives are usually tighter while they are in the south. They come home for visits regularly and help their brothers and sisters financially.

Tamale who used to come and buy from him in bulk. “In one day, they could empty your garden: the onions, garden eggs, tomatoes, lettuce, cabbage, everything. And they always pay you cash on the spot. That was good because you don’t have to go to market to sell it yourself.” In the last two decades, vegetables have become more popular in the local market, first among town-based civil servants, but later also among others.

“After the farming, I would go to the bush with a bullock cart to fetch the hardwood to fence the garden. You know, in the dry season, the people release their animals and you have to fence your garden; otherwise the animals will destroy your vegetables.” Osman used to work in the gardens himself. In addition, he always had some boys to help him, usually his small brothers or other boys in the house. Osman used to go to the market to sell the vegetables himself. It was not a task of the women, although at times he would ask a wife to go and sell the vegetables for him. Osman’s wives did not usually sow or harvest in the gardens either, like they do on the rainfed farms. The garden work usually started around September and continued until April. *The profit you can make with your garden in one year, is up to what you can get when you go and burn charcoal in down south?* “It is always good, you get a handsome amount, even more than when you go south.” *Can you get up to a million?* “More than that. You know, nowadays there are some young men here in Lambusie who have never travelled to down south. They have their gardens and they get a lot of money from it. There is no need for them to go and burn charcoal.” Osman always used chemical fertiliser in the dry season gardens. Nowadays, most gardeners only use cow dung because the chemical fertiliser has become too expensive after the removal of subsidies. They spray the gardens with chemicals to prevent the insects from destroying the vegetables.

Osman abandoned his dry season garden about seven years ago, when he became the head of the house. His junior brother (Balesaucier), who returned to Lambusie two years ago, has started his own garden, taking over from another junior brother (Bamako). The two brothers more or less changed position two years ago, when Bamako went to the south to burn charcoal, and Balesaucier came back from the south to work on the family farm and in the dry season garden. Osman’s nephew (Badihinse), who is still in school, has bought seeds and will sow one of Osman’s two gardens. The boy has asked Osman to help him with some investment capital. Osman will not work in the garden himself; he will only go there to teach the boy and give him advice.

Between the year that you first started your garden and the year that you left it, have there been years that you didn’t prepare your garden? “No, I prepared it every year.” *Even in the drought years in the early 1980s?* “Even in those years, the water was always enough. You know, our gardens are lower than in the Nandom area, Burutu side. We always have water throughout, until the rainy season starts. That time you have to start your farm.” Besides the vegetables, Osman had fruit trees in his garden, especially mango and pawpaw[20]. These trees are still there and he can pick the fruits every year. He also used to have some teak trees and banana trees. The teak trees are used both for house construction and for sale. Taken together, Osman’s two gardens measured about half an acre. Osman is the owner of the land on which he had his gardens.

[20] Pawpaw is papaya.

Drought and political turmoil in the early 1980s

Osman earlier stated that the only two years in his life that the harvest failed considerably were at the time of the floods (1963) and "the time that J.J. took over". He alluded to the second coup of President Rawlings in 1981. *What do you remember of that time?* "There were serious killings; the whole of the country was shaking. There were coups, conflicts and hunger." *Was there any fighting in Lambusie?* "No, no, they only killed smugglers who tried to bring our goods across the border. So many were killed, but not from Lambusie." *How was the situation in Lambusie?* "That was the hunger time, people were queuing for food. The people also came from the villages to queue for food in Nandom Town because they didn't get enough from their farms." (Victor adds) "The government received rice and maize from foreign donors and they distributed it to the Districts and the communities. You go and queue for that one. You don't buy it. It is aid. At times, you were only asked to pay a very small amount for the transportation fee."

Osman: "Around 1981, 1982, 1983 there was an outbreak of hunger in the area." *What caused the hunger?* "It was because of the rains. The rain wasn't there, that was the problem." *So in all three years, there was not enough rain?* "There was always some rain, but it did not extend to the end of the season. Let's take it that for example this year, it has started well and it is ending very well, too, so everybody knows that if you have farmed this year, if you have 'bent down', you will be able to take something to the house. But those years, it would start around July and break by September 15, that's all. You don't get rain in October. That year, we were able to get some harvest, but little. My brother, who was a Policeman in Wa, helped us. He bought food for the whole house." *Do you remember which crops failed?* "Maize was zero, rice zero, guinea corn and late millet were better. For those who did cowpea, the first harvest was there, but the second gave nothing. Those who sowed their groundnuts late had nothing. Those who sowed early did harvest."

"After the crop failure of 1981, we could eat from the granary, the old food. Alfred sent five bags of maize and also yams. We sold one cow. That time, when you go to market, the food is scarce and the prices are high. With this cow we were able to buy only three bags of maize." *How many bags can you usually get?* "Okay, it depends on the cow, but if you sell a cow at 600,000 cedis, you can get about ten bags." *Were you also able to get some food aid?* "We received one bag for the two compounds together. It was less than a bowl (2.5 kg) per person." *Were you forced to cut down the number of meals per day?* "Okay, we usually eat three times a day. This time we had to reduce to two times, but never less than that. The bowls were not as full either, but real hunger, no."

"That year [1981], Chief Baloro held a meeting with the farmers and told them that they should cultivate short varieties of crops, the two months and three months varieties. If you sow that one in June, July, you know you will harvest in September/October. The one that takes around five or six months, you won't get it."

What happened in 1982? "That year was better, we were able to harvest all the crops. In the previous year (1981), the rice had failed and I decided not to cultivate rice in the following year. That was bad luck because other farmers here had a bumper harvest." *Even though there was not much rain?* "That year, the rains were better. The people who sowed rice at the river side, they get it plenty." *How did the other crops do?* They did well, like in other years. I didn't have to go to market that year." *And were you able to sell?* "I only sold

groundnuts that year." *In the previous year, you had eaten the old food from the granary. Were you able to add after the 1982 harvest?* "We did, but not up to the level of before 1981." *Did your brother send food again?* "No, but when he came on his leave, he organised a separate farm and people to weed on it. That one, it was added to our own harvest." *Did you have to eat less that year?* "No, we ate like before, three times a day."

How was 1983? Were you able to harvest? "You know, in 1981, I was still farming these long, long varieties. But by 1983, I had made up my mind and I had switched to the shorter varieties. That one was okay for me." *For which crops?* "It's the rice, three months; the maize 60 days; and we have this guinea corn that takes three months. *How did you get the seeds?* "The chief gave them to me. He was a seed grower, too. He advised us that as the season is changing every year we should sow short varieties. In 1983 the rains were short, like in 1981, and those who did the long varieties suffered again. But my own was better." *Did you notice that other people were hungry that year?* "The following farming season, it was always easy and cheap to get labourers on our farms. The Dagaras came plenty for contracts and I could cut the contracts big.[21] They have to take it. They need the money to buy food." *Besides the Dagaras, who came to work for you, were there other people who requested your help?* "When they are a bit related, they come and you have to give, otherwise it is not good."

After these dry years, did the rains become better again? "Since that time, the rain has been responding very well, but it was last year (1999) that the rains fell too much." *Were there other years that the rains were not enough?* "No, it has been raining. It was okay. Only last year it was too much. The maize was spoilt because I had not sown very early. That's why I have sown very early, this year. Since yesterday (half September 2000), the women have started harvesting the maize." *So last year, the rains came heavily and you think that if you had sown earlier, they would not have spoiled?* (Victor) "You know, by the time the rains came heavily, the maize was too small and the water submerged the whole plant. That's how the maize got spoilt. When the plants are bigger, they are able to withstand." (Osman) "My whole maize farm was spoilt, I haven't even entered to harvest a single cob. Only some places, where I put the maize on mounds, I was able to harvest. But it was not much." *And did you have maize farms in other areas?* "That was the only place, plus the compound farm. Around the house, the maize did well because this area is higher." *Which of the two farms was bigger?* "The one that was flooded was bigger. In fact, it was a big loss."

Did this loss cause food shortage in this year's lean season? "In the upland farms, I sowed the guinea corn and late millet. They did very well. And the rice too, it was good because rice likes the water. It was only the lowland maize that failed. The other crops pushed me up." *So the other crops could make up for the lost maize.* "Yes, the only difference is that I couldn't sell the maize like in most years. Instead, I sold the groundnuts and the yams."

Can you compare the rains of the past twenty years with the time that you were a small boy? "Those days, the rains were always better." *In what sense?* "It used to start just the time that you go to the farm, in April. Nowadays, it happens often that it is time to sow, but the rains are not there. It comes very late." *How does this affect your farms?* "Since we are doing

[21] When people work on other people's farms for money, the farm owner usually 'cuts a contract' for the labourer to weed and they agree on a price. The more poor households run out of food, the more they will try to find access to food through contract farming. When labour is in ample supply, the money a hired labourer gets per area unit is relatively low.

these shorter varieties, it doesn't affect us so much. Only sometimes in May, when it has rained, you send your wife to the farm to sow millet. Then the rains stop for some time and the farm becomes very dry. The crops die and so you have to re-sow or re-fill the whole thing again. This happened three years ago.

"When the women sow, they put three or four seeds in a hole. After the seeds have germinated and the seedlings reach your knee, you look if there are still empty spaces where the seeds have not germinated well. Then you go thinning and you transplant the seedlings to the empty spaces. But you can only do that when the soil is moist. Nowadays, when the first rains come, I do not sow. I have to wait until the third or fourth rain[22], when the whole soil becomes very moist. I never sow in April anymore."

Osman as head of the house (1993-2000)

In 1993, Ali Bada entrusted the leadership of the house to Osman. But the old man still has to be consulted in certain matters, especially family affairs, like funerals and bride-wealth payments. *Why was the leadership not passed to the second senior man in the house, Kofi?* "Okay, Kofi and Aji have spent most of their lives in the south. While they were there, they have not been helping much. They never put up 'zinc rooms' in the house; they never sent money. So they can't talk. They haven't deserved anything. My father feared that they would misuse what he has built up. Moreover, when my father handed over to me, seven years ago, they were still in the south. Kofi and Aji grew up in Lambusie, but when they were old enough, they went down south. Now they are old and they have come home to die. They were having their own houses in the south and decided not to help their relatives in the village. Now they have come home and I feed them. But if they want anything else, like cigarettes or drinks, they have to get it themselves. Some people are very selfish when they are down south. They think they will not return to their village so they don't invest. But in the end, they do come home. If Aji and Kofi had been helping their brothers and sisters in Lambusie, they would have been better now."

"When my father dies, I will also be looking to see if somebody is capable in the house, who knows how these things work: the farm, the animals. He has to be able to improve… to increase the production. This man will become the new leader when I die. He will bring us up, not down (laughs)."

The farm: From man power to animal traction

Osman started farming with bullocks in 1988. Ali Bada was still the head of the house. My interpreter (Victor), who was working for the Ministry of Agriculture in those days, taught Osman how to use bullocks and plough to till the land. The Ministry worked together with the Nandom Agricultural Project to promote bullock farming. Osman first trained one pair of bullocks and later expanded to two pairs. Osman also used a donkey with a smaller plough for some time, but the animal was old and Osman's experience with the bullocks was better, so he ceased using the donkey on his farm. *Before you started farming with bullocks, were your*

[22] Note that when people in the research area talk of rain, they really talk of heavy rainfall, downpours. In the mornings after – what I considered – a rainy night, I often asked somebody: "How was the rain last night?" They usually answered: "It didn't rain, it was only a drizzle."

fields as large as they are nowadays? "Okay, that time we were less in number, so we were farming a smaller area." With the bullocks they expanded their acreage, but they also have more mouths to feed. It is not very clear whether the area has increased more than the food needs. *When you weren't using bullocks yet, did you already produce a surplus almost every year?* "In those days, I was not the head of the house, but my father was able to sell food almost every year: yams, corn, groundnuts and at times millet. The 'Lagosians' (Yorubas from Lagos, Nigeria) used to come to my father to buy from him and retail it in Nandom."

There was a time that, although the area they farmed was smaller, they sold much more maize than nowadays. That was after they had started applying chemical fertiliser on their maize farms and before the subsidies on chemical fertiliser were removed. Until the 1970s, they had never sold maize; the maize they produced was for home consumption. In the 1970s and 1980s, their maize production increased sharply because of the chemical fertilisers. According to Osman, they were able to harvest about eight bags per acre (i.e. app. 2000 kg/ha). In those years, they sold maize in quite large quantities. Nowadays, Osman still sells maize almost every year. The acreage has increased, but the yields have decreased because they no longer apply chemical fertiliser. In an average year, Osman can harvest about four or five bags per acre (1000-1250 kg/ha) when he applies cow dung. This is still pretty good as compared to most farmers I interviewed. In the 1990s, many scholars in the agricultural sciences have written about the adverse effects of chemical fertiliser use on soil conditions in the medium to long term. Most of these scholars favour the use of organic manure. As we will see below, Osman has adapted his farm practices quite well to the decreased availability and affordability of chemical fertilisers, but he still looks back with nostalgia at the time when he had "bumper harvests" thanks to chemical fertilisers.

"When it is time for farming, I send the bullocks to the fields to plough. We have two pairs of bullocks. I hold the plough myself. My brothers Balesaucier and Suulo can also do it and even my son Mubarak (13 years old) can hold the plough. Another person has to hold the yoke to direct the bullocks. Only if the bullocks are very well trained you don't need a second person to guide the animals. After ploughing, I use a liner that is drawn by the bullocks so that the women can sow in line. We usually sow on the flat. Only for the yams, of course, we make mounds. The women in the house are plenty, so for the sowing I don't have to hire any labourers. I have no cultivator that can weed between the crops, so I have to organise labourers to weed in my fields. They have to come either once or twice. If you want your maize, millet and guinea corn fields to be very clean, you do a second weeding, but it is not always necessary. As for groundnuts and cowpeas, we weed them only once. The rice, we also weed it once and later on, you go and look. If the grasses are plenty, you start pulling them out by hand. You don't use the hoe again. The yams, we only weed them once."

"When it is time for reshaping the guinea corn, millet and maize, I use the bullocks again. With a ridger you weed between the rows and put the soil near the plants so that you get ridges. You have to reshape in order to give the crop the strength so that when the wind comes, it will not blow them down."[23] The reshaping is done when the plants are about one meter high. "When the farm is on a slope, you have to sow in lines across the slope. Otherwise the water and the soil will be running away." *Do you also make high ridges around the farm to keep the water inside?* "That one, I only do it with the rice. We can store the water

[23] Another word for 'reshaping' is 'to earthen up'.

like that and if it is too much, we can make a hole so the water can run away. It's a bit like irrigation."

"I need the cultivator, but I have not been able to buy it yet and nowadays the cost is very high. The first time, when you buy, you get a set that comprises of a side plough, a cultivator, a ridger and a liner. But now, they sell it in parts and the cost is very high. A plough costs 300,000 cedis. Some years ago you could get the whole set for 260,000 cedis. We buy these things from the Nandom Agricultural Project." *Do you have a bullock cart?* "No, I usually go and beg a cart from other people. Last week an extension officer came and said that we should apply for a loan from MoFA[24] to buy a cart." *What would you use the cart for?* "I need it to bring manure to the farms and the harvest to the house. I could use it to fetch firewood and to transport building materials." *Would you also rent it out to other people?* "Okay, in our area here, we don't usually rent out carts. It is more like a friendship thing. I have been borrowing the cart of a friend and I don't pay, so if I have my own cart, I can't go and charge people. But if there is a woman who wants to use your cart to fetch the firewood, you can charge her because she will sell the firewood and make a profit. If I buy a cart, my son Mubarak will be moving with it."

Osman still uses the hoe for the first and second weeding and on the yam farms. "I have been working with bullocks for more than ten years, now. But I have not forgotten how to handle the hoe. As for that one, I will never forget it."[25]

The people of the Nandom Agricultural Project, have they been coming to your farm? "Yes, they came to teach us how to improve our farms. They taught us how to sow 'line-line', to sow across the slope and for this compost making. You make a pit near your house and you throw in all the house waste, leaves, stocks and so on. You cover it with soil so that it decomposes. Then you send it to the farm and you use it as manure." *Are you still doing this?* "I have done it and it was good for me, but I don't do it anymore. You know, it is a lot of work and my farm is very big so I decided to concentrate on collecting the cow dung. That is easier." *Do you sometimes go to the Nandom Agricultural Project to buy farm inputs?* "We go there to buy nose rings for the bullocks, plough shares, seeds for the garden, tools, all these things." *Did you also buy your plough there?* "No, I got a loan from the ADB (Agricultural Development Bank). They give you the plough and later you pay back the money. We organised a group of ten farmers to collect the loans." *Have you paid back already?* "It was directly after the first harvest that we paid back." *Did the ADB work together with another organisation?* "They were together with MoFA to help the farmers to produce more." Victor told me that the ADB, MoFA and the local agricultural projects were working together in those days. *Nowadays does this still exist, can you go to this bank to borrow money to buy the cultivator?* "Yes, but I have to form a group of people who need a plough, a cart, or a cultivator. We will go and they buy it in bulk. We are trying to form a group now. I have already talked about it with some people."

If you need a cultivator, can't you just sell a cow? "I can do it. I am actually thinking of selling a cow to buy a bullock cart. It is always cheaper to do it like that because you don't pay any interest." *In the past, have you been selling cows to buy farm inputs?* "No, not yet;

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[24] MoFA is the Ministry of Food and Agriculture.

[25] Hoe-farming is very central to the ethnic identity of Sisala and Dagara (see chapter five).

when I need something like ploughshares, I sell groundnuts or a goat. Every year I have to buy about three. That will cost me about 45,000."

"I prepare all my farms with the plough. It is only the yam farm that has to be done by hand because the bullocks can't make mounds (laughs)." Osman usually opens new bush farms at the end of the rainy season, when the soil is still moist. If the grasses are short, at knee level, they can plough the grasses directly into the soil where they start rotting. This produces green manure. When the grasses are too high, they have to burn the surface first because it is too difficult to plough. He doesn't open new farms every year. A newly opened farm will remain fertile enough for about six years. In some areas, "where the soil is black", the land is very fertile and you can farm for a good ten years before you abandon the field. The sandy soils on the contrary have to be abandoned after four to seven years. In the year to come, Osman will open a new farm. His existing farms are still fertile enough, but he wants to expand. Land is not really a constraint. He has a large fallow land north of Lambusie on the way to Nabala. It borders with the Bangwon-Barwo Forest Reserve. The new land that he is going to clear after this year's harvest has not been farmed since he was a very small boy, so he expects it to be very fertile.

The fallow period on Osman's bush farms is long, but although his land has enough time to regenerate, Osman says that the land has become less fertile. *How come?* "You know, those days, the soil was very rich in nutrients. This time it is being exhausted." *But how can it exhaust with such long fallow periods?* (Victor answers) "It is the way that we burn the bushes. In the past, they didn't do that. There were these by-laws. When you go to the bush and burn and they get you, you have to pay a penalty. But now, they do it anyhow. Go and look at a land that you haven't cultivated for a long time. Someone will see a rat or a rabbit and he will burn the whole field. In the colonial days, we didn't do that. The Chief would summon you and you would have to pay a fine. Then he will send you to the landlord. You have to pay him, too. From the landlord, they'll send you to the traditional council. If you have to pay these three penalties, you will suffer. This time, it is still forbidden, but the law is not implemented like in those days." *And before the colonial days, did they burn a lot?* "That time, if you burn, it will destroy other people's harvests." *But didn't they burn in the dry season?* "You know, in those days, they used to leave the grains in the farm before they would bring it to the house. They harvested it and then heaped it in the farm. From there, the grains would dry and later they would send it to their houses, to the granary. They still do that in Samoa.[26] In Lambusie, you can't do that anymore. The thieves are too many. In the olden days, when they were still doing that, you couldn't burn the bush because you would destroy people's harvest."

How does the bush burning affect the soil fertility? "If the vegetation is not burned for about five years, the grass will rot and this will increase the fertility of the soil. But when you burn it, the wind will blow away the ashes and it becomes less." The main reason for people to burn the bush is for hunting. Cattle herders also burn the dry vegetation in order to get fresh grasses. Besides the bush burning, people also burn the vegetation and/or crop residues in their farms. This makes the tilling of the land easier. To maintain soil fertility, it is

[26] Samoa is a small town or large village, app. 10 miles east of Nandom.

probably[27] better to cut the vegetation and cover it with soil so that it starts rotting and producing manure. This involves more work, however, and in the local farming system, labour is as much a constraint as is fertile land. Another reason for people to burn crop residues and vegetation cover on their farms is to destroy hiding places of snakes. In some villages, the use of fire to prepare farms has recently been banned through a by-law of the village chiefs.

Last year, goats disturbed the guinea corn and maize in Osman's compound farm. That's why Osman wants to open a large cereal farm on a good distance from the house. In the compound farm, he will sow more groundnuts because if the goats chop the leaves of the groundnuts, it will not do as much harm as with the guinea corn. During the farming season, the goats in Lambusie have to be tethered, just like in the Nandom area, "but some people are very hard-headed. They will only tie the big goats and the small ones can go and destroy the crops." In the beginning of the farming season, the chief makes the announcement and everybody will catch and tie their goats. But in September, many people untie the goats because it is less work.

In the farming season of 2000, Osman has used his bullocks to plough six acres for other people. For each acre, he received 40,000 cedis. *Was that money enough to pay your labourers?* "I think I spent more or less the same on contract labourers, but I have to spend a lot to cater for the group farmers, too." Osman has also sent his bullocks to the individual farms of three women in the compound: his 'mothers' Batiune, Ama and Kinimbie. This is free of charge. Osman didn't plough for his wives. They have paid someone else to plough for them. They used the money from their groundnut farms and from the sheanut processing and other income generating activities. In other years, Osman did plough for them, free of charge. "If I would charge them, they would even prefer to hire the bullocks from someone else (laughs)." It is not exceptional that household members charge each other for services or goods. If a woman has brewed pito, she will usually give the husband his 'ansoman'[28]. This is a small pot of pito. If the man wants a gallon of pito, he has to pay for it just like any other customer.

Osman has also ploughed for an uncle, a brother of his mother. "You know, I am his nephew and if I am a bit okay, I can go and help him. Last year December, I organised some people to raise yam mounds for him. This year, in the wet season, I went and ploughed his farm. Now, two weeks ago, he called me to his house because he wants to give me something. When the uncle has the love for you, he can call you and give you an animal, a sheep, a goat, or even a cow, to take care of. It will reproduce and later, if he has a pressing issue, he can come to you and ask an animal back. And if he dies, you know that you have to bring an animal to his funeral.[29] Osman also ploughs for the Fulani man who herds his cattle. Osman's relationship with the Fulani man will be elaborated in the section about livestock.

Some years ago, Osman helped a young man from the neighbouring compound by ploughing a large groundnut field for him and by providing the seeds. With the revenue, the young

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[27] I say 'probably' because there are still some debates going on about the effect of bush burning. According to Richards (1985) researchers and extension workers have been wrong to indiscriminately condemn bush burning. He indicates that by burning off vegetation, potassium is released to the soil instantly. On soils that are poor in this nutrient, burning is favourable to crop yields. His findings result from a fieldwork in the tropical forest zone of Sierra Leone, however. I don't know whether the same is true for the savannah zone.

[28] 'Ansoman' means good morning in Dagaare.

[29] This so-called 'uncle-farming' is further elaborated below, in the section about social networks.

man was able to buy his own bullocks. "When I am old and weak, this boy will also remember me," Osman says.

Do you have a system in which you sow certain crops after opening new farms and then change to other crops when the land becomes less fertile: what they call crop rotation? "Okay, we have these striga weeds in our farms, especially with the guinea corn. When you sow the late millet, it kills the roots of the straiga. So we try to change from year to year. I divide one bush farm in different plots and I sow millet here; guinea corn there; millet here; guinea corn there. The next year, I will change it. The third year I can change it to maize, the whole farm." *When you open up a new bush farm and the land is still very fertile, do you not prefer to sow maize first?* (Victor answers) "You don't sow maize on a newly opened farm. The probability is that the soil hardens up, that it becomes very dry in time, so you first of all sow guinea corn or millet. After the first harvest, you will see which part of your farm is very fertile. That is where you sow the maize in the following year. Let's take it that you open a new farm of five acres. You sow guinea corn small; millet small; maize small; groundnuts small. It is like a test plot, to see which of the varieties is good for that place." (to Osman) *Is that something that the 'agric people' do, or do you do it yourself?* "We do it. We test the varieties for the soil. This year I did it with the two varieties of guinea corn." In his compound farm, Osman has sown both a traditional variety of guinea corn and a new variety (Global 2000). Osman has sown the two varieties because he wants to experiment which type does better in this soil so that in the future, he will know which will give the highest yields. *Do you also sow the two together so that if one fails, at least you'll get something from the other?* "No, that is what the small-small farmers do. For me, it is just a test. Next year, I will continue with the one that yielded more." *Which crop is doing better?* "The Global 2000 is responding very well. I will get it plenty this year, more than the old type." Osman says that he will never totally abandon the traditional guinea corn. He will always reserve a small plot to sow the old varieties. *Why would you do that... if the Global 2000 is better?* "It's our grandfather's inheritance. If you leave it, there will be a year that you want it back and you can't get it." (Victor continues) "You know, some people in our area still have the local variety of maize. One year, you might need it and then you don't have to go to anybody, or to the market. Some old people still have the colonial type millet. That one takes a very long time, just like the Wala type, 'Kyere'. We call it 'Furmiyɛ'. They still produce it, but not much. You will tell your future generations that when you were a small boy, this was the crop that your father was growing and that it yielded more than what you are growing now." *But would that be true?* "It's true because in those days, the rain pattern was better. These varieties need a long rainy season, so nowadays they are not very good. But you don't know what the rain is going to do in the future."

I asked Victor whether he had heard of 'fixed crop rotations'. In farming system research in the Upper West Region, it was found that farmers in the low population density areas have typical five to seven year cycles in which they cultivate their bush farms. In these cycles, crops that need a relatively fertile soil are cultivated directly after the fallow period.[30] Surprisingly, Victor, who worked as an extension officer for many years, had never heard of crop rotation. It is known that these cycles are not so much practised in the high population density areas, like Nandom, but initially, I thought that the Lambusie area had more or less

[30] See Adolph et al. (1993) and Runge-Metzger et al. (1993).

the same farming system as the Eastern part of the Upper West Region. In fact, Lambusie lies in the transition zone between high and low population density farming systems.

Intercropping is very common among the Dagara. Osman does not intercrop much. He only cultivates maize and yam on mounds with rice in between and his wives sow some vegetables between the grains in the compound farm. Osman does cultivate several crops on one field, but they are not mixed together. One plot is sown with guinea corn, one plot with beans, etc. Osman is thinking about intercropping millet and beans, or millet and cowpeas next year because he has heard that these crops "help each other."

Most people prepare their rice fields for the following year directly *after* the harvest. Osman says he doesn't do this. "After the harvest, we just heap the crop residues. When it is almost time for sowing again, I just use my bullocks to plough the crop residues inside." *Do you know why other people do it?* "This way, they can sow the rice early and they will have more time to prepare other fields when labour is short, at the start of the farming season." *Why do you not do that?* "It's because I have bullocks. The moment that it is almost time to sow, I just go and plough. If you don't have bullocks, you cannot be fast so you have to start around the dry season time. This enables them to sow early, after the first rains."

In the late 1980s, Osman farmed cotton for two years. It was not very profitable, however, and that is why he stopped. "The people of the Company came very late, in February, to buy it. When you bale it, the weight reduces and you don't get very much." On a regional level, the substantial increase in cotton production is mainly concentrated in the eastern part of the region (Sisala district). In my survey sample, only one out of sixty respondents cultivated cotton. In the Lambusie area, cotton farming is more common than in the Nandom area.

Due to their short growing period (60 days), cowpeas are usually harvested twice a year. This year, Osman harvested only once because at the time of the second sowing he wanted to concentrate on the other crops and the labour was a bit scarce at that moment. Osman could have asked someone, for example his-son-in-law, to organise farm labourers for him, but he didn't do it. "You don't ask your in-law all the time. He will come, but he will not be very happy with you, because he also has to go to his own farm to feed your daughter."

No other crops than cowpeas are harvested twice a year. It is only the yams that people harvest *in two phases*, the first time somewhere around August or September. The farmer will harvest a few tubers, cut a piece and put it back in the ground. From this, a bunch of tiny shoots will sprout. The shoots are used for planting the following year. "But the other yams, I leave them to grow to be very fat tubers that will get good prices in the market. After the rains cease, soon you will see that the yam leaves dry up. You will then go and harvest it. Around December when I harvest yams, I always dash a lot to people who come to the house and the village. The seeds too, I often dash to people." Osman usually sows his yams directly after harvesting. The seeds are in the mounds during the dry season. This is risky because animals can take out the seeds, or the seeds can dry up. To protect the shoots from the sun, Osman mulches his yam mounds, either with grasses or with rice husk.

Osman has three bush farms: one with maize, guinea corn and millet; one with groundnuts, cowpeas and bambara beans; and one in the valley with rice, yams and a little bit of maize. Osman estimated the size of his bush farms at six acres maize, four acres guinea corn and three acres millet (early and late). In the year 2000, the groundnut farm was 'only' two acres in size, while the cowpea farm measured four acres. In other years, the area sowed with

groundnuts was larger. I did not get estimations of the areas cultivated with other crops. But Osman estimated that the compound farm, which I measured to be six acres, fits about four times in all his other farms together. This would mean that the total area farmed by Osman is about thirty acres. This excludes the individual farms of other household members. With a household size of 31, the acreage per capita is a bit more than the average of the whole survey sample (0.83 acre per capita).

Maintaining and improving soil fertility

Osman used to buy chemical fertiliser. This year, however, he decided that it was too costly so he didn't buy. "A bag now costs about 108,000 cedis. That's more than the price of a bag of maize. I have made up my mind: If I get a bullock cart, my worries are over because I can go and get plenty cow dung for my farms. The cow dung is very good, better than the chemical fertiliser."[31] *This year, you didn't buy chemical fertiliser and you don't have the cart yet. Do you think your harvest will be very poor?* "It will be good because this year, instead of using a cart, the women and children carried the manure to the farms and we, the men, have been using our bicycles to carry cocoa bags with dried manure to the farms." All able-bodied compound dwellers assist.

They bring the manure to both the compound farms and the bush farms. *Do you apply the animal dung to all the crops?* (Victor answers) "No, when you apply manure to rice, the water will wash everything away because the rice fields are in a valley. And you don't apply to groundnuts. They don't need it. If you do, you will see that the plants get plenty leaves, but the seeds are the same. There are certain chemical fertilisers that are good for groundnuts, however." Osman himself never used this type of fertiliser, but the extension officers once experimented it on his farm. Osman does apply cow dung on the guinea corn. The millet will benefit from this manure one year later because he usually rotates the guinea corn and millet. The cow dung releases its nutrients for about three years before it is exhausted. Osman doesn't apply manure to cowpeas and yams. *The time that you were using chemical fertilisers, on which crops did you apply?* "On the maize, guinea corn and in the garden."

Osman uses the cow dung from his own kraal and from the Fulani kraal. *Do you have to pay for the manure?* "You know, the Fulani have settled on our land. We don't have to give them anything for the manure. Only if you want, you can dash them something. They won't refuse you." Osman has entrusted part of his cattle herd to a Fulani man, but even if this would not be the case, the Fulani would give him the manure. My interpreter confirmed that because he collects dung from the Fulani himself. They give it to him for free while they are not herding his cattle. There are four different Fulani men whose cow dung Osman collects. "You go to the first Fulani and collect the manure, then to the second, third and fourth. After some weeks, the cows have been shitting enough again and you return to the first."

Osman and his people collect cow dung during the whole dry season and they go several times a week. They heap the cow dung in the farms. "When April comes, you spread the manure and after the first good rains, you plough it inside. If you spread it directly, there may be a very big early rain and the manure will be washed away. That's why I first heap it, to

[31] In a way, this contradicts with what he earlier said about the yields they used to get with chemical fertiliser. That was more than what he can get by applying manure. The manure is "better" in the sense that it is less costly. It is probably also better for the soil fertility in the long term.

avoid leaching." Osman says that when they are collecting manure, the women can't carry out their normal income generating activities. Osman always announces it well in advance so that the women can plan their own activities. When Osman gets a bullock cart, the women will benefit because then they can fully engage in their non-agricultural income generating activities again.

The time that your father was still in command, were you already collecting the manure from the Fulani kraals? "No, that time, there was plenty chemical fertiliser. We didn't collect the manure from the Fulani." Nowadays the chemical fertiliser is very expensive. Few people can afford to buy and those who *can*, like Osman, doubt the price effectiveness. Even though the increase in output may still be higher than the extra costs in a normal year, those farmers who can afford it realise that the investment is risky. In case of a partial crop failure, they lose more. Even for those who still want to buy chemical fertiliser, it is sometimes hard to get because few stores are still selling it. "It is only the Cotton Company. You can talk to the man in charge and he'll release you two or three bags. But he can't sell you more, he has a limit." Four or five years ago, Osman started collecting manure from the Fulani men. That time, he still used to buy the chemical fertiliser in addition, though less than before. Last year was the first time that he didn't buy any chemical fertiliser at all and fully relied on manure. Chemical fertiliser was subsidised from the mid 1960s until 1990. After the removal of subsidies, fertiliser use decreased dramatically. (Tripp & Marfo 1997: 100-101). The recent sharp increase in fertiliser prices was mainly caused by the decline of the Ghanaian currency. All chemical fertilisers are imported.

Farm labour

Osman is a member of a farming group ('pakaana'). The group has ten members, but the composition changes from year to year. All have bullock ploughs. During the land preparation, the group is divided. Five members have agreed to plough each other's farms. "In one day, we can plough a very large area, like up to 10 acres." Five members of the group plough their own farms. When it is time for weeding, the whole group works together. After the second weeding, when it is time for reshaping, the group divides again. Five members, of whom Osman is one, join together to enter each other's farms with the bullocks. The other members will reshape their own farms. Osman's group works in the morning. "Sometimes we try to go very early. Around 4.30 a.m., you leave the house. Around eight o'clock you have finished your contracts and you are free to do other things the rest of the day. You can go to your own farm or you can decide to rest: it's up to you."

When Osman, Suulo and Balesaucier work with their farming groups, the other household members, who are not in farming groups, are supposed to go to the family farm. *Do the other household members always have to work in the family farm in the morning so that they are free to go to their own farm in the 'evening time'*[32]*?* "Correct. In the afternoon you are free to do what you want. Most people will rest for some hours and in the evening time they will go to their individual farms. Some will work on other people's farm for money or meat and yet others will go and do something else."

[32] In local English, the 'evening' starts around four o' clock. That is the time that the weather cools down a bit and those people who take a siesta in the mid-day hours start working again.

In Osman's farming group, all men are more or less of equal strength and they are all from the surrounding compounds. Suulo is in the same group as Osman. Balesaucier is in a different group. Kofi and Aji are not in groups. Osman's son (Mubarak) has formed a group with some friends. "In a farming group, the most important thing is that you don't have somebody telling lies. For example, today you like to go to Nandom market and you will say: "I'm sick, I can't go to farm. That one is not good. There has to be unity. And the group must have some by-laws to govern the movement of the members. For example, if someone has a funeral in the house, the others have to accept that he can't come and they won't worry him. But if it is a funeral that doesn't directly concern you and you go there, when you do that about three times, they will warn you and they will sack you from the group. They will say: "Brother, we can't work with you." But if somebody is really sick or there are many people dying in his house, the group will help him. Although this man can't work as much as the others, they will come to his farm to work for him. They know that next year, misfortune can come to them. And then they'll be happy that they are in a group."

Do you also get people from the Dagara villages to come and work on your farms? "Yes, they come as a group and I give them contracts. Today, there are 5 girls from Dondometeng who have come to work for me. I sent them to my rice farm and they are pulling out the grasses now. Back at home they have nothing left to do because their farms are small and they have finished the weeding there. With these contracts, some people can get a lot of money. Some come early morning and they stay until five. They don't stop. They can go home with 20,000 cedis. Some of them don't want the money at the end of the day. I pay them at the end of the week. "They know that if they get it at the end of each day, they will spend it and do nothing." At the end of the week they can have 100,000 cedis. "That is more than what a government worker gets (laughs), but to get such an amount, you have to be very strong and you have to work very hard. No resting."

As we have seen, the compound is populous, but many compound dwellers are children and elderly. Osman's two junior fathers (Kofi and Aji) still help, but they can't contribute much labour because they are getting old. Kofi is about five years older than Aji, but he works more. "Aji is lazy and he is a chain smoker," Osman says. Osman's junior brothers (Balesaucier and Suulo) are very strong. Suulo stays down south most of the year, but he always comes home to work on the farm. Osman's son (Mubarak) doesn't go to school and always works on the farm. He also takes care of the animals. Two other boys (Badahinse and Basiru) do go to school. Badahinse is a son of Alfred, Osman's late brother. Basiru is a grandson of Mumune. Badihinse attends Lambusie JSS and Basiru is in Lawra SSS. Both boys help in the farm during their school holidays and Badihinse also helps after school. The two sons of Suulo (Fatawu and Mutaru) are in primary school and although they are quite young (eleven an eight years old) they also help in the farm. Two other boys in the house (Tauu and Hanif) are too young (6 and 2 years old respectively) to work on the farm. In all, there are three strong adult men, two old men, one boy 'full-time' and four boys 'part-time' to do the land preparation and the weeding. There are enough women in all age groups to do the sowing, harvesting and processing. Osman occasionally hires girls to work on his individual farms.

Besides the farming group, the household labour and the hired labour, three types of labour arrangements are of importance in Osman's farm activities: in-law farming, uncle-farming

and friendship farming. These will be discussed in the section about social networks. According to Osman, the non-household labour is more important than the household labour. "When a group of thirty-five strong men comes to my farm for two days, they do more than we can ever do ourselves."

Individual farms

In the two 'pathways' I have described before Osman's, the households did not distinguish collective and individual farms. In general, it can be said that the larger a household, the more likely it is that some individual household members cultivate their own fields. In Osman's household, this is the case for almost all adults (see table 8.6). The two most common crops that the house people sow on their individual fields are groundnuts and rice. Some of them also cultivate bambara beans, cowpeas or yams (yams only by the men). Osman's three wives all have their own rice and groundnut fields. Balesaucier has his own rice and yam fields. Besides that, he has his own garden. During the farming season, Balesaucier usually sows maize in the garden. It has to be an early maturing variety of maize because in October, the garden has to be empty to sow the vegetables. The garden is under total control of Balesaucier. Balesaucier can give some revenue of the garden to Osman, but it is not an obligation. If he does, Osman will sooner or later reward him. This year, Balesaucier hasn't shared any garden revenues with Osman, nor has he informed Osman about the profit.

Osman usually works on his individual fields in the afternoon and evening time. He cultivates groundnut, rice, cowpea and yam individually. Osman's brothers don't usually help on Osman's fields. Osman's wives and children do have to work on his fields when he requests. The children of Suulo and Amisa who live in Lambusie are under Osman's direct control, so they also have to work for him. Ultimately, as the head of the house, Osman can force other compound dwellers to work on his personal farms, but he will only do that in exceptional cases.

After the harvest, individual household members can decide to sell their produce or they can decide to keep it for their own consumption. When a man wants to eat rice today, he has to go to his own storeroom, collect a bowl and give it to his wife to prepare. But he can't keep the food for himself or for his own sub-unit; he has to share it with the other compound dwellers. Osman's brothers and most of the women give out their rice like that: for common use. Only Kofi sells his whole rice harvest. Osman is not particularly happy about that. "He is like a parasite, but since he is a father, we can't refuse him. Anyway, he is old, but since he can still produce, he should also share, just like the others."

Marketing of agricultural produce

Osman sells maize, groundnuts, cowpeas and yams. Millet and guinea corn are usually stored in the house and only sold if there is a surplus after the new harvest. Osman doesn't sell rice. "I like eating it too much (laughs)." *When do you usually sell your groundnuts?* "When everybody is harvesting his groundnuts, the price is always very low. But in December, January, the price goes up. That is when I sell most. You know, I often use my groundnut money to buy animals and that time of the year, the price of animals, for example cows, is coming down again. But I always save two bags for sowing next year and three bags to sell later on, getting to April, May, for any pressing issue." By that time, the price will have further

increased. “As for groundnuts, if there is no pressing issue, I always try to delay in selling. At harvest time, a bowl will cost about 2,000 cedis. In the lean season, it is up to 4,000. So if I do not really need the money, I will store it to get this 4,000. Anyway, sometimes I need the money and I sell.”

“As for maize, I will always avoid selling after the harvest. Only if there is a very pressing issue, I will do that. I save it at least until April.” *Do you sometimes try to delay even longer, until the peak of the lean season?* “No, I don’t usually do that. When I sell around April, I sell it in bulk to be able to start my farm work again. That time, I will be buying my farm implements and at times I also need the money to take care of the workers on the farm. I will buy some goats to make sure that there is enough meat for them. As for the pito and the grains, I usually get it from my own granary.”

The yams are harvested around December. They are stored and sold out gradually, not in bulk. “There is no fixed time for selling yams, it is up to you, the farmer. Traders sometimes come to you and collect about a hundred tubers. That is good money. You can get about 1000 cedis per tuber. *Do you also use yam money to buy animals?* “Yes, sheep, goats, but not cows, the money won’t reach. You know, you farm yams and with the profit, you buy a goat for, let’s say, 60,000. In two years time, your goat may have reproduced and after some time you have enough to buy a cow.” *But you estimated that you harvest more than 2000 tubers each year and one tuber on average can give about 1000 cedis. With two million cedis, you should be able to buy at least one cow?* “That is true, but you don’t sell in bulk and there are many other expenses that have to be taken care of with the yam money. Besides, we will eat part of the yams in the house and what we give away is plenty, too. That is more than what I sell.”

Late rains

“This year (2000), the rains are good because they started early, just before Easter, and it is still raining. In some years, the rain has stopped by now (20 September). Other years, it continues until the 15th of November before it ceases finally and we know that we are in our dry season. This year, we expect it to continue until the 15th of November.” *Would that be good?* “It would be good because there are some crops that need rain around October ending.” *Which crops?* (Victor answers) “Late millet needs rain in October to wash away the pollen dust. They form their seeds in October. When there is a rain, let’s say, between the 27th of October and the 3rd of November, it washes away the pollination. You will see that the whole farm becomes very white. That is the seeds of the millet. You can stand at about half a kilometre and you see the whole farm white. That means it is a good harvest.”

If the rains stop on the 15th of October, what can we expect from the harvest? “The early millet, the guinea corn, the maize, the groundnuts, all will do well. It is just the late millet and the rice that won’t give much. Anyway, for the rice it depends on the variety. The long – five months – variety would not do well. That one you harvest it the same time as the late millet. But the three months variety, they are starting to harvest it now (20 September) so it would do well.” *If there is a lot of rain in October ending, would that also be bad for certain crops?* “Too much rain can affect other crops in the sense that there will be no good, dry place to store it. There won’t be sunshine for the crops to dry. The grains will germinate in the house. That means you have to eat it, sell it, or waste it. You give it to your animals and you later go hungry yourself. We want the rain to come in stages, intervals, so that between the rains there

will be time to dry the crops. Like now, we are harvesting the groundnuts and we need these intervals of four, five days no rain. When it is threatening to rain, you take them inside. When the rain is over, you bring them outside again."

Do you also need a dry period before you can enter the field to harvest? "No. Why?" *If it rains today, can I harvest tomorrow?* "Oh yes, if you have a place to dry it, you can go and cut it and next morning they can start bringing it into the house. As for the groundnuts, the soil *has* to be moist when you harvest. If it is dry, you will pull the plants out and the groundnuts will remain in the soil."

Livestock

Osman owns four trained bullocks, four cows and four calves. A Fulani man herds the cows and the calves. *Do you spread the cattle between two Fulanis?* "No, it is all with one Fulani, in one kraal." *Are you not afraid that he will run away with your cattle? It has happened before…* "No, it won't happen again. This Fulani man has so many children and people with him; he can't run away just like that. You know, it is more complicated to have cattle with several Fulanis. Anyway, I have the trust for this man. Other people do spread their cattle like that. It means they don't trust the Fulani." *Are these cattle considered family cattle?* "No, it is my own property. This time, we don't have family cattle anymore. It only gives trouble. Some lazy relatives will not like to work. They will push you to sell the cows. You will have plenty money, but when it is gone, it will not return. If it is your own property, you can go and sell when you see that it is necessary. You don't have to consult anybody."

Osman is expected to maintain the Fulani man who herds his cattle. "The rule is that every month you have pay the Fulani who takes care of your cattle. So I ask him: 'Should I be paying you a monthly 'salary', or should I help you to produce more food?' The Fulani man will say that I should farm for him. He knows that if I pay him, he will go to the market and he will not be able to buy enough food. But now, if he is able to harvest ten bags of maize, it is all for him. And the milk from your cows, too, he doesn't give it to you. He sells it." *So this year, how many days have you been working for him?* "Every year, I go there three or four times with some people in the house. I plough for him. That is one day. The second day is for the first weeding. The third day is for the second weeding, but that one is not always necessary. The last day is for the reshaping." *Do you farm more than an acre for him?* "It's more than that. It can be up to eight acres." *Are you sure?* "You know, I am not the only one who works for him. He will organise labour. The other people who have entrusted their cattle to him will also be helping. And the 'Dagartis' will come to him for contracts. Let's say you are in need of a fowl. The Fulani man will tell you to bring three people and give you a contract. You finish the contract and he will give you a fowl."

Besides you, are there any other people in the house who have cows for themselves? "My brothers, when they went to work down south, they decided to 'pocket' all the money for themselves and chop it instead of giving it to their father. If you are a government worker and you get 300,000 cedis every month, you'll give it to your father and he will give you 100,000 back to spend. He will know how to invest the rest in cattle. One day, he will show the cows to you." *So Balesaucier, for example, did he never give money to your father?* "Balesaucier is very young. He has not been helping like I used to do." As we will see below, Suulo owns

one cow and Bamako owns three heads of cattle. Bamako lives down south, but the cattle are in Lambusie.

Besides the cattle, there are many other farm animals in the house. Most women in the compound have their own goats, sheep and/or poultry. They have bought the animals with the profits of their income generating activities. Balesaucier (who is not a Muslim) also rears pigs. Osman: "As for the fowls, someone who has cattle, sheep and goats, he doesn't take the poultry very seriously. I have some birds, but they often die from diseases. The boys in the house have their own fowls, too. They can start with fowls, to get the feeling and the experience. Later, they will be able to rear bigger animals." When I visited Osman's house for the survey, there were about thirty-five fowls, twenty-two goats, ten sheep, three pigs and the cattle.

Is there a special time in the year that you always sell animals? "I always sell when I need the money. When the farming starts, I need money, but I always try to use the groundnut or maize money for that one. Anyway, I don't sell so often. *Is your herd increasing?* "Yes, it is."

Hunting

In the dry season, Osman hunts. Suulo, Bamako and Amisa also hunt when they come home from the south in the dry season (which is rare). Osman usually hunts in the night. It is not communal hunting. He goes out alone, with a headlamp and a gun. Victor continues: "As for the big hunting parties[33], we have stopped it in our area. It is only the Dagaras who still do it. And they always try to steal people's guinea fowls. They will kill it and say it is a bush fowl. So when they intend to come to our area, we usually inform them to stay away to stay in their own area. We Sisalas, we don't do it. It is only once in about five years, when there are plenty monkeys in the bush disturbing our farms, that they will announce to the whole village to come and chase these monkeys away to far away places and kill a few."

Osman shoots rabbit, porcupine, wild ducks and, if he's lucky, deer, bush pigs or antelopes. When he catches a big mammal, he will sell part of it. When he catches rabbits or birds, he will just take them to the house to chop.

Food storage

"We can store grains up to three years with these herbs: 'zaare'. Before you store the new grains in the granary, you take out the old grains and burn grass inside in order to kill insects. You then take a basket to find the herbs in the bush, bring it to the house, dry it, pound it, add ash to it and sprinkle it over the millet and inside the granary. You put one layer of grains and sprinkle, then another layer and sprinkle, until you get to the end. No insects will enter. But when you open the granary later, the scent will come to you like that (turns his head away and makes an ugly face). But it doesn't affect the food." *Which crops can be protected this way?* "When you use the 'zaare', it can store any type of crops, for example beans, corn, bambara beans, groundnuts and of course the millet and guinea corn, anything at all." It is only for storing the maize that Osman uses chemicals. In practice, Osman never stores food for three years. In the past, it only occurred after a sequence of good harvests.

Around September, October, Osman usually still has guinea corn in store and sometimes he also has millet left. When the new harvest is good, he will give the old grains to Petronella,

[33] Described in the pathway of Egidius Dugyi.

Fio and Adjuah to brew pito. This pito is used to cater for the group of labourers who come and help to clear new fields. After this, if there are still grains left, Osman will sell the remainder, usually to brewers. Sometimes a woman in the house will buy the guinea corn from him. She will not get it for free. If Osman sees that for some reason the new harvest is not very good, he will store the new harvest and start eating the old grains. He will not sell millet and guinea corn in such a year.

There are several granaries in the compound. A very big granary made of straw and sand – the same type as found in the Dagara villages – serves to store millet and guinea corn. In the middle of the courtyard, there is a granary for maize that I have never seen in the Nandom area. It is a small building made of mud bricks and a thatched roof. The old women of the house remove the maize seeds from the cobs and store the seeds. Usually Osman applies chemicals (Asteric Dust) to protect the maize. For groundnuts, there is a separate, smaller granary, but Osman will usually just put the groundnuts in bags and store the bags in his room. Rice and cowpeas are also put in bags. The bambara beans are put in a big open pot with ashes. The sheanuts are also stored in a small granary. Yams are stored in a big hole outside the compound. The yams are piled inside and covered with stocks and thorns so that animals will not disturb. Osman can store more than 2000 tubers like that.

Food habits

There are five cooking units in the compound. Hasulo and Asuma cook together because Hasulo has only one child left in the house. Kassin, Ama, Kinimbie and Petronella cook separately. Batiune and Fio don't cook; they eat with the others. At dusk, the women will bring their bowls with food to the central courtyard. The men, women and children form separate groups. Osman will mix the soups of his wives. "If I say that one soup is sweeter than the other, there will be trouble in the house." Most days, the women cook different meals. One will prepare T.Z. and another one will make kenkey, rice or yams. This way they diversify their diet.

Osman usually gives out grains to the cooking units once a week. There is a fixed ratio of distribution. With their own food production, the women can supplement this if they wish. If they want to eat rice and Osman doesn't hand out rice, they can take it from their own store. If they do this, they can't keep the rice for themselves and their own children. They have to share it with the rest of the compound. In practice, Osman says, a woman will often hide some food to give to her own children.

The amount of food Osman hands out varies between two and three bowls of millet or guinea corn plus three to five bowls of maize per cooking unit per week. As for the rice, he hands it out for the whole house in one. The women have to share it. The same applies to the other crops of Osman's individual fields: yams, cowpeas, beans and bambara beans. These are handed out irregularly. Groundnuts are the exception. Although the women sow on Osman's groundnut fields, the harvest is Osman's own property. "If I want to buy something for myself, I take a bag of groundnuts and sell it." They don't eat groundnut soup very often. Sometimes a wife will take out her own groundnuts to prepare the soup "to please her husband". Equally, Osman will sometimes give out groundnuts to please the house people. The wives get most soup ingredients from the bush. In the rainy season, the soup ingredients

are abundant in the bush. They dry the tree leaves and bush vegetables so that they can use it in the dry season.

Osman says that the weekly amount of grains he hands out doesn't change over the year. "As a man, you take care of the granary. You have to work out how much is brought in from the fields. If this year, you have a bumper harvest, you maintain a certain level for your people, but if you know that this year the harvest is very poor, you have to decrease it. The women know it too: that you will give out less. It changes from year to year, but not so much within the year." *This requires quite a precise calculation. Do you really do it like this?* "Let's say last year I had ten bags and I was able to feed them throughout the year. This year I get six bags. I have to count the harvest when it comes in. I will know that I won't be able to feed them like last year. I know that I will have to reduce and I won't wait until the lean season. I will start from the beginning so that we don't suffer later on. Anyway, after a bad harvest, we don't always eat less. I will just decide to *sell* less, only groundnuts. And I usually have some grains in store. I will first hand out the old grains. I can also decide to sell some of my animals. If I sell animals to buy grains after the harvest when grain prices are low and I bring the grains to the house, the women will start wasting it and I will probably have to sell another cow before the next harvest. But if I sell a cow later in the year, it is also not good because by then the food prices have increased and the price of cattle is probably less. So what I do is this: I wait until the prices for cows are good. Then I will sell a cow and go to a trader or a big [commercial] farmer to buy maize. But I will not take the bags to the house immediately and I will not inform my wives. When the granary is getting empty, I will then go to collect the bags." *What I don't understand is this: you are the one that hands out the grains. You know how much you have and you determine the rations. So how can the women be wasting the food?* "Let's say I give out five bowls per woman per week. Instead of finishing it in one week, they'll finish it in four or five days. If they think that what we have in store is not much, they will be more careful."

In the past seven years, since you took over from your father, have you ever seen the bottom of the granary? "No, in fact there has always been a surplus. And you know: the women now have their own farms, too. At times if I don't give out grains, they will provide. So if I give less, they will be forced to use their own harvest and cook for the family. They will even be happy to do it". *In the past, did the women already have their own farms?* "They had farms, but it is more now. In those days, the women were not using their harvest to cook for the family, only when there was hunger. Nowadays, it is more common. Yesterday for example, Petronella provided the millet for the T.Z. and today it is Asuma. I handed out the grains a week ago, but it only lasted five days. I won't give out again until the week ends. So that is where they have to come in. Usually they will provide rice." Most women don't cultivate maize, millet and guinea corn. But Petronella, who is a teacher, has been using her salary to buy millet for the house. Some other house women have also been using part of their farm and non-farm income to buy grains. *Does it give the women status to do that?* "They become happy and proud that they're also productive in the family."

As he indicated above, Osman sometimes deliberately delays handing out the grains. When he does this, the women have to provide the food. *When you do this, is there tension in the house; do the women become angry?* Victor answers: "Okay, it changes from house to house how the man treats his people and how they come to a common understanding. Some lazy

men do not want to go and farm and the women have to struggle to get enough food." *When you delay, are there any women in the house who cannot provide grains?* Osman: "There is no woman in this compound that can't afford. They're all doing fine. Even the old woman lying down on the floor most of the day, she has her own farm. She hires labourers to do the weeding. When she sees the need, she will give out some grains to the younger women to cook food for the house."

Income generating activities of individual household members

Most adult compound dwellers have their own income-generating activities. In their work, they are usually assisted by the children who sleep in their rooms. That is how the sub-units in the compound are formed. Some of the individual income-generating activities are agricultural and local, while other activities are non-agricultural and/or extra-local. Table 8.6 shows a schematic overview of the income generating activities of the compound dwellers. Besides the activities mentioned in the table, most adult and adolescent household members own livestock individually.

Table 8.6 Income generating activities of individual household members

Name	*Activity (livestock production excluded)*
Hasulo	Sheanut processing, rice, groundnuts, guinea corn, cowpeas;
Asuma	Sheanut processing, kenkey selling, rice, groundnuts, cowpeas;
Kassin	Sheanut processing, kenkey selling, rice, groundnuts, cowpeas;
Balesaucier	Dry season garden, individual farm;
Fio	Pito brewing, sheanut processing, maize, rice, groundnuts, cowpeas;
Ama	Basket weaving, groundnuts, rice, cowpeas;
Kinimbie	Groundnuts, maize;
Batiune	Groundnuts, basket weaving;
Petronella	Teacher at primary school, pito brewing, farming;
Aji	Mending tools, weaving armchairs;
Kofi	Rice, groundnuts;
Suulo	Charcoal burning in southern Ghana

Osman's three wives all process sheanut butter. They do it every week and even though they help each other, every wife has her own, separate business. The children, especially the daughters, help, too. The production of sheabutter involves the following steps: pick the shea*fruits* from the farm trees and the bush trees; eat the fruits or remove the flesh; the nut inside appears; boil, dry, pound and grind the nuts; add water to it and boil the substance; let it cool down and then beat and stir it; a thick grey-yellow foam will appear on top; use a calabash to separate the foam from the brownish liquid that remains in the pot; heat again; the foam becomes liquid; let it cool down *et voila*. The yellowish butter can be sold in the market or used for home consumption. Sheabutter is principally used as cooking oil. It can also be used as (medicinal) pomade, especially to protect the skin in the dry Harmattan season.

When I saw Osman's wives processing the sheanuts, they were preparing three iron pots of oil of approximately 6 litres each. If every wife can produce this amount of butter every week, it is a relatively profitable activity. I told my interpreter that I wanted to ask the women how

much they would get if they sold it. But he said: "They wouldn't like to disclose it. Our African women, when their husbands are around, they will not tell you." Considering the price of shea butter in the market and the quantity they were preparing, I estimate the revenue to be about 40,000 cedis[34] of which most is profit, that is, if they don't have to buy the seeds. They said that most of the year, they can process the butter with the sheanuts they had gathered from the bush and their farms. But sometimes they buy. They have to pay for the grinding, too. In the time of the year that the shea fruits ripen, the women gather, clean, boil, dry and store the seeds for the rest of the year. The processing continues the whole year, but it is less at sowing and harvesting time, when there is more work in the farm.

In the past, the women were already farming groundnuts and preparing sheanut butter for sale. The traders from Nandom Town used to come to the villages to buy the groundnuts. The women didn't farm rice. They were all brewing pito before they converted to Islam. The fact that Muslims taboo alcohol consumption closed off one livelihood option for Osman's wives, but there are enough other non-farm income opportunities left for them. Altogether, Osman says, the income generating activities of the women have increased considerably in the past decades. Besides hunting, Osman himself has no other income generating activities in the dry season because he is fully occupied with collecting manure. He used to have a dry season garden until some years ago.

Five women in the compound have grouped together with five women from other compounds to apply for a loan of the "European Union something". This goes through the Jirapa-Lambusie District Assembly[35] (local government). "You can use the loan for any business you like to do provided you pay it back." The women have invested the loan in a collective cowpea farm. With the money, they have hired bullocks to plough their field and they had to pay to the man who came to spray pesticides. The women don't use the loan as a direct investment for their other income generating activities, but the profit they get from their farm can be reinvested in non-agricultural income generating activities.

Before they could get loans through the District Assembly, did they or you yourself take loans from commercial moneylenders? "No, only if you have a problem, you can go to a friend and borrow money from him. You settle your problem and then try to pay him back. But you don't pay interest."

Petronella is a teacher in the primary school of Lambusie. She receives a salary. Besides that, she receives a small pension from her late husband every month. She doesn't report or share her income with Osman on a regular basis, but if there is anything that has to be paid in the house, Osman can call on her. She has been paying school fees, for example. Sometimes, when the house people are in need of money, they go directly to her, instead of trying Osman first. Despite her formal job, Petronella participates in the compound life like the other women. She helps on the farm and eats from the granary. She also brews pito every now and then. *The fact that a woman in your house has a formal income, does it influence your authority in some way?* "It's good that she has a monthly salary. I am very happy with her. No complaints."

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[34] At the time of the interview, 40,000 cedis amounted to about six US$.

[35] I don't know which organisation is behind this project. Note that Lambusie is not under Lawra District, like Nandom is.

Religion: Unity in diversity

In Osman's house, there are three or even four religions. Osman himself, his wives and his children are Muslims; the elderly people in the house and Osman's brothers are Traditionalists; Petronella and her children are Catholics; and some house people are what Osman calls 'Free-thinkers'.[36] According to Osman, there have never been problems in the house because of the diversity in religious practice. "Religion will not disturb the unity in the house," he said. Although I haven't really talked about this with Osman or any other relative, I had the impression that most of the people in the compound are not very fanatic in their religious practice. We never had to interrupt our interviews for prayers, for example.

Osman became a Muslim when he was a young man, before he married his first wife. His father has always been a Traditionalist.[37] *Why did you become a Muslim?* "I always saw how my father was wasting on chickens and animals for 'the second Gods', but I didn't see the outcome. So I decided to forget about these gods and choose my own religion." The Muslims in the area help each other. If a man is not able to farm because of disease or other misfortune, they will organise labour for him. The Muslims also practise 'Zakat'[38]. The money doesn't go directly to the poor. Osman gives it to the Imam in Lambusie. From Lambusie, the money first goes to Nandom after which it is sent to Wa. Later, it is supposed to be distributed among "the disabled, the blind, or those who do not have enough to eat because they are poor." According to Osman, there is not a fixed amount or proportion of his income that he has to give. Besides the money, Osman also takes part of his grain harvest and sends it to Wa. *Are there more poor people in Wa?* "No, but that is where the Al-Hadjis are." This is not 'Zakat'; it is to support the religious clergy.

Every year, Osman fasts during Ramadan. In some years, Ramadan coincides with the farming campaign. In such years, Osman and the other Muslims in the house get up to eat very early in the morning, at four o' clock. At dawn, they start the farm work and they stay on the farm for about four or five hours, after which they go back to the house to rest. They don't work in the afternoon and 'evening', like they usually do. At 6.30 P.M. after sunset, they take their second meal of the day. When Ramadan coincides with the farming season, labour is a bigger constraint, but as Osman puts it: "If you have money, it is not a problem, because you just get more hired labour. In those years, I spend more money on labour." He usually sells extra animals to pay labourers on his farm and he calls on his brothers down south for extra assistance. If labour is still scarce, Osman can ask his sons-in-law or his nephews to bring labourers to him. The fact that a good number of household members do not have to fast during Ramadan relieves some pressure on available labour. After Ramadan, Osman always kills a ram. "If you start with a cow, you have to continue with a cow every year until you die. That one is for the big wealthy men: the Al-Hadjis." *Are you thinking of going to Mecca some day?* "Of course. Everybody thinks of it, but how many people can go?" *Do you think one day you will be able to go?* "If Allah wants it, I will go." Victor laughs: "Hey, I am a Catholic and I want to go to Rome, but I don't think it is possible."

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[36] 'Free-thinkers' have not converted to Christianity or Islam. Neither do they practice the traditional rituals.

[37] Osman's father seems to bear a Muslim name (Ali Bada). On his voter registration card, Osman's last name is Baagulibe. A person's last name is often the first name of his or her father. During the interviews, Osman possibly used a Muslim name for his father because he had wanted him to be a Muslim.

[38] 'Zakat' is one of the five pillars of the Islamic religion: It directs Muslims to give part (2.5 percent) of their income to the poor and the disabled.

Social networks

Even though Osman has invested in animal traction to improve his agricultural activities, access to labour remains an important prerequisite for a good harvest. To get access to labour you need good networks. As Osman said: "In our area here, you need relations to be a good farmer."

The brothers down south and the junior father in Nandom town

Some junior brothers who are living in southern Ghana help Osman with money to invest in the farm. This doesn't happen every year. If Osman can manage with his own resources,[39] he will not request support from them. In years that he is short of money, he will send word to his brothers. "They will not let me down." *Do you only call for their help if you need money to pay farm labourers?* "No, they have also been helping with dowry payments for people in the house and they have also helped me to buy tools and spare parts, like plough blades." *Have you been sending foodstuffs to them in return?* "No, we don't do that, but when they come to the house and there are groundnuts or cowpeas, I will give them some to take with them to the south. Anyway, it is not in large quantities, perhaps two or three bowls each."

Suulo comes home to farm and leaves before the harvest. If you look at it from his point of view, why does he come home every year, what is in it for him? "It's because of the old man (Ali Bada) and our mother. You have to take them into consideration. His second wife (Petronella) is also here and he will not forget about her. It is his responsibility. Besides that, if there is anything, he will have a share. He has been coming home with money for his father and me. The way he has been helping me… I will also think of a better plan for him in the future." *Have you already done anything for him?* "There is a cow for him with the Fulani man, I have put one aside for Suulo and I told him. There are also three cows for Bamako because he has also been helping for many years already."

Besides Suulo, the other brothers who are down south don't come home every year. They only come for funerals and other important family affairs. Children are frequently 'exchanged' between Lambusie and the south. Sometimes a brother requests Osman to send a daughter down south to assist his wife in the house chores. Osman can request a son of his brothers to come and help in the farming. Sometimes one of Osman's brothers will send a son to Lambusie "to train them because the way they live in the south, it is very different from the way we live here. When you send your child here, to Lambusie, he will face hardships, he will get experience." *In what sense are the hardships more here?* "When you're with your own father, the way that you'll be compelled to work will not be the same as when you come to me. You'll have to work much harder. When I have my brother's son in the farm, he will have to work harder than my own son, to get experience. My own son, I can't force him. But my brother's son, I can force him to work, ooh; he can't pretend. If I ask him to weed the whole field, he will weed it. And if he doesn't, he will be punished. You can't punish your

[39] It could be argued that Osman has enough resources in the form of cattle, but he usually doesn't sell cattle to buy farm inputs (including labour). As we will see below, the cattle have an indirect function in the allocation of resources. As long as Osman doesn't sell and the cattle reproduce, the herd size increases. When he sees that one of his junior brothers has contributed considerably to the household economy for several years, Osman will decide to give this brother a cow.

own son like that. It is your brother who will punish your son when you send the boy to him. That's the way we do it."

Osman's junior father (Aquate), the policeman in Nandom Town, also helps with money. In the past, Osman used to send maize, yams and late millet to him in return. But some years ago, Aquate told Osman to stop sending them because he had begged some land to farm around Nandom himself and his sons are old enough to help him so he doesn't need the food anymore. Although Aquate no longer receives foodstuffs from his paternal house in Lambusie, he still continues helping his relatives financially. When Aquate retires, he will return to the family compound. He is planning to build a few rooms in this year's dry season. When Aquate returns to Lambusie, he will officially become the head of the compound, Osman says. In day-to-day practice, Osman will make most decisions, especially concerning the farm.

Several people in Lambusie regularly come to Osman to ask for help, usually food or money. Most of them are relatives. "If they are young, they will have to do something for me before I give them something. But the old men and women, I give them, just like that."

Maternal uncles

The present 'Acting Chief' of Lambusie, Eduso Bamié, is a maternal uncle of Osman. This man has played an important role in Osman's life. As an adolescent, Osman worked on his commercial farms as a mate. He learned how to drive the tractor and he saw how Eduso managed his large farm.[40] Later, Osman worked as a driver to late Chief Baloro who was Eduso's 'family brother'. After Osman left this job, Eduso asked him to operate a corn mill for him. Nowadays, Osman is an independent, relatively well-to-do farmer. He doesn't *need* help from his maternal uncles anymore, but his relation with Eduso Bamié is still very good, and if Osman needs something, he can always call on him. "Some years ago, an old man died in our house and I needed a cow to 'purify some taboos' towards the funeral celebrations. I went to my uncle to buy a cow from him. He gave me a cow and didn't allow me to pay for it." Osman also received his first pair of bullocks from his uncle. These favours do not come without efforts, however. Osman is always ready to support his uncle in whatever issue evolves, be it in farming or in local politics.

If anything happens like a crop failure or some other difficulty, can you go to your uncle for help? "It is more. If I have a problem and I feel shy to approach him and he finds out, he will be angry with me. He will call me. He will be angry that I haven't approached him myself. He will say that I shouldn't have waited until the problem became high. To hear it from somebody else, he doesn't tolerate it. But he will help me. He will always help me." Osman's livelihood is already quite secure in itself. With this 'big man' he can lean on in times of difficulties, he will not have to fear real hardships and hunger in the future.

The *mother's brother-sister's son* relationship works two ways. In the course of one's life, emphasis shifts from being a nephew to being a maternal uncle. Osman has no direct maternal nephews because his only sister died childless. Osman does have indirect maternal nephews, however. They are the sons of his cousins and second cousins. Last year, a 'nephew' from

[40] According to Victor, Eduso Bamié is the biggest farmer in the Upper West Region. He farms more than 400 acres of maize, 50 acres of cowpeas and other crops. He has several hired labourers working for him permanently.

Nabala organised a group of thirty-five men to work on Osman's farms. The group stayed for two days and slept in Osman's house. Osman had to arrange food for them and pito for the ones who were not Muslims. The Muslims get cow milk or 'fura'. Fura is a drink of cow milk, mashed millet, pepper and sugar. The people who came were all Sisalas. Osman didn't have to pay them money. *Why do they like to come all the way from Nabala to farm for you if they know they will only get some food and pito?* "My nephew will ask them and they will come. It is just a way of helping. When his friends or relatives want to organise a group for somebody, he will also go." *So why does this boy want to organise labour for you?* "Because I'm his uncle." *But there are so many boys who 'uncle' you. They don't organise labour for you.* "Okay, the relationship between me and the boy is different. In our tradition when the boy does this, getting to some time, I will ask the boy to come and I will say: 'Nephew, you have ever helped me, I want to thank you with this animal [usually a goat or a sheep]. Go and keep it for yourself.' When I die, this boy will bring an animal to my funeral. The offspring of the first animal will be for him. While I am still alive I will ask the boy every now and then: 'The goat that I have given you, has it reproduced?' If the boy is honest, he will not deny. Perhaps it has reproduced four or five. When I am pressed for some reason, I can take one animal from the boy. But I can't collect two or three, only one." Uncle farming does not occur *on request*. "When my nephew visits me in the house and he sees that the work is too plenty, he will volunteer to organise labourers for me to help." *When you die, will this boy also inherit from you?* "No, we Sisalas, we inherit everything through the father." As we have seen earlier, Osman himself has also organised a labour party for an uncle and he has ploughed for him. This occurred 'within the same set-up.'

In-laws

After the harvest, Osman sometimes sends grains to his three mothers-in-law. If he sends to one wife's mother, he has to send to all. "If not, the wives will be quarrelling in the house. They'll say I love one more than the other." The fathers-in-law have been coming to Osman to ask for a goat or money. Besides that, he has to organise labourers for his fathers-in-law's farms.[41] When the wife goes to visit her father's house and there is any work to be done, she will assist. Sometimes, her father will give her some food to take home, usually groundnuts or rice. "It is always a pride when your daughter visits you and you can send her back to her husband with something small." Osman has only one direct daughter who is married. She left the house about four years ago. The husband has not yet sent farmers to Osman because Osman has not yet requested. Osman's fathers-in-law have also not requested for labour in the past few years. "Some years ago, I sent farmers to my father-in-law in Dahele (first wife). 150 men showed up and the man couldn't cater for them. They stay for two days and to take care of the food for such a group, it is difficult." Since then, that father-in-law has never requested again. "To Assuma's father I sent about 100 men. Now he is afraid to request again because he will disgrace himself if he can't cater for them." Later, this father-in-law asked Osman to send him a small group (four men).

(Victor says) "You know, in our area here, this in-law farming is very important and it is a 'must', a force. You don't know when your own in-laws will request you to bring farmers to them. If you refuse to go to this man's in-law farming today, they will also refuse when you

[41] This is called 'in-law farming' (in Sisala: 'hila pwara').

need them tomorrow. So you are always compelled to go." Even the old man (Ali Bada) he still has to organise labour for his in-laws. He'll tell Osman: "My son, you know people now and you're free with them so you organise a group for me!" Osman will take his bicycle and make the announcement in all the compounds. On the set day, the men from Lambusie will go and farm. They'll get food and pito, but no money. *If you make the announcement and few people show up, would that be a disgrace for you?* "It will not happen. Everybody will go, except for the old men." *Does it depend on someone's position in the community how many people show up?* "No, even if it's a drunkard, if his in-laws request everybody will go. It would not be a disgrace to him if few people show up; it would rather be a disgrace to the community."

Has your son-in-law been sending grains to you after the harvest? "No, he hasn't been doing that." *Do you have to request or does he have to do it voluntarily?* "That one, it is voluntarily. It is only for the labour that you have to request." *This house has got many daughters married outside. Can you request in-law labour from their husbands, too?* "Yes and I have been doing it. The last time was six years ago; to Ketoa's husband. Ketoa is a daughter of Kinimbie, Aji's present wife who is the widow of Mumune.

I wondered why Osman doesn't ask his sons-in-law to farm for him more often. There were several explanations. Initially he said that it is not good to always ask your in-laws, because they will not be happy with you. But I said that there are many sons-in-law and that if he would ask one per year, there would be enough years in between for them 'to rest'. He answered that in fact most sons-in-law are down south and you can't ask them, unless they come home. Another reason is that in the past years, his other sources of labour were sufficient to do the farm work. He prefers to save this alternative source of labour for some time when he is really pressed.

Friendship farming

Besides the group farming, contract farming, uncle farming and in-law farming, a fifth labour arrangement is friendship farming ('nando pwara'). Osman explains: "For example, you are my friend. I say: 'My friend, this year my farm work is plenty. Help me with some people to come and work for me.' This friend, who is usually from another village, will then organise about 10, 15, 20, 30 or even up to 60 people. "I have a Dagara friend at Bilegangn and he always organises labourers for me. He will come to offer. I don't have to request. I give them food and pito, but I don't pay them. My friend is in a farming group himself and when it is his turn to receive the labourers, he will send them to me instead of letting them work on his own farm. He doesn't have a large farm and he manages to complete the work without the help of the group. That's how he can send them to me."

Do you also help your friend in some way? "Okay, if my friend needs anything, like money, he can come to me. Sometimes I give him a goat, but it is not the same as with my nephew. He doesn't have to bring it back to my funeral. Besides that, I have been ploughing his farms with my bullocks. Last year, I wanted to give him some yams, but he said: "No, we are friends. If I accept this, it will look like I am demanding something from you." Osman knows this friend from his childhood. When they were small boys, both their fathers had farms in the valley between Nandom and Lambusie. In the farming season, they had to go there to chase away the monkeys and other animals that disturbed the farms. They were both

herding their fathers' sheep and goats, too. Sometimes they grouped their flocks together so that they could talk and play together.

Do you also go to other people's farms to help like that? "Okay, a friend can come to me and say: "Please, organise some people for me," and I will go to my friends and relatives to help him." *Did this happen last year?* "Yes, I sent a group to Kohuo, to a friend. The people in the group are my friends and relatives. But I also go myself. I don't have to pay the people."

Epilogue

In May 2002, when I revisited the research area, I decided to ride my bicycle to Lambusie to greet Osman. When I entered the compound, the sad news came to me that Osman had passed away a few months before. He just became sick and died. It came as a shock to me. He was doing so well, building up his house, his family, his farms, his herd...

Photo 17
Farming group preparing a field

9

Conclusion: (How) are we managing?

In the past decades, the climate in the Nandom area has become drier and more variable. Climatic conditions for rainfed agriculture have deteriorated and the area has experienced some severe droughts. My study did not focus on the *causes* of climate change, like natural climate variations and the anthropogenically enhanced greenhouse effect, but on the *impact* of climate change on rural livelihoods. I especially looked at the ways in which people have responded to these changes and to extreme weather events. A better insight in vulnerability and adaptive capacity is needed to assess whether and how rural people in Sub-Saharan Africa will be able to deal with possible climatic changes in the future.

In this concluding chapter I will try to answer the central research question posed in chapter two: "Which strategies have rural households in the villages around Nandom Town adopted to deal with unreliable rainfall, drought and climate change (1960-2000)." In this study, the term 'livelihood strategies' stands for the ways people gain access to food and to income to meet food and non-food needs. They do this in response to 1) normal opportunities and constraints; 2) unusual events; and 3) changing conditions. Parallel to this division in three contextual circumstances, I have broken down the concept of livelihood strategies into three sub-sets of responses: insurance strategies, coping strategies and adaptive strategies (see chapter one). Insurance and coping strategies change over time because both the internal (household) variables and the external (environment/context) variables change. People's portfolios of options change and the ways people respond to these changes can be labelled adaptive strategies.

Instead of drawing conclusions about these three concepts of responses in separate sections, I will try to integrate them in the different *domains* of vulnerability and responses (agriculture, food self-sufficiency, non-farm activities, seasonal labour migration, social networks, remittances and food habits). In the theory chapter, the three concepts of responses have been linked to vulnerability, trigger events and environmental change and brought together in a "*conceptual framework* for studying farm household vulnerability and responses to normal opportunities and constraints, unusual events and changing conditions". Before I

end this chapter with some policy recommendations, I have 'filled in' the conceptual framework for the real-world situation in my research area (see Figure 9.1 on page 277).

When I carried out my fieldwork[1], it was almost two decades since drought had triggered *widespread* crises in the Upper West Region of Ghana (in the late 1970s and especially the early 1980s). Between these widespread crises and the present, some households in the research area have been confronted with livelihood stresses resulting from adverse agro-climatological conditions and other problems. Some of these stresses were only felt by certain households (idiosyncratic risk at the micro-level) and some stresses were felt in the whole area (covariate risk at the meso-level). The difference with the 1970s and early 1980s is that these stresses were much less *extreme*. The fact that no extreme events have hit the area for almost two decades[2] has implications for the study of coping strategies, especially if coping strategies are defined narrowly and not as anything people do besides primary production (see Davies & Hossain 1993: 61).

Crop cultivation

Farming is still the mainstay of the rural economy in the research area. The survey findings suggest that more than fifty percent of rural households' productive income is derived from crop cultivation. The most important crops are guinea corn and millet. These crops are relatively drought resistant. The minimum amount of rainfall required in a growth cycle is 400 millimetres, and guinea corn can withstand prolonged dry spells by 'staying dormant' (Onwueme & Sinha 1991: 178, 192). Given climatic conditions in the research area, total crop failures of millet and guinea corn are very unlikely. The dominance of guinea corn and millet in the crop mix is an important insurance strategy. It explains why even in the drought years of the late 1970s and early 1980s, people were still able to harvest some of their fields, especially in the lowlands. People choose to reserve a large part of their land for millet and guinea corn, whereas higher yielding, but more 'risky' crops like yams, maize and rice are less important in terms of farm size.[3] Regional level data, district level data and my survey findings suggest that the relative importance of millet and especially guinea corn has increased in the past decade. It would be wrong, however, to downplay the role of secondary crops in the farming system. Besides the crops mentioned above, almost every household in the area cultivates groundnuts, beans and bambara beans. A diverse crop mix is an insurance against total harvest failure and it provides diversity in the people's diet.

Three categories of common on-farm insurance strategies in the research area can be distinguished: 1) measures that are meant to reduce the variation in crop output, i.e. risk spreading; 2) measures that are meant to 'maximise' the farm size; and 3) measures that are meant to 'maximise' yields. These three categories sometimes compete with each other.

To reduce the variation in total crop output, farmers cultivate a large variety of crops; they cultivate fields on many locations with different soil types and drainage situations; they

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1 From October 1999 until October 2000.

2 Perhaps needless to say, the fact that no extreme events have hit the area in the past two decades is, more than anything else, a positive situation for the people in the Nandom area. Academic research defeats its purpose when this is not realised.

3 Cassava has never gained much importance in the local farming system. According to Warner *et al.* (1999: 101-103), however, cassava is replacing yam as the dominant root crop in parts of Northern Ghana. Such a development has not yet taken place in the Nandom area.

stagger sowing moments; they use different types of seedbeds; they cultivate different crops on one field (inter-cropping); they sow several seeds per hole to enable transplanting of seedlings when germination is not good on part of the field; they resow an entire field when a dry spell has caused bad germination; they refill when seeds have not germinated well on part of the field and when no extra seedlings are left for transplanting; they use legumes as cover crops between cereals to reduce soil and water run-off; they mulch their yam mounds to avoid desiccation; they cultivate early maturing crop varieties; and they use their knowledge of the (micro) soil differences and drainage conditions on their fields to sow the right crops on the right places (patchwork agriculture). Virtually all *hoe* farmers in the area farm this way. For bullock farmers (like Osman Ali), risk-spreading in agriculture has become less important. Bullock and tractor farmers rather try to expand their farms. When a plough is used to till the land, less attention can be given to micro-differences on the farm.

The second type of on-farm insurance strategies (measures to maximise the farm size) is mostly related to the allocation of *labour*. For households that do not own much farmland, it also concerns establishing good relations with landowners. Bullock farmers have chosen to increase the capital input rather than labour input to maximise the size of their farms. Fifteen of the sixty households in the survey sample had adopted bullock farming. Nine households actually owned bullocks and ploughs, and six households hired the services of bullock farmers. Three households also hired a tractor to plough their fields, and one farmer used a donkey plough. The majority, however, still tills the land by hand (with a hoe). To maximise the size of their farms, hoe farmers start preparing their fields directly after the first rains, and they work very hard. Most households do not send all their children to school because their labour is needed on the farm.[4] Seasonal labour migrants try to be back home in April so that they can contribute their labour on the farm. Most adult men organise themselves in rotating farming groups for land preparation and weeding. The farming groups improve work morale, and are also a collective insurance against disease. When a group member is seriously ill, his colleagues will help him. To be able to receive and cater for the farming group, some households will sell small livestock. Some women also organise themselves in farming groups for sowing and harvesting.

Besides the farming groups, the local farming system has several types of communal labour arrangements, like in-law farming, uncle-farming, friendship farming and contract farming. In general, to receive labourers on your farm, you have to be able to cater for them. Therefore, well-to-do households receive more labour on their fields through these arrangements. For poorer farmers, the labour parties and contract farming are a way to get instant access to food, pito and/or money at a time of year when these items are scarce. The more they work on other people's farms, the less they will be able to harvest from their own fields, however. In most households, individual members have to work on the family farm in the mornings and they can work for food, pito and/or money in the afternoons. Some individual members have their own fields on which they also work in the afternoons. At harvest time,

[4] This is also a long-term strategy of rural households. By sending some children to school and keeping some children on the farm, parents lay their eggs in different baskets. They hope that the school-going children will get formal jobs (probably outside the Nandom area) in the future and that the children who do not attend school will ensure the continuity of their livelihood system and cultural identity.

especially when it is time to harvest groundnuts, poor women help in the fields of better-off farmers in exchange for some produce.

The third type of on-farm insurance strategy concerns what people do to maintain or improve crop yields. Due to high population density (83 inhabitants per square kilometre in the year 2000) and reduced fallows, farmers have had to intensify their farming system. The fact that a vast majority of farmers report decreased crop yields suggests that intensification measures have not been adequate in the past decades.[5] It should be noted that the most common changes in farming methods, except the adoption of bullock farming, require little capital input.[6] Most farmers can not afford to adopt more capital intensive methods and those who *can* prefer to invest their capital in other – less risky – economic activities.

Measures to maintain or enhance crop yields mostly concern measures to protect or enhance soil fertility. The compound fields are kept fertile by dumping household waste and animal droppings. Most human faeces also end up in the compound field. Although the Nandom Agricultural Project has promoted composting, this technique has not been widely adopted yet. Crop yields on the bush fields have come under strain because of reduced fallow periods and because these fields receive less attention than compound fields. Mechanical soil and water conservation measures include contour tillage, grass strips, earth bunds and stone lines across the slope. To improve the fertility of their fields, after the harvest, some farmers make ridges or mounds by covering the stalks and other crop residues with soil. In the following farming season, higher yields are reported. This technique competes with the use of stalks and other crop residues as a source of energy and as fodder. In the survey, I did not inquire about soil conservation measures and therefore I cannot tell how widespread these measures are. Few farmers apply chemical fertilisers on their farm, especially since the subsidies on fertilisers have been removed and since devaluations of the Ghanaian cedi have made the imported fertilisers even more expensive. At the community level, several initiatives have been put in place to improve bush fire management and in some communities, the use of fire on cultivated fields has also been banned.

Some high yielding crop varieties have been introduced in the area. People can buy new crop varieties through the Nandom Agricultural Project, but inter-household transfers are the most common way for new varieties to spread. The success of these new varieties depends to a large extent on the soil qualities. No miracles are to be expected, but some farmers do report substantially improved yields. In its extension services, the Nandom Agricultural Project also promotes line-sowing to increase crop densities in fields. Many farm households in the area are adopting this technique. To combat weeds, virtually no pesticides are used except in the dry season gardens. Inter-cropping reduces weed occurrence and to combat striga, people rotate millet and guinea corn. To get a good yield, most farmers weed their guinea corn, millet and maize fields three times. In the third weeding, they gather and press soil around the base of the long stalks to protect the crops from being blown down by the wind (this technique is called ‘to earthen up’ or ‘to reshape’). Most other crops are weeded once or twice.

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[5] Deterioration of climatic conditions could be an intervening variable. In the survey, unreliability of rainfall was mentioned as a cause of declined crop yields just as often as soil fertility decline.

[6] In southeast Burkina Faso, Mazzucato & Niemeijer (2002) similarly found that people do – successfully – intensify their farming methods, but that this intensification is not capital-led.

A last type of agricultural intensification is the increase of dry season gardening. From an overall livelihood perspective, I prefer to look at it as a livelihood *diversification* strategy. In the dry season, when no rainfed agriculture can take place, people look for alternative ways to make some money, and a dry season garden is one of the options. On the other hand, the in-depth analysis of Suurib's livelihood (see Van der Geest 2002a) shows that dry season garden activities are linked to the rainfed farming campaign in several ways. No large-scale irrigation schemes, like in parts of the Upper East Region, are found in the research area.

To assess adaptation to climate change in local agriculture, we have to determine which of these on-farm strategies are new or have changed in response to changes in the reliability of rainfall. The most outstanding responses to climate change in local agriculture are the (increased) importance of millet and guinea corn in the crop mix; the increased use of lowland and valley bottom fields (to reduce drought exposure); the use of new early maturing crop varieties (especially 'dorado': an early millet) and the shift in sowing dates. Other agricultural adaptations have mainly occurred in response to increased population pressure and reduced fallows.

Food storage

After the harvest and after the crops have been dried, most farmers store farm produce in their granaries. Guinea corn and millet are stored in large traditional granaries. Most secondary crops are stored in bags or smaller granaries. Farmers reserve the best grains for sowing in the following season. In 'the olden days', when exchange opportunities were more limited than today, and when livelihood options were less varied than today, farmers tried to accumulate surplus food to insure against future dearth. After a sequence of good years, successful farmers could have enough grains in store to survive two total crop failures. With traditional methods, farmers could conserve the grains for three years. In the late 1970s and early 1980s, many households still had food stores that helped them to cope with the droughts and (partial) crop failures. Nowadays, some households with above-subsistence food production still use this technique, but they do not store grains for more than one year (see pathway of Osman in chapter eight). At the time of the new harvest, people see how much old grain they still have left, and how much new grain is coming in. When the new harvest is good, they can sell some old grain or brew pito with it. When the new harvest is not good, they will decide not to sell, and will use the surplus of previous years to fill the food gap in the coming lean season.

Livestock

In my study, livestock production has received less attention than crop cultivation. The survey findings and the in-depth analyses show that livestock production is important as a secondary source of food and especially cash, and that livestock ownership is an important way to store wealth. The survey findings suggest that in 1999, the monetary income from livestock production was only a fraction (11%) of the estimated value of crop output and of total productive income (6%). Two qualifications are needed, however. Firstly, the value of home-consumed meat and milk (rare) was not recorded; and secondly, livestock sales vary greatly between years. The poorer the harvest, the more animals are sold.

Livestock sales are an important coping strategy when primary production (partly) fails. The accumulation of livestock is an important insurance strategy against future food entitlement decline in the face of a (partial) crop failure. In that sense, farmers in northern Ghana have an advantage over their southern counterparts who do not own much livestock. In the survey, the majority of households indicated that it is common for them to sell animals with the aim to buy food. This is an important seasonal coping strategy for households that are not self-sufficient in their food production. The in-depth analyses showed that livestock sales were a very important element in the strategies employed to cope with food stress in the early 1980s ('genuine' coping strategies). The most important types of livestock in the research area are cattle, goats, poultry, pigs and sheep.

When expressed in Tropical Livestock Units (T.L.U.), the average herd size per household in the survey sample was almost four cow equivalents (see chapter six for some remarks on the T.L.U. calculation I used). Such a buffer capacity significantly reduces a household's vulnerability to drought and food entitlement decline even though caloric terms of trade are likely to be less favourable in case of an area-wide drought. Households in the vulnerable group had an average herd size of two cow equivalents, and the ten most vulnerable households owned one cow equivalent, on average.

To assess adaptation to climate change in the livestock sector, one could look at changes in herd size and in herd composition. If rainfall becomes more erratic, one could expect that farm households try to increase their herd size and thus their buffer capacity. On the other hand, a household can only increase its herd size when the household is not forced to sell livestock to cope with seasonal shortages. Livestock functions as a balance between good years and bad years. In good years, surpluses are converted in livestock and in bad years, livestock is converted in food and/or other necessities. Most households in the research area report decreasing herd sizes in the past decade. This suggests that although no extreme droughts have occurred, harvests in 'normal' years are not good enough to substantially increase buffer capacity. Even though most households try to increase their livestock buffers, only few do succeed. Non-climatic factors also play a role here, however. Labour availability, the incidence of diseases and theft blur the relation between climate (change) and livestock ownership and production. The in-depth analyses showed that the motivation behind animal sales is not just cash needs. When stocks increase, people sell animals because it would take too much labour to take care of the animals. Last but not least, decreased herd sizes per capita can also reflect increased cash needs and 'temptations' to sell.

Self-sufficiency and food purchases

Most rural households in the research area try to harvest enough from their own farm to secure food needs for the rest of the year. In 1999, two thirds of the households in the survey sample had to purchase grains, however. Maize is by far the most popular grain to buy because it is usually cheaper than millet and guinea corn. The average amount households spent on grain purchases in 1999 corresponded to the price of one bag (100 kg) of maize, which is not much as compared to the estimated total crop output per household (about 1600 kg grain equivalents). Of the twenty households in the vulnerable group, only four did not report grain purchases. The remaining sixteen households spent about forty percent more on grains than food-deficient households in the middle and secure groups. On average, the vul-

nerable group had bought grains in six to seven years of the past decade. In the middle and secure groups, households had purchased grains in four out of ten years. People do not only purchase *maize* to fill the food gap. For the poorest households, maize is a luxury in the hunger season. They buy 'konkonte' (dried cassava) from southern Ghana because it is cheaper than maize.

Throughout the year, people also buy prepared foods, like bean cakes, fish, meat, fried yam, prepared rice, etc. People also spend money on soup ingredients, like salt, pepper, oil, vegetables and Maggi Cubes. To keep cash needs low, women try to minimise these expenses. They grow vegetables between the staples or in small, heavily manured and irrigated gardens; they gather wild vegetables and tree leaves and they process tree products like sheanuts and dawadawa into edible oil and condiments. For food insecure farmers, the lean season is the time prior to the harvest, i.e. the rainy season. This is also the time when wild foods are more widely available. To cope with seasonal grain shortages, people adjust their diets to include more wild foods, like wild vegetables, certain tree leaves, fruits and certain roots. These seasonal coping strategies intensify in the lean season following a bad harvest.

To fill the food gap when one's own food production is below subsistence levels, people sell livestock and use revenues from seasonal labour migration and non-agricultural income generating activities. Remittances from migrant relatives and gifts from better-off households within the area are an additional source of income to draw from. In the next section, non-farm and off-farm sources of income will be discussed.

Livelihood diversification

If the primary source of livelihood for rural households in the research area is *rainfed* crop cultivation, then all additional sources of food and livelihood are elements of rural livelihood diversification. Several types of non-cropping income can be distinguished: animal husbandry; foraging; local non-farm activities; seasonal labour migration; remittances from migrant relatives; gifts from other households in the area; and (food) aid from government agencies and NGOs.

Local non-farm income generating activities include *female* jobs, such as pito brewing, sheanut processing, firewood selling and petty trading; and a large variety of *male* casual jobs, such as masonry, carpentry, tailoring, butchering, fishing, shoe repair and block moulding. Other sources of non-farm income are salaries (mostly in civil service), pensions and income from property. Although some of the non-farm activities were very low-yielding, the importance of these activities cannot be underestimated. Virtually every household in the sample had members engaging in such activities. On average, almost three sources of non-farm income were mentioned per household. Virtually every able-bodied adult in the research area engages in such activities, and children often assist. More women than men engage in local non-farm activities, but they cannot invest as much time as men because of their reproductive tasks and household chores. Consequently, female non-farm activities are less rewarding.

Households in the vulnerable group had fewer non-farm sources of income than households in the middle and secure groups, and their jobs were lower yielding. Taking account of household size, the average cash income of 'secure' households was more than three times as high as the cash income of 'vulnerable' households. This was mainly due to the fact that few members of 'vulnerable' households had 'male casual jobs' and formal incomes.

Seasonal labour migration is an important additional source of income. In 1999, seasonal labour migration was a source of income in twenty-nine out of sixty households. A total of thirty-eight adult men went to work down south in the dry season. The majority worked as farm labourers on maize farms in Ghana's middle belt (Brong-Ahafo Region).

A tentative calculation of the relative importance of the different sources of productive income (excluding remittances) of rural households in 1999 shows that crop cultivation (51.7%) was the primary source of income, followed by local non-farm income (34.8%), seasonal labour migration (7.7%) and animal sales (5.7%).[7] These figures indicate the *degree of de-agrarianisation* of livelihoods in the research area. Together, crop cultivation and animal husbandry provide 57.4% of the households' entitlements to food and income. As I have indicated in chapter seven, many remarks can be made about such calculations as they are based on a set of assumptions. An important remark is that the relative importance of different sources of food and income varies greatly from year to year. The outcome in one year may not be representative for other years or for 'average conditions'. With these remarks in mind, however, the reader can at least get a general impression of the composition of rural livelihoods in the research area.

Several differences between vulnerability groups exist when it comes to sources of livelihood. Firstly, 'secure' households were more de-agrarianised (46.0%) than 'middle group' households (42.0%) and 'vulnerable' households (36.5%). Secondly, 'secure' households relied less on seasonal migrant income (4.1%) than 'middle group' households (11.8%) and 'vulnerable' households (8.3%). Thirdly, income from local non-farm activities was more important in 'secure' households (41.9%), than in 'middle group' households (30.2%) and 'vulnerable' households (28.2%). For a good interpretation of these data, it should be borne in mind that the total productive income over which these percentages have been calculated was about twice as high in 'secure' households as in 'vulnerable' households, despite the larger household size in the latter group. In vulnerable households, more people had to share a smaller household cake.

From the livelihood diversification *activities*, we now turn to *transfers* as sources of livelihood[8]: remittances, inter-households transfers within the area and (food) aid from government agencies and NGOs. Virtually all households in the research area have close relatives down south. Not all migrants help their relatives back home, however. Most transfers occur when migrants visit their home villages. Some migrants come home for a visit at least once a year; some migrants only come for funerals of close friends and relatives; and some migrants 'forget about their northern origin' and do not come home at all. Besides remittances received when migrants visit their home villages, there is also an elaborate informal 'money transfer network' in which local tro-tro drivers have a central position. Forty-two out of sixty households had received monetary remittances in 1999. Seventeen households had received at least one bag of maize from migrant relatives. In absolute terms, the value of remittances was considerably lower than seasonal migrant income. The amounts received were relatively high

[7] The figure for animal sales excludes the value of home-consumed animals.

[8] I thank Prof. Dr. Leo de Haan for emphasizing that transfers are not *passive* sources of livelihood. It involves *active* maintenance of networks.

in households whose migrant relatives had formal incomes. Most remittances of migrants are given to 'first-line' relatives, but cousins and neighbours also receive small amounts. Besides remitted money, consumer goods and food, some migrants also invest in 'modern' houses or rooms in their family compounds and some migrants store wealth in livestock. The relatives at home can benefit from these investments, and when the migrant finally returns to his village, he will have a good place to stay and – if the livestock is still there – some 'capital for a restart'. Most migrants take up farming again after they have returned to their villages. While they are living down south, migrants often give shelter to new migrants from their home villages, and help them to find jobs (see pathway of Philibert in Van der Geest 2002a). A good social network is an important condition for a successful 'career' of a new migrant. Unlike many households in southern Ghana, few households in the research area have relatives in Europe and the United States.

Two sources of food and livelihood remain to be discussed here: firstly, inter-household transfers within the village and between villages and secondly, (food) aid from government agencies and NGOs. Inter-household transfers do not 'add value' on an aggregate level in the sense that it does not produce food or money. The construction and cementing of strong social networks can, however, be an important insurance against food and livelihood stress in the future. The value added is the reduced collective vulnerability (see Adger 1999) and a reduction of variability in living standard (consumption smoothing). Moreover, some people manage to structurally improve their livelihoods with the help of social networks (see pathway of Osman Ali). This requires careful manoeuvring and negotiation in the act of giving and taking. Inter-household transfers occur in the form of labour, farm produce, money, loans, livestock and 'softer' items such as knowledge and opportunities. Most inter-household transfers are mediated by marriage and kinship. The different inter-household relationships that form an interface between livelihoods and the socio-cultural environment have been described in some detail in the 'livelihood histories and in-depth analyses' in chapter eight. Some characteristics of the social system can be viewed as collective responses to the risk-proneness of the natural and economic environment.

A last source of food and livelihood concerns food aid and other types of aid from government agencies, like NADMO, and church-based organisations, like CRS.[9] I do not have official data on food aid. In normal years, food aid is very limited. If a drought hits in the nearby future and famine threatens, it is unclear whether food aid will reach the area in appreciable amounts. In the early 1980s, the food aid that was distributed by the mission and the government in Nandom Town was a welcome and useful supplement to farmers' own coping strategies. In 1999, small amounts of food aid reached the area through Catholic Relief Services. Most households in the survey sample reported that they received one bowl of maize (2.5 kg). CRS distributes food aid on a more structural basis through female pupils in Junior Secondary Schools (to reduce drop-out rates). Besides food aid, NADMO has been helping households in the area with non-food items, like blankets and mattresses.

Having discussed the main elements of livelihood diversification in the research area, I will now draw some conclusions on the link between livelihood diversification and climate

[9] NADMO is the National Disaster Management Organisation; CRS is Catholic Relief Services.

change. People diversify their livelihoods in response to (changes in) the opportunities and constraints of the environment. As I indicated in chapter one and in chapter seven, livelihood diversification is alternatively viewed as a positive process by which households increase their livelihood security in response to improved opportunities, or as a negative development in which household are *forced* to respond to increased food and livelihood stress. In this latter situation, people diversify their income portfolio because they can no longer attain the desired or minimum level of food and livelihood security through primary production.

Rainfall has become more erratic and farmers indicate that it is increasingly difficult to achieve self-sufficiency in food production. Meanwhile, livelihoods have become more diverse. It is tempting to conclude that people have diversified their livelihoods in response to deteriorated climatic conditions. By relying on different sources of food and livelihood, people become less dependent on rainfed agriculture and less exposed to drought risk. In that sense, livelihood diversification is an important insurance strategy against drought and crop failure in my research area. I see two different paths towards livelihood diversification as a response to deteriorating climatic conditions. Firstly, *drought risk encouraged* people to diversify (as a preventive strategy) and secondly, *inadequate food production forced* people to diversify their livelihoods (as a coping strategy). The first type would be typical for secure households, and the second type for vulnerable households.

People either diversify or specialise their livelihoods in response to a large set of internal and external variables, of which climate change is only one. A first problem in the reconstruction of livelihood diversification in my research area concerns the timing. I can safely state that rural livelihoods in the research area became more diversified over the course of the 20th century, but I am not so certain about when the major changes took place. The findings of my study do not all point in the same direction. If the major changes took place in the 1960s, then it cannot be concluded that people have diversified their livelihoods in response to climate change (because climate deterioration started in the late 1970s). Similarly, one could wonder whether people would not have diversified their livelihoods if climatic conditions had been stable over the past decades. Although the climate is very likely to play a role, other contextual factors, like the increased integration in the national economy, increased levels of education, increased formal income opportunities, increased cash-needs and increased population density have to be considered to avoid climatic determinism.

If rural households principally diversify their livelihoods in response to declining agricultural productivity (as a negative and forced development), then poor households would have more diversified livelihoods than wealthy households, and one would expect a negative correlation between livelihood security and livelihood diversity. In my survey sample, however, 'vulnerable' households relied more on crop cultivation than 'secure' households. In the latter group's livelihood portfolio, non-farm income played a major role. This is an indication that livelihood diversification in the research area has occurred as a response to improved (non-farm and off-farm income) opportunities more than as a response to deteriorating conditions.

I will now look at the relevance of non-cropping income for seasonal and 'genuine' coping strategies (coping with *unusual* events). As indicated before, the general livelihood strategy of rural households in the research area is to try and harvest enough from their own farm to

secure food needs. In this overall strategy, non-farm and off-farm income is used to cover non-food cash needs. Many households do not achieve this goal every year, however, and when they don't, they will use the revenue from these secondary sources to buy food. Among households with low food self-sufficiency rates, this is an important strategy to cope with expected seasonal shortages. When these households have to spend money on food, this means that they can spend less money on non-food items. To deal with exceptional, severe shortages, households can also rely to a large extent on local non-farm activities. When the food crisis is area-wide, the efficiency of these strategies is likely to decrease because of increasing food prices, competition and a lack of clients due to a general scarcity of money in the local economy. The historical analyses of coping strategies in chapter eight suggest that remittances from migrant relatives are a more efficient coping strategy in case of an area-wide crisis. People reserve calls on these relatives for times when they are really in need. The advantage of the geographical spread of family networks is that a crisis in one location is unlikely to coincide with a crisis in the other location (low covariate risk). For the same reason, seasonal labour migration often remains an effective strategy to gain access to money to buy food when local non-farm income opportunities have lost some effectiveness.

Reduction of food intake

In my livelihood analysis survey, no sections on nutritional status and food consumption were included. Theoretically, a rough idea of nutritional status in 1999 could be arrived at by quantifying the different sources of food and comparing them to food needs based on household size and household composition. A problem in this respect is that some sources of food were not quantified in the survey. In this book, I have occasionally compared crop production figures with per capita or per adult male equivalent energy requirement figures as handled by FAO. The aim of these comparisons was to allow for a better interpretation of production figures. For a good assessment of nutritional status of rural households in the research area, more detailed analyses are needed at the household level.

In the in-depth analyses presented in chapter eight, I did inquire after food habits. The three cases show a tremendous variation in levels of food security. Francisca's household has to reduce consumption every year. Their food intake is structurally low. Even after the harvest, they only eat once a day. In the course of the dry season and in the months prior to the harvest, their food situation further deteriorates. It has become common for them only to eat every second day in the lean season. In those months, they usually eat konkonte or gari because they can no longer afford to buy grains. In Egidius' household, the food situation had been relatively bad in the past two or three years. In earlier years, they always used to eat twice a day and after the harvest they would eat three times a day. In the past couple of years, they have sometimes been forced to reduce consumption to one meal a day in the lean season. The food situation in Osman's household is very secure. They never have to reduce consumption. In the early 1980s, they experienced one serious crop failure, but they were able to manage through a varied set of coping strategies, including eating stored grains, selling livestock and using remittances from brothers in southern Ghana to buy food.

Most regional studies conducted in the past decades and up to the present make mention of a severe 'lean season' in northern Ghana. A comparison of food habits of households from different vulnerability groups indicates that the lean season for the more 'secure' households

is not very serious (see also the pathways of Suurib and Philibert in Van der Geest 2002a). In the farming season, most people do not eat in the morning. This is not because they do not have access to food, but because entering the field with a full stomach would make them lazy.

It is debatable whether the reduction of consumption can be considered a strategy to *cope* with transitory food shortages. In many cases, reduced food intake is rather a result of the failure of other coping strategies. In some cases, however, people may choose to 'go hungry' to protect future livelihood security. If a household has the choice to either reduce food intake one month prior to the harvest or sell a goat to buy food, some households will choose to eat less for a while. The insurance strategy connected to this coping strategy concerns *the way poor people steel their bodies and souls against hardships*. This preventive strategy may look cruel, but the capacity of self-denial is an important quality in a risk-prone environment and in a livelihood system that regularly experiences lean years.

Population density and livelihood strategies

Within Ghana's Upper West Region, my research area has a special position. It is situated in the most densely populated part of the region (83 inhabitants per square kilometre). This has certain disadvantages, but also advantages. The main disadvantage is that access to fertile farmland has decreased due to increased population pressure. Given present conditions, the return to labour seems to be lower for on-farm investments than for non-farm or off-farm activities.[10] Other livelihood disadvantages of high population density are the decreased availability of fuel wood; higher competition for certain 'wild' tree products and vegetables; and the decreased availability of prey for hunters.

High population density has certain advantages, too. It enables a higher degree of occupational specialisation; public services (including schools, hospitals and agricultural extension services) become more cost-effective and more readily available; this creates formal income opportunities; infrastructure (roads, electricity, telecommunication, water pumps, dams and dugouts) is more likely to improve; market access and trade opportunities improve; transaction costs decrease; manufactured goods become cheaper and farm gate producer prices are likely to rise (see Tiffen *et al*. 1995). All these advantages seem to be valid for the Nandom area, though it should be noted that Nandom *Town* enjoys some of these advantages more than the surrounding villages.

In the agricultural sector, increased population pressure may eventually lead to increased agricultural productivity and higher rural incomes as was the case in the region (Machakos) studied by Tiffen *et al*. (1995). Serious questions can be posed with regard to the 'replicability' of the 'Machakos Miracle', however (see Klaasse Bos & Dietz 1998). One of the main factors that contributed to the successful transition process in the case of Machakos was good access to the large urban market of Nairobi (see also Zaal & Ostendorp 2002). In the case of my research area, there are advanced plans to tar the road that connects Nandom to southern Ghanaian urban centres. This may provide better opportunities for *in situ* development. Meanwhile, the virtual stagnation of population growth between 1984 and 2000 indicates that high population growth in earlier decades and resulting high population densities have stimulated *out-migration* rather than agricultural *intensification*. The third overall livelihood strat-

[10] As is shown in the 'pathway' of Osman Ali, this may be changing. Since the mid 1990s, he has abandoned his non-farm and off-farm activities in the dry season to fully concentrate on collecting manure for his farms.

egy for rural households, livelihood *diversification* (see Ellis 1998), has also been more popular in the research area than investing in agriculture.

To reduce livelihood vulnerability, most farmers in the research area choose to diversify their livelihoods (both occupationally and geographically) rather than to intensify agriculture. The Nandom area may be in a transition stage, however. Migration is not only an alternative to agricultural intensification; migration can also be a source of capital and information that can later stimulate agricultural intensification (see Tiffen *et al* 1995: 47-48). Even if savings and remittances of migrants are not directly invested in agriculture, they can provide 'room to manoeuvre' for risk-taking and indigenous forms of agricultural intensification that are not capital-led. Certain changes to a more sustainable land use are discernible, and a few households have quite successfully increased their yields and output. In the in-depth analyses, we have seen Osman Ali who has invested in bullock farming and who spends much of his time in the dry season on collecting manure from the Fulani kraals. Moreover, he strategically uses his social networks to get access to farm labour. Egidius cultivated almost ten percent of his land with labour intensive yams. Philibert applied manure not only on his compound farm, but also on his more distant fields (transport with bicycle). Suurib achieved very good yields in his heavily manured gardens, which he cultivates in the dry *and* in the wet season. To collect manure, he sweeps the compounds of sheep owners in Nandom Town (for 'pathways' of Philibert and Suurib, see Van der Geest 2002a).

At the end of the theory chapter, I presented a conceptual framework for studying 'farm household vulnerability and responses to normal opportunities and constraints, unusual trigger events and changing conditions.' After having studied vulnerability and responses to unreliable rainfall, drought, climate change and other changing conditions in Northwest Ghana, I can fill in the framework for a 'real-world' situation (see Figure 9.1). The figure gives a schematic overview of my findings, though not all aspects of vulnerability and responses could be captured.

The conceptual framework that I designed prior to the fieldwork was quite useful in structuring my thoughts and findings, especially keeping the details under control. I have adjusted the framework to new findings and insights throughout my fieldwork and writing period. The initial framework had an important weakness: it implicitly supposed that there is a clear distinction between a drought year and a 'normal' year, and that in drought years people have to cope with food stress, while in 'normal' years this is not necessary. In reality, there is a continuum between very dry and very wet years, and there is a continuum between total crop failure and a bumper harvest. My impression from the in-depth livelihood analyses is that for some households, every year is a crisis year, while for other households, harvest shortfalls are very rare, and if they occur, the household has several options to bridge the food gap. To return to the title of my thesis, some households are able to *manage* even the worst drought and crisis, while other households never really *manage* to achieve food and livelihood security. In the framework presented below, I have incorporated a separate cycle of seasonal coping strategies for vulnerable households to reflect their continuous struggle.

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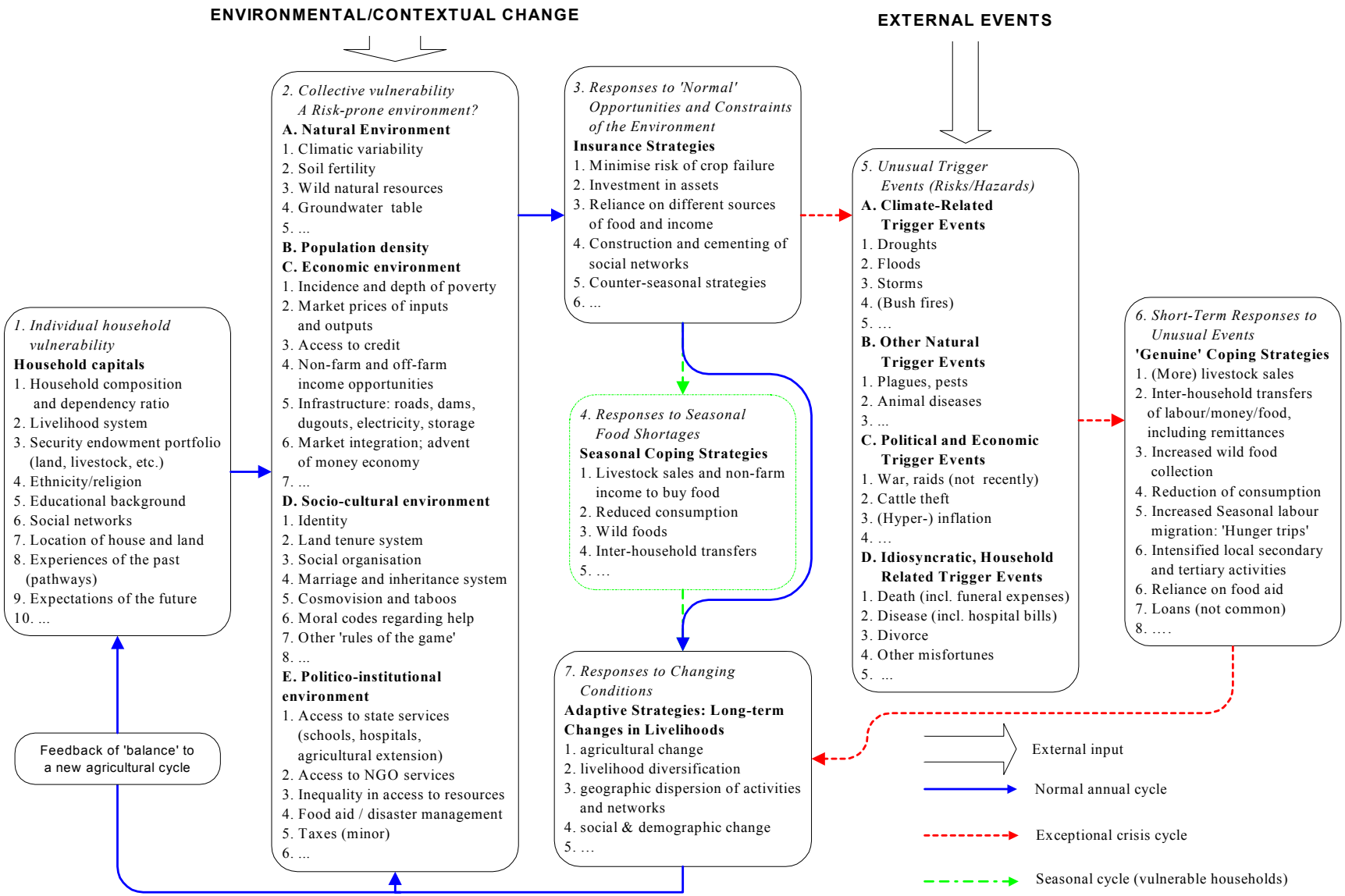
Figure 9.1 Farm household responses to normal opportunities and constraints, unusual events and changing conditions in the research area


ENVIRONMENTAL/CONTEXTUAL CHANGE
EXTERNAL EVENTS
1. Individual household vulnerability
Household capitals
1. Household composition and dependency ratio
2. Livelihood system
3. Security endowment portfolio (land, livestock, etc.)
4. Ethnicity/religion
5. Educational background
6. Social networks
7. Location of house and land
8. Experiences of the past (pathways)
9. Expectations of the future
10. ...
2. Collective vulnerability
A Risk-prone environment?
A. Natural Environment
1. Climatic variability
2. Soil fertility
3. Wild natural resources
4. Groundwater table
5. ...
B. Population density
C. Economic environment
1. Incidence and depth of poverty
2. Market prices of inputs and outputs
3. Access to credit
4. Non-farm and off-farm income opportunities
5. Infrastructure: roads, dams, dugouts, electricity, storage
6. Market integration; advent of money economy
7. ...
D. Socio-cultural environment
1. Identity
2. Land tenure system
3. Social organisation
4. Marriage and inheritance system
5. Cosmovision and taboos
6. Moral codes regarding help
7. Other 'rules of the game'
8. ...
E. Politico-institutional environment
1. Access to state services (schools, hospitals, agricultural extension)
2. Access to NGO services
3. Inequality in access to resources
4. Food aid / disaster management
5. Taxes (minor)
6. ...
3. Responses to 'Normal' Opportunities and Constraints of the Environment
Insurance Strategies
1. Minimise risk of crop failure
2. Investment in assets
3. Reliance on different sources of food and income
4. Construction and cementing of social networks
5. Counter-seasonal strategies
6. ...
4. Responses to Seasonal Food Shortages
Seasonal Coping Strategies
1. Livestock sales and non-farm income to buy food
2. Reduced consumption
3. Wild foods
4. Inter-household transfers
5. ...
5. Unusual Trigger Events (Risks/Hazards)
A. Climate-Related Trigger Events
1. Droughts
2. Floods
3. Storms
4. (Bush fires)
5. ...
B. Other Natural Trigger Events
1. Plagues, pests
2. Animal diseases
3. ...
C. Political and Economic Trigger Events
1. War, raids (not recently)
2. Cattle theft
3. (Hyper-) inflation
4. ...
D. Idiosyncratic, Household Related Trigger Events
1. Death (incl. funeral expenses)
2. Disease (incl. hospital bills)
3. Divorce
4. Other misfortunes
5. ...
6. Short-Term Responses to Unusual Events
'Genuine' Coping Strategies
1. (More) livestock sales
2. Inter-household transfers of labour/money/food, including remittances
3. Increased wild food collection
4. Reduction of consumption
5. Increased Seasonal labour migration: 'Hunger trips'
6. Intensified local secondary and tertiary activities
6. Reliance on food aid
7. Loans (not common)
8. ....
7. Responses to Changing Conditions
Adaptive Strategies: Long-term Changes in Livelihoods
1. agricultural change
2. livelihood diversification
3. geographic dispersion of activities and networks
4. social & demographic change
5. ...
Feedback of 'balance' to a new agricultural cycle
External input
Normal annual cycle
Exceptional crisis cycle
Seasonal cycle (vulnerable households)

Recommendations: No recommendations?

As a geographer, I have tried to describe the present situation and how it has come into being historically. With recommendations about policy interventions to *change* the present situation in the future, I enter the arena of planners. As I have indicated in chapter five, I have not studied the policy environment in the research area very thoroughly. In the field, my first impression was that government policy does not much impact on farm households. Very few farmers reported government interventions to improve agricultural production. On the positive side, the government does not extract much tax, either. They leave the farmer pretty much in peace. This picture that I initially had about the relation between farmers and authorities is not entirely correct, however. Central government policies and the activities of the district assemblies do have a large influence on the opportunities and constraints of the environment, and farmers do have certain expectations of state services, especially in the field of education, healthcare and infrastructure. Moreover, Ghana's stability of the past two decades and Ghana's democracy in the past decade are good conditions for positive policies which may turn the north into a more 'enabling environment'.

As I said, my knowledge of the policy environment in the research area is limited. In this situation, *no recommendations* might be better than *bad recommendations*. But let me look at the future with some reserve. For the Nandom area, the most important question is whether the people, the authorities and other change agents (especially NGOs) should try to solve the agricultural crisis, or whether they should invest in a non-agricultural economy. Obviously, one path does not exclude the other; they could reinforce each other. In the decades to come, the urban population in Ghana will grow faster than the rural population. All these urbanites will have to be fed. Considering the predicted growth in urban demand for food products from within the nation and the projected increase of climatic risk in the area (see Dietz *et al*. 2001a), it would probably be wise to favour the cultivation of relatively drought-resistant food crops in the area, both for subsistence and market production. The great advantage of this pathway would be that the crops that people depend on for their monetary income are edible. This would make rural people less vulnerable to market perturbations. It should thereby be acknowledged that, presently, millet and sorghum are not preferred foodstuffs in urban Ghanaian markets; instead, maize, rice, and yams are preferred food crops. Generally, these crops are not very drought-resistant and they will require a further switch to lowland and valley-bottom cultivation. In addition, groundnuts, beans, cowpeas and vegetables deserve much attention, and perhaps new crops that have proved to be suitable for similar production environments elsewhere in the world can be introduced. In addition, irrigated dry season gardens could benefit from a growing urban demand for vegetables like tomatoes, lettuce, onions, garden-eggs, etc. Due to the perishable nature of these crops, improved road infrastructure is a 'sine qua non'. The experiences in Ghana's Upper East Region indicate that gardeners in northern Ghana can gain access to urban markets in southern Ghana. Moreover, when rural incomes rise, local and regional demand for these products is likely to increase, too. A prerequisite for a boost in dry season vegetable production in northwest Ghana is investment in the hydrological and road infrastructure.

The disadvantage of an agricultural pathway for the research area is that, presently, crop yields are relatively low, both in output weight and monetary income. In fact, the future pathway I propose here for those people who decide to stay in the rural areas clearly builds on the

present livelihood system that is characterised by risk spreading more than anything else. The first challenge ahead is to raise agricultural productivity through intensification and through the expansion of the area under cultivation (by increased use of draught-power). Another big task is to enhance the marketability of food crops by minimising transaction costs. This requires public investments in infrastructure. The challenge for the Ghanaian government and other institutional actors is to create an enabling environment for improved food production: to facilitate.

It is questionable, however, whether such boosts in agricultural production can be expected in the densely populated Nandom area. From a regional perspective, it would perhaps be wiser to concentrate efforts to substantially increase agricultural production in low population density areas and to promote non-farm activities in the densely populated areas of the region (see also Al-Hassan *et al*. 1997). Indeed, one can wonder whether in a country where food farmers are by far the poorest group it would be good advice to choose an agricultural pathway. As long as farmers don't get a good price for their produce, it is unlikely that they will substantially improve their livelihood security and living standard.

I hope that some policy makers and other civil servants and planners in Ghana will get to read this book and that this study will provide them with good ideas to improve the lot of rural households in northwest Ghana.

Photo 18
Small boys applying animal dung on the compound farm

References

ADGER, N. (1999), Social Vulnerability to Climate Change and Extremes in Coastal Vietnam. *World Development,* Vol.27 No.2: 249-270.

ADOLPH, B., Y. ALHASSAN, S. BISANDA, J. KWARI, G. MEKONNEN, H. WARBURTON & C. WILLIAMS (1993), *Coping with uncertainty: Challenges for agricultural development in the Guinea Savanna Zone of the Upper West Region, Ghana.* Wageningen: International Centre for Development Oriented Research in Agriculture (ICRA).

AL-HASSAN, R., J.A. FAMIYEH & A. DE JAGER (1997), Farm Household Strategies for Food Security in Northern Ghana: A Comparative Analysis of High and Low Population Farming Systems. In: Asenso-Okyere, W.K., G. Benneh & W. Tims (eds). *Sustainable food security in West Africa.* Dordrecht: Kluwer Academic Publishers. pp.129-152.

AMIN, S. (1974), *Modern Migrations in Western Africa.* Oxford: University Press.

ASENSO-OKYERE, W.K., S.Y.ATSU & I. S. OBENG (1993), Communal Property Resources in Ghana: Policies and Prospects. *ISSER Discussion Paper* No.27. Accra: Institute of Statistical, Social and Economic Research.

ATINGDUI (1988), *Taxation and Structural Change in Ghana's Economy 1960-1980.* PhD thesis, Department of Economic History, Lund University.

BAAS, S., L. YONGONG & J. SWIFT (2001), *Guidelines for developing improved risk assessment, prevention and management approaches in pastoral areas of Northwestern China.* Rome: FAO. See internet sources.

BAILEY, H.P. (1979), Semi-arid Climates: Their Definition and Distribution. In: Hall, A.E., G.H. Cannell and H.W. Lawton. *Agriculture in Semi-Arid Environments.* Springer, Ecological Studies No. 34, Berlin.

BARTLE, P. (1980), *Cyclical Migration and the Extended Community: A West African Example.* Leiden: Afrika Studie Centrum.

BEBBINGTON, A. (1999), Capitals and Capabilities: A Framework for Analyzing Peasant Viability, Rural Livelihoods and Poverty. *World Development*, Vol. 27 No.12: 2021-2044.

BENNEH, G. (1973a), Small-scale farming systems in Ghana. *Africa,* Vol. 43 No.2: 134-146.

BENNEH, G. (1973b), Land tenure and farming systems in a Sissala village in Northern Ghana. *Bulletin de l'Institut d'Afrique Noir*, Vol. 35 Series B No. 2: 361-379.

BENNEH, G. (1974), The perceived environment as a factor in the decision-making process of the traditional farmer in Ghana. In: Laryea, A.M. (ed). *Environment and Development in West Africa*. Accra: Ghana Academy of Arts and Science/UNESCO/Environmental Protection Council.

BLAIKIE, P., T. CANNON, I. DAVIS & B. WISNER (1994), *At risk. Natural hazards, people's vulnerability, and disasters.* London & New York: Routledge.

BOATENG E.A. (1966), *A Geography of Ghana.* Second edition. Cambridge: University Press.

BODOMO, A. (1998). Dagaare Language and Culture. See internet sources.

BOGNER, A. (2000), The 1994 civil war in northern Ghana: the genesis and escalation of a 'tribal' conflict. In: Lentz, C. & P. Nugent (eds). *Ethnicity in Ghana: The Limits of Invention.* London: Macmillan Press Ltd. pp. 183-203.

BOHLE, H.G., T.E. DOWNING AND M.C. WATTS (1994), Climate change and social vulnerability: Toward a sociology and geography of food insecurity. *Global Environmental Change*, Vol. 4 No.1: 37-48.

BRINKMANN, A. (1990), Die sozio-ökonomische Bedeutung der Tierhaltung in kleinbäuerlichen Betrieben der Dagomba in Nordghana. Universität Göttingen, Diplomarbeit.

BRYCESON, D.F. (1997a), De-agrarianisation in Sub-saharan Africa: Acknowledging the Inevitable. In: Bryceson, D.F. & V. Jamal (eds). *Farewell to Farms: De-agrarianisation and Employment in Africa.* Hampshire: Ashgate Publishing Ltd. pp.3-20.

BRYCESON, D.F. (1997b), De-agrarianisation: Blessing or Blight? In: Bryceson, D.F. & V. Jamal (eds). *Farewell to Farms: De-agrarianisation and Employment in Africa.* Hampshire: Ashgate Publishing Ltd. pp.237-256.

CAMPBELL, D.J. AND D.D. TRECHTER (1982), Strategies for coping with food consumption shortage in the Mandara Mountains Region of north Cameroon. *Social Science and Medicine,* Vol.16 No.24: 2117-2127.

CANNON, T. (1990), *Hazard Need Not a Disaster Make: Rural Vulnerability and the Causes of "Natural" Disaster.* Lecture spoken at the Institute of Social Studies in The Hague, 21 November 1990.

CHAMBERS, R. (1983), *Rural Development: Putting the Last First.* London, Lagos, New York: Longman.

CHAMBERS, R. (1989), Editorial Introduction: Vulnerability, Coping and Policy. *IDS Bulletin,* Vol.20 No.2: 1-7.

CHEN, M. A. (1991), *Coping with seasonality and drought.* New Delhi: Sage Publications India Pvt Ltd.

CLEVELAND, D.A. (1991), Migration in West Africa: A Savanna Village Perspective. *Africa,* Vol.61 No.2: 222-246.
CORBETT, J. (1988), Famine and Household Coping Strategies. *World Development,* Vol.16 No.9: 1099-1112.
CRS/GHANA (1992), *Wa Diocesan Development Office Capacity Building Project.* Phase 2, Concept Paper.
CURTIN, P., S. FEIERMAN, L. THOMPSON & J. VANSINA (1978), *African History*. London: Longman.
DAVIES, S. (1993), Are Coping Strategies a Cop Out? *IDS Bulletin,* Vol.24 No.4: 60-72.
DAVIES, S. (1996), *Adaptable livelihoods: Coping with food insecurity in the Malian Sahel.* London: Macmillan Press Ltd.
DAVIES, S. & N. HOSSAIN (1997), Livelihood Adaptation, Public Action and Civil Society: A Review of the Literature. *IDS Working Paper No*.57. Sussex: Institute of Development Studies.
DE BRUIJN, M. & H. VAN DIJK (1994), Drought and Coping Strategies in Fulbe Society in the Hayre (Central Mali): A Historical Perspective. *Cahiers d'Etudes africaines*, Vol.34: 85-108.
DE BRUIJN, M. & H. VAN DIJK (1998), *"Pathways" and "Habitus": Two Frameworks for the Analysis of Decision-Making in High-Risk Environments.* ICCD paper.
DEI, G.J.S. (1992), *Hardships and Survival in Rural West Africa: A Case Study of a Ghanaian Community.* Dakar: CODESRIA Monograph Series.
DER, B.G. (1979), Agricultural Policy in Northern Ghana during the Colonial Era. *Universitas*, Vol.8: 3-16.
DER, B.G. (1998), *The Slave Trade in Northern Ghana.* Accra: Woeli Publishing Services.
DE ROUVILLE, C. (1987), *Organisation Sociale des Lobi.* Paris: L'Harmattan.
DERY, G. (1987), *Inheritance and Marriage among the Dagaaba of Northern Ghana: Second Opinions to Existing Theories.* Accra: Assembly Press.
DESSEIN, J. (2002), *Het stremmen en stromen van de markt: een antropologische analyse van markten en landbouw bij de Birifor en de Wala in Noordwest Ghana*. PhD thesis at Katholieke Universiteit Leuven.
DEVEREUX, S. (1993), Goats Before Ploughs: Dilemmas of Household Response Sequencing During Food Shortages. *IDS Bulletin,* Vol.24 No.4: 52-59.
DE VOS, S. (1983), *Beschrijvende Statistiek: Een syllabus, geschreven ten behoeve van het eerstejaars-college statistiek voor sociale geografen.* Amsterdam: Sociaal Geografisch Instituut (unpublished).
DE WAAL, A. (1989), Is Famine Relief Irrelevant to Rural People? *IDS Bulletin,* Vol.20 No.2, pp63-67.
DIETZ, T. (1991), Crisis Survival Strategies: A summary of concepts and an example from the semi-pastoral Pokot in Kenya/Uganda. In: Stone, J. C. (ed). *Pastoral economies in Africa and long term responses to drought.* Aberdeen: University African Studies Group. pp.86-108.
DIETZ, T., P. DRUIJVEN & D. FOEKEN (1992). Coping mechanisms and livelihood strategies: a summary of concepts. In: Reitsma, H., T. Dietz & L. de Haan (eds). *Coping with semiaridity: How the rural poor survive in dry-season environments.* Utrecht: Netherlands Geographical Society. pp.37-43.
DIETZ, T. & A. VAN HAASTRECHT (1997), Livelihood stress in dryland zones. In: Naerssen, T. van, M. Rutten & A. Zoomers (eds). *The diversity of Development: Essays in Honour of Jan Kleinpenning.* Assen: Van Gorcum. pp.43-56.
DIETZ, T. & J. VERHAGEN (1998), *The impact of Climate Change on Drylands: The Case of West Africa.* ICCD paper.
DIETZ, T. & D. MILLAR (1999). *Bolgatanga Regional Study, Ghana.* ICCD report.
DIETZ, T., J. VERHAGEN & R. RUBEN (2001a), *Impact of Climate Change on Drylands with a focus on West Africa*. ICCD report.
DIETZ, T., A. A. NONOW, A. W. ROBA & F. ZAAL (2001b), Pastoral Commercialisation: On Caloric Terms of Trade and Related Issues. In: Mohamed Salif, M.A., T. Dietz & Abdel Ghaffar Mohamed Ahmed (eds). *African Pastoralism: Conflict, Institutions and Government.* London and Sterling, Virginia: Pluto Press. pp.194-234.
DREZE, J. & A.K. SEN (1989), *Hunger and Public Action.* London: Clarendon.
ECONOMIST (1958), Government Revenue and Expenditure in Ghana. *Universitas,* Vol. 3 No. 4: 109-112.
ELLIS, F. (1998), Household Strategies and Rural Livelihood Diversification. *The Journal of Development Studies,* Vol.35 No.1: 1-38.
ESCOBAR, A. (1995), *Encountering Development: The Making and Unmaking of the Third World.* Chapter 5: Power and Visibility: Tales of Peasants, Women and the environment. Princeton: University Press. pp.154-211.
EYRE-SMITH, R. ST. J. (1933), *A Brief Review of the History and Social Organisation of the Peoples of the Northern Territories of the Gold Coast.* Accra.
FAO (1980), *Report on the second FAO/UNFPA Expert Consultation on Land Resources for Populations of the Future.* Rome: FAO.
FOEKEN, D.W.J. (1989), Aspects of seasonality in Africa. In: Foeken, D.W.J. & A.P. den Hartog (eds). *Seasons, food supply and nutrition in Africa: Contributions to a workshop held in Wageningen on December 14, 1988.* ASC Research Report, Vol.43. Leiden: Afrika Studie Centrum. pp.6-29.

GHANA STATISTICAL SERVICE (1993), *Rural Communities in Ghana: Report of a national rural community survey carried out as part of the third round of the Ghana Living Standards Survey of 1991/92.* Accra: Ghana Statistical Service.

GHANA STATISTICAL SERVICE (2000a), *2000 Population and Housing Census: Provisional Results.* Accra: Ghana Statistical Services.

GHANA STATISTICAL SERVICE (2000b), *Poverty trends in Ghana in the 1990s.* Accra: Ghana Statistical Services.

GHANA STATISTICAL SERVICE (2002). *2000 Population and Housing Census: Summary Report of Final Results.* Accra: Ghana Statistical Services.

GOODY, J. (1967), *The Social Organisation of the LoWiili.* Second edition, first published in 1956. Oxford University Press.

GOODY, J. (1969), *Comparative Studies in Kinship.* London: Routledge and Kegan Paul.

GREELEY, M. (1994), Measurement of Poverty and Poverty of Measurement. *IDS Bulletin,* Vol.25 No.2: 50-57.

GRIGG, D. (1995), *An Introduction to Agricultural Geography.* Second edition. London and New York: Routledge.

HALL, S. (1999), Livestock Production Systems in Northern Ghana in relation to Environmental Conservation and Economic Development. In: Blench, R. (ed). *Natural Resource Management in Ghana and its Socio-economic Context.* London: Overseas Development Institute. pp.44-59.

HART, K. (1982), *The political economy of West African agriculture.* Cambridge: University Press.

HAWKINS, S. (1997), To Pray or not to Pray: Politics, Medicine, and Conversion among the LoDagaa of Northern Ghana, 1929-1939. *Canadian Journal of African Studies,* Vol.31 No.1: 50-85.

HEWITT, K. & I. BURTON (1971), *The hazardness of a place.* Toronto: University Press.

HOUGHTON, J.T., G.J. JENKINS & J.J. EPHRAUMS (1990), Executive Summary and Introduction. In: Houghton, J.T., G.J. Jenkins & J.J. Ephraums (eds). *Climate Change: The Intergovernmental Panel on Climate Change Scientific Assessment.* Cambridge. pp.xi-xxxix.

HULME, M. (1994), Using Climate Information in Africa: Some Examples Related to Drought, Rainfall Forecasting and Global Warming. *IDS Bulletin,* Vol.25 No.2: 59-68.

KEMP, D. D. (1994), *Global Environmental Issues: A Climatological Approach.* Chapter 3: Drought, Famine and Desertification. London & New York: Routledge.

KENWORTHY, J. (1991), The Recognition and Interpretation of Recurrent Drought in Africa. In: Stone, J. C. (ed). *Pastoral economies in Africa and long term responses to drought.* Aberdeen: University African Studies Group. pp.7-21.

LADOUCEUR, P.A. (1979), *Chiefs and Politicians : The Politics of Regionalism in Northern Ghana.* London and New York: Longman Group Limited.

LEACH, M., R. MEARNS & I. SCOONES (1999), Environmental Entitlements: Dynamics and Institutions in Community-Based Natural Resource Management. *World Development,* Vol.27 No.2: 225-247.

LENTZ, C. (1993), Histories and political conflict: A case study of chieftancy in Nandom, Northwestern Ghana. *Paideuma mitteilungen zur kulturkunde* 39 pp. 177-215.

LENTZ, C. (1994a), 'They must be Dagaba first and any other thing second...': The Colonial and Post-Colonial Creation of Ethnic Identities in North-western Ghana. In: *African Studies,* Vol.53(2) 1994: 57-91.

LENTZ, C. (1994b), A Dagara Rebellion against Dagomba Rule? Contested Stories of Origin in North-Western Ghana. *Journal of African History,* Vol.35: 457-492.

LENTZ, C. (2000), Contested identities: the history of ethnicity in Northwestern Ghana. In: Lentz, C. & P. Nugent (eds). *Ethnicity in Ghana: The Limits of Invention.* London: Macmillan Press Ltd. pp. 137-161.

LENTZ, C. & V. ERLMANN (1989), A Working Class in Formation? Economic Crisis and Strategies of Survival among Dagara Mine Workers in Ghana. In: *Cahiers d'Etudes Africaines.*Vol.29-1 No.113: 69-111.

LEVINSON, D. & M. EMBER (eds) (1996), *Encyclopedyia of Cultural Anthropology*, Volume 1. New York: Henry Holt & Company.

LIPTON, M. (1986), Seasonality and Poverty. *IDS Bulletin,* Vol.17 No.3: 4-8.

LONGHURST, R. (1986), Household Food Strategies in Response to Seasonality and Famine. *IDS Bulletin,* Vol.17 No.3: 27-35.

LUGINAAH, I. & C. DAKUBO (2003). Consumption and impacts of local brewed alcohol (akpeteshie) in the Upper West Region of Ghana: a public health tragedy. *Social Science & Medicine,* Vol. 57: 1747-1760.

MAZZUCATO, V. & D. NIEMEIJER (2002). Rethinking soil and water conservation in a changing society: a case study in eastern Burkina Faso. *Tropical Resouce Management Papers*, No. 32. Wageningen.

MCCOY, R. F. (1988), *Great things happen: A personal memoir of the first Christian missionary among the Dagaabas and Sissalas of northwest Ghana.* Montreal: The Society of Missionaries of Africa.

MILLAR, D. (1999a), Traditional Worldviews from a Cosmovision Perspective. In: Haverkorst, B. & W. Hiemstra (eds). *Food for Thought: Ancient Visions and New Experiments of Rural People.* Leusden: ETC/COMPAS; Bangalore: Books for Change; London: Zed Books. 131-138.

MILLAR, D. (1999b), When the Spirits Speak. In: Haverkorst, B. & W. Hiemstra (eds). *Food for Thought: Ancient Visions and New Experiments of Rural People.* Leusden: ETC/COMPAS; Bangalore: Books for Change; London: Zed Books. pp. 139-154.

MILLAR, D., R. AYARIGA & B. ANAMOH (1996), 'Grandfather's way of doing': Gender relations and the yaba-itgo system in Upper East Region, Ghana. In: Scoones, I. & C. Toulmin (eds). *Sustaining the soil: indigenous soil and water conservation in Africa.* London: Earthscan. pp.117-125.

MILLAR, D., J. ANGLAAERE & H. A. S. PUL (1997), *Final Report of the Evaluation of Nandom Agricultural Project & Nandom Food Farmers Cooperative Union.* Wa

MOERKAMP, J. (1997), *Ghana: Mensen, politiek, economie, cultuur (landenreeks).* Amsterdam: KIT.

MOFA, UWR (1993), *End of Year Performance Report 1992: The Potentials of Agricultural Production and Strategies for Future Development.* Internal Paper.

MORTIMORE, M. (1989), *Adapting to drought: Farmers, famines and desertification in West Africa.* Cambridge: University Press.

MORTIMORE, M. (1998), *Roots in the African Dust: Sustaining the Drylands.* Cambridge: University Press.

NIJZINK, L. (1999), *More Grass Strips, Less Erosion: Intensification, the Market and Grass Strips on the Central Plateau, Burkina Faso.* M.A. Thesis, University of Amsterdam.

NSIAH-GYABAAH, K. (1994), *Environmental degradation and desertification in Ghana: A Study of the North-Western Region.* Hants: Ashgate Publishing Limited.

OKAI, M. (1997), Agricultural Production, Food Security and Poverty in West Africa. In: Asenso-Okyere, W.K., G. Benneh & W. Tims (eds). *Sustainable food security in West Africa.* Dordrecht: Kluwer Academic Publishers. pp.14-34.

ONWUEME, I.C. & T. D. SINHA (1991), *Field Crop Production in Tropical Africa: Principles and Practice.* Technical Centre for Agricultural and Rural Co-operation.

OUEDRAOGO, J.-B. (1995), The girls of Nyovuuru: Dagara female migrants to Bobo-Dioulasso. In: Baker, J. & T.A. Aina (eds). The migration experience in Africa. Sweden: Nordiska Afrikainstitutet. pp.303-320.

PAYNE, G. (1997), *Urban Land Tenure and Property Rights in Developing Countries: A Review*. IT Publications, ODA.

PLANGE, N.-K. (1979), Underdevelopment in Northern Ghana: Natural Causes or Colonial Capitalism? *Review of African Political Economy.* No. 15-16: 4-14.

PODA, E.N. (1998), Is the Dagara an Acephalous Society? *Hemispheres.* No.13: 53-62.

POPKIN, S. (1979), *The Rational Peasant: The Political Economy of Rural Society in Vietnam.* Berkely, Los Angeles and London: University of California Press.

POSNANSKY, M. (1984), Early Agricultural Societies in Ghana. In: Clark, J. D. & S. A. Brandt (eds), *From hunters to farmers: the causes and consequences of food production in Africa.* Berkely, Los Angeles and London: University of California Press. pp. 147-151.

PUT, M. & T. DIETZ (1998), *Climate Change in Dryland West Africa and the Resultant Responses of the Local Population, their Institutions and Organizations.* Proceedings of the seminar: Acts of Man and Nature: Different Constructions of Social and Natural Resource Dynamics. Bergen, the Netherlands, 22-24 October 1998.

RATTRAY, R.S. (1932), *The Tribes of the Ashanti Hinterland,* Vol. *1 & 2*. Oxford: University Press.

REARDON, T., P. MATLON & C. DELGADO (1988), Coping with Household-level Food Insecurity in Drought-affected Areas of Burkino Faso. *World Development,* Vol.16 No.9: 1065-1074.

RIBOT, J.C. (1995), The Causal Structure of Vulnerability: Its Application to Climate Impact Analysis. *GeoJournal*, Vol.35 No.2: 119-122.

RIBOT, J.C., A. NJAM & G. WATSON (1996), Climate Variation, Vulnerability and Sustainable Development in the Semi-arid Tropics. In: Ribot, J.C., A. R. Magalhaes and S. S. Panagides (eds). *Climate Variability, Climate Chage and Social Vulnerability in the Semi-Arid Tropics*. Cambridge: University Press. pp.13-51.

RICHARDS, P. (1985), *Indigenous Agricultural Revolution: Ecology and food production in West Africa.*London: Hutchinson & Co. (Publishers) Ltd.

RUNGE-METZGER, A. & L. DIEHL (1993), *Farm Household Systems in Northern Ghana: A case study in farming systems oriented research for the development of improved crop production systems.* Tamale: Nyankpala Agricultural Research Station. Special Report, No.9.

RUTHENBERG, H. (1980), *Farming Systems in the Tropics.* Oxford: Clarendon Press.

SACHS, W. (1999), *Planet Dialectics: Explorations in Environment and Developments.* Chapter 4: Environment and Development: Story of a Dangerous Liaison. London: Zed Books. pp. 56-70.

SAHLINS, M. (1974), *Stone age economics.* London: Tavistock.

SCHIJF, A. (2004), *Disentangling risks: Livelihood vulnerability and responses to climatic variability in Northwest Ghana*. M.A. thesis. University of Amsterdam, in collaboration with University of Development Studies, Tamale, Ghana.

SCOONES, I. (1998), Sustainable Rural Livelihoods: A Framework for Analysis. *IDS working paper* no. 72. Sussex: Institute of Development Studies.
SCOTT, J.C. (1976) *The moral economy of the peasant: Rebellion and subsistence in Southeast Asia.* New Haven and London: Yale University Press.
SEN, A. (1987), *Hunger and Entitlements: Research for Action.* Helsinki: World Institute for Development Economics Research.
SHEPHERD, A. (1981), Agrarian Change in Northern Ghana: Public Investment, Capitalist Farming and Famine. In: Heyer, J., P. Roberts and G. Williams (eds). *Rural Development in Tropical Africa.* London and Basingstoke: The MacMillan Press Ltd. pp. 168-192.
SNEL, M. & J. POMP (1999), *Ghana & Benin: Rurale opdracht voor het colloquium Milieu en Ontwikkeling.* Unpublished manuscript. Amsterdam.
SONGSORE, J. (1985), Intra-regional commodity flows within a centre-periphery structure: the case of Wa town and North-western Ghana. *Occasional Papers Series, No.19.* Norwich: Centre for Development Studies.
STANNEVELD, A., B. ANAMOH, J.DAKOUO, A. VAN VOORST & W. ZOET (1994), *Sustainable development from a farmer's perspective: Programme evaluation on sustainable land use in Ghana and Mali.* The Hague: DGIS/CEBEMO.
SUTTON, I. (1989), Colonial Agricultural Policy: The Non-Development of the Northern Territories of the Gold Coast. *The International Journal of African Historical Studies,* Vol.22 No.4: 637-669.
SWIFT, J. (1989), Why are Rural People Vulnerable to Famine? *IDS Bulletin,* Vol.20 No.2: 8-15.
SWIFT, J. (1993), Understanding and preventing Famine and Famine Mortality. *IDS Bulletin,* Vol.24 No.4: 1-16.
TELLEGEN, N. (1997), Brewing Women and Drinking Men: The Costs of Beer in Rural Malawi. In: Glas, M. van der, H. Goeren, W. Pompe & F. Zaal (eds). *Under Pressure: Essays on Development Research.* Utrecht: ISOR/CERES. pp. 37-56.
TENGAN, A. B. (1999), Dagara *Bagr*: Ritualising myth of social foundation. *Africa,* Vol.69 No.4, pp-595-633.
TENGAN, A. B. (2000), *Hoe-farming and social relations among the Dagara of Northwestern Ghana and Southwestern Burkina Faso.* European university studies: Ser.19, Secion B, Volume 54. Frankfurt am Main: Peter Lang GmbH.
TENGAN, E. B. (1994), The social structure of the Dagara: the house and the matriclan as axes of Dagara social organization. *The Victor Series.* No.3. Tamale: St. Victor's Major Seminary.
THOMAS, R.G. (1973), Forced Labour in British West Africa: The Case of the Northern Territories of the Gold Coast 1906-1927. *Journal of African History*, Vol. 16 No.1: 79-103.
TIFFEN, M. (1995), Population Density, Economic Growth and Societies in Transition: Boserup Reconsidered in a Kenyan Case-study. *Development and Change,* Vol.26: 31-66.
TOULMIN, C. (1986), Access to Food, Dry Season Strategies and Household Size amongst the Bambara of Central Mali. *IDS Bulletin,* Vol.17 No.3: 58-66.
TRIPP, R. & K. MARFO (1997), Maize Technology Development in Ghana During Economic Decline and Recovery. In: Byerlee, D & C.K. Eiches (eds). *Africa's Emerging Maize Revolution.* London: Boulder.
TUUREY, G. (1982), *An introduction to the Mole Speaking Community.* Wa: Catholic Press.
UNDP/FAO (1967), *Land and Water Survey in the Upper and Northern Regions, Ghana.* Final Report, Vol.3, Soil surveys. Rome: UNDP/FAO.
VAN DER BORN, G.J. & M. SCHAEFFER (1998), *Identification of climate scenarios for the semi-arid and sub-humid regions, comparing existing climate scenarios for the dryland regions in West Africa, covering 1990-2050*. ICCD report.
VAN DER GEEST, K. (2002a), *"We are Managing!?" Vulnerability and Responses to Climate Variability and Change Among Rural Households in Northwest Ghana.* M.A. Thesis, Department of Human Geography and Planning, University of Amsterdam. See internet sources.
VAN DER GEEST, K. (2002b), *Impact Analysis of the Interventions of the Producer Enterprise Promotion Service Centre (PEPSC) in Northwest Ghana.* See internet sources.
VAN DER GEEST, K. (2003), Klimaat en voedselproductie in Noordwest Ghana: Droge of natte statistiek? In: M. Wolsink & M. Baumeister (eds). *Van nijlpaard tot maasbedding; verscheidenheid en samenhang in de milieugeografie.* Utrecht: Van Arkel.
VAN SCHAIK, A. & H. REITSMA (1992), Agriculture in dry-season environments. In: Reitsma, H., T. Dietz & L. de Haan (eds). *Coping with semiaridity: How the rural poor survive in dry-season environments.* Utrecht: Netherlands Geographical Society. pp.19-36.
VAN VELUW, K. (1987), Traditional Poultry Keeping in Northern Ghana. *ILEA Newsletter*, Vol.3 No.4: 12-13.
WARNER, M,, R. AL-HASSAN & J. KYDD. (1999), A Review of Changes to Farming Systems in Northern Ghana (1957 to 1994). In: Blench, R. (ed). *Natural Resource Management in Ghana and its Socio-economic Context.* London: Overseas Development Institute. pp.85-113.
WATTS, M.J. & H.G.BOHLE (1993), The Space of vulnerability: the causal structure of hunger and famine. *Progress in Human Geography,* Vol.17 No.1: 43-67.

WEBB, P. & T. REARDON (1992), Drought Impact and Household Response in East and West Africa. *Quarterly Journal of International Agriculture,* Vol.31 No.3: 230-246.
WEISS, H. (1997), "Flight to Survive": Migrations during Times of Drought and Famine in Early Colonial West Africa. *Working Paper* no. 13. Helsinki: Institute of Development Studies.
WENNER, M. & MOONEY, T.J. (1995), *Livestock trade and marketing costs in the Burkina Faso – Ghana corridor. Final Report September 1995. Prepared for the Sahel West Africa Office, Africa Bureau, US Agency for International Development.* USAID and Abt. Associates Inc., Development Alternatives Inc., USA.
WILKS, I. (1989), *Wa and the Wala: Islam and polity in northwestern Ghana.* Cambridge: University Press.
ZAAL, F. (1998), *Pastoralism in a Global Age: Livestock Marketing and Pastoral Commercial Activities in Kenya and Burkina Faso.* Amsterdam: Thela Thesis (PhD Thesis, University of Amsterdam).
ZAAL, F. & R. H. OOSTENDORP (2002). Explaining a Miracle: Intensification and the Transition Towards Sustainable Small-scale Agriculture in Dryland Machakos and Kitui Districts, Kenya. *World Development*, Vol. 30 No. 7: 1271-1287.
ZOOMERS, A. & L. DE HAAN (forthcoming), On Capital, Access, Strategies and Trajectories: key-issues in livelihood research.

Internet sources

- BAAS, S., L. YONGONG & J. SWIFT (2001), *Guidelines for developing improved risk assessment, prevention and management approaches in pastoral areas of Northwestern China.* Rome: FAO. www.fao.org/sd/2001/IN0602a_en.htm
- BODOMO, A. (1998). Dagaare Language and Culture. http://www.erols.com/johnston/lawra_language_culture.htm
- INTERNATIONAL PANEL ON CLIMATE CHANGE (IPCC). *The Regional Impact of Climate Change. Executive Summary*. http://www.grida.no/climate/ipcc/regional/007.htm
- INTERNATIONAL PANEL ON CLIMATE CHANGE (IPCC). *Regional Trends and Variations of Temperature and Precipitation*. http://www.grida.no/climate/ipcc/regional/305.htm
- VAN DER GEEST, K (2002a), *"We are Managing!?" Vulnerability and Responses to Climate Variability and Change Among Rural Households in Northwest Ghana*. M.A. Thesis, Department of Human Geography and Planning, University of Amsterdam. http://users.fmg.uva.nl/kgeest
- VAN DER GEEST, K. (2002b), *Impact Analysis of the Interventions of the Producer Enterprise Promotion Service Centre (PEPSC) in Northwest Ghana.* Evaluation for Cordaid. http://users.fmg.uva.nl/kgeest, click on 'other research'.
- An Overview of Vulnerability Analysis and Mapping (VAM). http://www.wfp.it/vam/vamhome.htm
- Are We Having a Drought Yet? http://enso.unl.edu/ndmc/plan/define.htm
- Understanding and defining drought. http://www.enso.unl.edu/ndmc/enigma/def2.htm
- United Nations Food and Agriculture Organisation (FAO). http://www.fao.org
- FAO's Minimum Energy Requirements. http://www.fao.org/docrep/x8200e/x8200e03.htm#P2_33
- Historic currency exchange rates. http://www.oanda.com/convert/fxhistory
- Ghana national economy indicators. http://www.newafrica.com/economy

Appendix:
Conversion factors and recommended energy intake

Table A.1 Consumer units and labour units: conversion factors used in the vulnerability analysis

Male			Female		
Age	Consumer unit	Labour unit	Age	Consumer unit	Labour unit
0-4	0.4	0.0	0-4	0.4	0.0
5-12	0.7	0.4	5-12	0.6	0.4
13-19	0.9	0.8	13-19	0.7	0.8
20-59	1.0	1.0	20-59	0.75	1.0
> 59	0.9	0.7	> 59	0.65	0.7

Source: Adapted from Runge-Metzger & Diehl (1993: 199)

Table A.2 Recommended energy intakes and adult male equivalence scale for Ghana Living Standard Survey

Category	Age (years)	Average energy allowance per day (kcal)	Equivalence scale (adult male = 1)
Infants	0-0.5	650	0.22
	0.5-1.0	850	0.29
Children	1-3	1300	0.45
	4-6	1800	0.62
	7-10	2000	0.69
Males	11-14	2500	0.86
	15-18	3000	1.03
	19-25	2900	1.00
	25-50	2900	1.00
	51+	2300	0.79
Females	11-14	2200	0.76
	15-18	2200	0.76
	19-25	2200	0.76
	25-50	2200	0.76
	51+	1900	0.66

Source: Recommended Dietary Allowances, 10th ed. (Washington D.C. National Academy Press, 1989)

Table A.3 Minimum energy requirements of adults by gender, body weight and physical activity used by FAO

Physical activity norms for adults:

Light activity: - Activity associated with sitting at a desk or behind a counter (..).
Moderate activity: - Continual light physical activity such as in light industry or during off-season farm work.
Heavy activity: - Heavy and occasionally strenuous work (e.g. agricultural production, mining or steel work).

	Approximate daily energy requirement for adults (kcal)		
	Light activity	*Moderate activity*	*Heavy activity*
Men (height 1.71 m)*			
lowest acceptable body weight (54 kg)	2335	2682	3164
highest acceptable body weight (73 kg)	2786	3199	3775
Women (height 1.59m)*			
lowest acceptable body weight (47 kg)	1846	1941	2154
highest acceptable body weight (63 kg)	2223	2337	2594

Source: www.fao.org

Glossary

Bello	Matrilineage
Biir	Local vegetable
Circular migration*	Migration system in which the migrant lives and works elsewhere for a number of years and then returns to his/her home village
Dawadawa	Indigenous tree. The seeds from the pulses are processed into a condiment often referred to as 'our local Maggi cubes'
Guinea corn	Sorghum
JSS	Junior Secondary School; the first three years of secondary school (in the new system)
Livelihood history	Life history (biography) with a focus on changes in livelihood security (see chapter two and eight)
Middle School	Four years of secondary school (in the old system)
Non-farm income*	Income derived *locally* from sources other than agriculture
Off-farm income*	Income derived from outside the local economy; seasonal labour migration and remittances from migrant relatives
Pathway*	See 'livelihood history'
Pito	Local beer brewed with sorghum or millet
Polytechnic	School for higher technical education
Puo	Farm within the village territory, but not in the immediate vicinity of the house
Sheabutter	Butter derived from the seeds of the sheanut tree
Sigman	Compound farm; farm in the direct vicinity of the house
SSS	Senior Secondary School; the last three years of secondary school (in the new system)
T.Z.	'Tuo zafi'; starchy food prepared from millet, maize or guinea corn; the staple food in the research area
To chop	To eat (Ghanaian English)
Wie	Bush farm; the 'wie' is always located across a natural or man-made barrier like a road, a river or a hill.
Yankboro	Local vegetable
Yir	House; patrilineage

(*) Note: definitions may differ from other authors

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