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On the Move
Livelihood Strategies in Northern Ghana

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Abstract

The households who live in the rural areas of Northern Ghana base their subsistence on natural resources, which are threatened by the progressive desertification and increased frequency of extreme weather events in the region. We draw on a field work and on extensive secondary data sources to analyze how the rural population successfully adapted its livelihood strategies to cope with the economic, institutional and environmental changes which occurred over the last two decades. The field work evidences significant differences across communities in the adaptation strategies, which depend closely on the available portfolio of assets. The analysis evidences serious concerns about the environmental consequences of some of the observed changes in livelihood strategies, strengthening the case for public policies aimed at promoting a sustainable development in the region.

Keywords: Livelihood Strategies, Agriculture, Non Farm Activities, Internal Migration, Sustainable Development, Rural Areas.

JEL: I31, O18, O55, Q15

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INTRODUCTION

During the celebrations of the fiftieth anniversary of its independence from the United Kingdom, many observers praised Ghana for being one of the success stories with respect to the application of structural adjustment policies. The country which was *Championing African Excellence*, as the slogan of the celebrations suggested was expected to eventually join the club of middle-income countries. The economic reforms implemented since 1983 rescued a country that was suffering since too long from a deep economic crisis: tight fiscal policies successfully reined in the budget deficit, large aid inflows provided the resources needed for some key public investments, and Ghana succeeded in reducing the incidence of income poverty (Aryeetey & Kanbur, 2009). These encouraging steps notwithstanding, the country remained characterized by a substantial spatial inequality, and large disparities across the North-South divide still prevail nowadays.

Northern Ghana, which represents the geographical focus of this paper, includes the Northern, Upper West and Upper East regions. It is entirely covered by the savannah, it is sparsely populated and poorly endowed with natural resources and the income per capita of its population falls well below the national average. With the adoption of the structural adjustment policies in the early 1980s, the country opened up to international trade, but this external liberalization did not prove to be beneficial for Northern Ghana. The region suffered from the increased competition by foreign producers, which was not matched by an ability to strengthen local production. Specifically, the subsidies provided by European countries and the U.S. to cotton growers damaged local producers, and imported rice, poultry and tomato paste induced a significant decline in the demand for locally produced varieties (CEPA & ODI, 2005, Khor & Hormeku, 2006).

Moreover, the public investment projects to promote the economic development of Northern Ghana which had been initiated in the early 1970s were discontinued as a consequence of the tightening of the fiscal policy, and the design of the new economic policies neglected the economic needs of this backward part of the country (Hutchful, 2002). The detrimental effects of the economic adjustment were just partly compensated by the aid flows that foreign donors directed towards this region.

Last but not least, a progressive change in the environmental conditions negatively affected the agricultural sector. According to the Ghanaian Environmental Protection

Agency, the Sahara desert advances southwards by an estimated 0.8 kilometre every year, with major consequences for the population (Dorurugu, 2010). The rainy season now begins later in the year, and the variability of the pattern of rainfalls has been steadily increasing, with prolonged drought periods occurring even during the rainy season. This entails that farmers are exposed to a higher risk of crop failure, a reduction in the yields of the land and to the loss of livestock due to the shortage of water, without having access to adequate insurance schemes (Dietz *et al.*, 2004, Hesselberg & Yaro, 2006, Assan *et al.* 2009). Moreover, the higher concentration in the rainfall has increased the frequency and severity of floods in Northern Ghana over the last two decades. Between August and September 2007, and again in 2009, heavy rainfalls led to major flooding, which killed at least 20 people, destroyed key infrastructures, livestock and crops, and it determined the displacement of an estimated 400,000 people (Armah *et al.*, 2010).

No wonder that these institutional, economic and environmental changes had an impact on the livelihood strategies of rural households in Northern Ghana, which drew their incomes from agricultural production. Although agriculture still represents the main economic activity in the area, survey data show an increasing diversification into non-farm activities and migration,¹ consistently with the theoretical predictions of the literature (see GSS, 2005, Yaro, 2006, Yeboah, 2005, Obeng, 2005 and Assan *et al.* 2009).

Yaro (2006) provided a detailed account of these changes describing the process of “multiplex livelihood adaptation” that occurred in the Kassena District in the Upper East region. The interviews with a sample of households from the district realized by Yaro (2006) reveal that the decline in agricultural incomes, and the increased needs for cash, connected to the rise in the user fees of some services which were previously publicly subsidized, led to an increase in multi-activity, particularly for the households belonging to the middle of the income distribution. Poor households did not have enough resources to diversify their economic activities out of agriculture, while better-

¹ Data from the Core Welfare Indicator Questionnaire, CWIQ, show that the percentage of working people employed in the agricultural sector decreased from 66.2 to 61.5 per cent between 1997 and 2003 in the Northern region, from 73.9 to 35.4 per cent in Upper East and from 74.5 to 57.1 in Upper West regions, with a symmetric increase the employment shares of manufacturing, construction and trade (GSS, 2000a, 2005a). GLSS data show that in 1993 only 20 per cent of the households in rural Northern Ghana received remittances, while in 2005 the corresponding figure was 32 per cent, signalling an increase in internal and international migration (GSS, 1995, GSS, 2000b).

off households did not have an incentive to do so, as they could still draw sufficient resources from agricultural production and related activities (Yaro, 2006).

The objective of this paper is to explore, along the lines of Yaro (2006), the changes in the livelihood strategies in other rural areas of Northern Ghana: although the environmental characteristics of this region are quite homogeneous, there are important differences among its three regions, and across districts, with respects to population density, land cover and elevation. These differences can have a non-negligible impact on the resources people can rely upon, and on the livelihood strategies that they pursue in order to cope with the deep transformations that occurred in the area.

This general objective can be detailed into a number of more specific research questions. These relate to the differences in the strategies that households have pursued to adapt to the aforementioned changes across areas with different resource endowments. We are interested in understanding people's own perception of the determinants and of the effects of the changes in their livelihood strategies. Furthermore, we will explore to what extent these adaptation strategies have been successful, and whether they can be sustainable over time. We draw the theoretical framework of our analysis from the Sustainable Livelihood Approach, which allows disentangling the complex array of factors that influence livelihood strategies in rural areas, highlighting the underlying determinants and their interrelations. This approach moves from an analysis of the livelihoods and of their evolution over time, and it also focuses on the impact of public policies and institutional, economic and social processes upon the lives and well-being of people (see Scoones, 1998, Ellis, 2000 and DFID, 2001).

The analysis is realized through a field study conducted in eight rural communities in Northern Ghana, where we realized gender-specific focus group discussions within each community, and some semi-structured interviews with local key informers. The communities have been selected through a stratified sample selection process, where the stratification was meant to identify clusters of districts with similar geographic, demographic and environmental characteristics that theory suggests to have an impact upon household livelihood strategies.

Our analysis evidences that the decline in agricultural income induced a variety of responses across the various communities. The first response is on farm diversification, that ranges from intensification or extensification of land use, to the adoption of new crops, and a greater reliance on market transactions to meet basic food consumption

needs. At the same time, almost everywhere, the decline in land yields induced a widespread increase in non-farm activities that could generate a complementary source of earnings, as farming activities alone became hardly sufficient to meet the basic needs of the households. Households engaged in new activities, as mining, tree cropping and the production of charcoal, while traditional activities as weaving and food processing became more market-oriented. Another strategy that has been pursued to meet the increased need of cash is migration, which constitutes a multifaceted phenomenon. Rural-to-rural seasonal migration of some household members is the most widespread pattern of migration, which is still on the rise and triggered by poverty, while whole household migration is less common.

The extent to which a community relies on each one of the possible alternative responses varies according to its portfolio of assets. As a general rule, where population density is low and there is availability of land, the most common strategy is on-farm diversification, in particular with the cultivation of new plots of land, also far away from the village, and the associated practice of bush burning. In areas with high population density, and where fertile land is already scarce, the most common household strategy is to rely more on traditional non-farm activities. Finally, in the areas where the demographic pressure is not too high, but the availability of fertile land is nevertheless scarce, households resort more to migration because there are not enough opportunities to develop non-farm activities because of insufficient demand.

These various strategies turned out to be quite effective in guaranteeing food security for rural people in the short run, but they generally determined a negative impact on the environment, which was already characterized by a fragile equilibrium: farming practices often contribute to the erosion of the soil, mining activities induces substantial water and land pollution, while charcoal production is depleting the limited tree coverage.

The paper is structured as follows: it first describes the theoretical foundations and the analytical methodology, and it introduces the salient features of our study area. Then, it presents the main findings that emerged from the field study and the secondary data sources, and it discusses the relationships among resources, institutions, strategies and outcomes. Finally, the last section draws the main conclusions.

THEORETICAL FRAMEWORK

The Sustainable Rural Livelihood Framework – that draws on the writings by Robert Chambers – represents a relevant theoretical framework for the analysis of a rural context². As Scoones (1998) argues, the fundamental question a researcher using this framework has to pose is ‘*given a particular context (of policy settings, politics, history, agro-ecology and socio-economic conditions) what combination of livelihood resources (different types of capital) result in the ability to follow what combination of livelihood strategies (agricultural intensification/extensification, livelihood diversification and migration) with what outcomes?*’ (Scoones, 1998, p. 3).

Five key elements can be identified in the framework: the context in which people act, the resources they have at their command, the institutions that mediate the access to the resources, the range of activities and choices that people can undertake, and their goals (see Scoones, 1998, Carney, 1998).

The context. Livelihood are influenced by external contextual factors, that can be subdivide into two broad groups, trends and shocks, that differ with respect to the pattern of their evolution over time. Trends consist of population change, climate conditions, technology, terms of trade, macro policies, national and world economic trends. While shocks include droughts, floods, pests, diseases, civil wars, but also sudden price changes.

The resources. Five type of capital have been identified in the framework to describe the set of resources people can dispose to achieve their objectives. Individuals who retain control over a wider set of capabilities have a better possibility to cope with adverse external initial conditions or with unexpected shocks. Natural capital includes all the natural resources that are valuable to people as means of survival: the relationship between natural capital and livelihood is particularly important in rural areas because most of the shocks that hit people are caused by damages suffered by their natural assets. Physical capital comprises the infrastructures and capital goods people can have access to (DFID, 2001), while we define financial capital as the stock of liquid assets people can access, generally savings and loans. Human capital is the labor force people can employ: it is influenced by the education, skills and by the health

² The concept of sustainable livelihood security was first introduced in a report of an Advisory Panel of the World Commission on Environment and Development (WCED) released in 1987; Chambers and Conway (1991) modified the initial definition contained in WCED, arguing that “a livelihood comprises the capabilities, assets and activities required for a means of living: a livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets and provide sustainable livelihood opportunities for the next generations” (Chambers and Conway, 1991, p.i)

status enjoyed by the individuals (Carney, 1998). Moser (1998) defines social capital as the “reciprocity within communities and between households based on trust derived from social ties” (p.4)³.

The mediators. The access to the various resources is mediated by the set of formal and informal institutions, which also shape the expected returns from investing on them (DFID, 2001).

The strategies. With the term livelihood strategy we refer to the array and combination of choices and activities that households resort to in order to achieve their own objectives. In line with Scoones (1998), we identify three directions along which households can move to choose the combination of strategies that better suit their proposed objectives, given the available resources: farming activities, non-farming activities and migration. Within each direction, a household is confronted with further choices (e.g. it has to choose the kinds of crops and farming techniques to adopt, the degree of diversification in income sources, and whether or not to have one or more members who seasonally, temporarily or permanently migrate).

The outcomes. All individuals aim achieving a common basic objective, that is to maintain or to improve their wellbeing. Specific objectives – as raising income, reducing vulnerability or improving food security – can be identified according to the individual’s desires and necessities. It is important to distinguish between the intentional and non-intentional effects that the livelihood strategies determine. A strategy can have either positive or negative consequences on the livelihood security of the subject who has been embarked in the strategy, or on that of other subjects. Moreover, it can produce feedback effects on some of the contextual factors, as the environment. Therefore, a successful livelihood strategy needs not only to achieve the proposed goals, but it also needs to be ‘sustainable’. Sustainability represents an elusive concept, but as a first approximation we can regard strategies as sustainable when they allow to cope with shocks, they are not excessively dependent on an external support, they do not erode over time productive resources, they do not impinge on the subsistence chances of other actors (DFID, 2001) and they are not harmful for the environment.

³ The relevance of this - admittedly fuzzy - concept of capital in the rural context of Sub-Saharan Africa can be hardly overemphasized: household decisions do not simply reflect the availability of private assets, but are heavily influenced by those resources that pertain to the community. An atomistic perspective could produce misleading conclusions, as the household does not have to be artificially removed from the complex net of relationships with its community (Shaffer *et al.*, 1996; Goldstein *et al.*, 2002).

METHODOLOGY

The underlying hypothesis of our analysis is that households living in communities with similar geographical, environmental and demographic characteristics are likely to adopt similar livelihood strategies. The whole territory of Northern Ghana is covered by savannah, and the districts in the three regions are rather homogeneous with respect to the crops that are cultivated. Still, there are some relevant characteristics that vary considerably. Population density, for instance, is not homogeneous in this area of the country: the Northern region is sparsely populated, while some of the districts in the Upper East region are characterized by a very high population density. According to a study conducted by the World Food Program and the University for Development Studies (WFP & UDS, 2004), there other two variables, besides population density, which allow subdividing the territory into homogeneous areas: namely, elevation and land cover.

Using spatial and principal components analysis techniques, WFP & UDS (2004) identified five homogeneous clusters of districts in Northern Ghana.

The five clusters identified in WFP & UDS (2004) can be described as follows:⁴ (i) lower lands covered by natural vegetation and low population density characterize the Eastern part of the Northern region and the Builsa district in the Upper East region; (ii) tree cover with low population density characterize the Western part of the Northern region; (iii) higher lands covered with natural vegetation and different varieties of crops and a low population density are the distinct features of the whole Upper West region; (iv) cultivated land combined with a high population density characterize Bongo, Bawku Municipal and Garu-Tampame districts in the Upper East region; (v) lower land, a combination of natural vegetation and croplands and high population density characterize the rest of the Upper East districts⁵.

We have randomly selected one district from each of these five clusters. The five districts that were drawn at random are: (i) the Savelugu-Nanton district, close to Tamale, the administrative capital of Northern region; (ii) the West Gonja district in the Western part of the Northern region, within the major Ghanaian conservation park; (iii)

⁴ The districts of Lawra (in Upper West), East Maprusi and Bunkpurugu-Yunyoo (in Northern Region) – differ from all the other districts in Northern Ghana, as they are more similar to those in Central Ghana, have been excluded from the analysis with the district of Tamale (in Northern Regions), which is predominantly urban.

⁵ The Kassena district, analysed by Yaro (2006), is located in cluster (v).

the Jirapa-Lambusie district in the Upper West region, close to the border with Ivory Coast and Burkina Faso; (iv) the Bongo district in the Upper East region, and (v) Talensi-Nabdam in the Upper East.

Then, we randomly selected eight rural communities from these five districts, using the lists of rural communities compiled by the various District Assemblies. Specifically, we selected two communities from the first three districts (specifically, Yilipani, Sugutampia, Busunu, Sori – also known as Kotito N.2 -, Die and Willing), and one community from each of the other two (namely, Lungu and Namoo). The choice to draw two communities was related to the geographical extension of some of the districts included in our sample. Figure 1 shows the selected communities and their location in the district they belong to.

Although this sampling procedure is not meant to support any inference about the population from which the communities have been selected, we maintain that - consistently with the arguments described in the previous section - such a procedure allows us to better understand the relationship between the environment and the livelihood strategies adopted by the households.

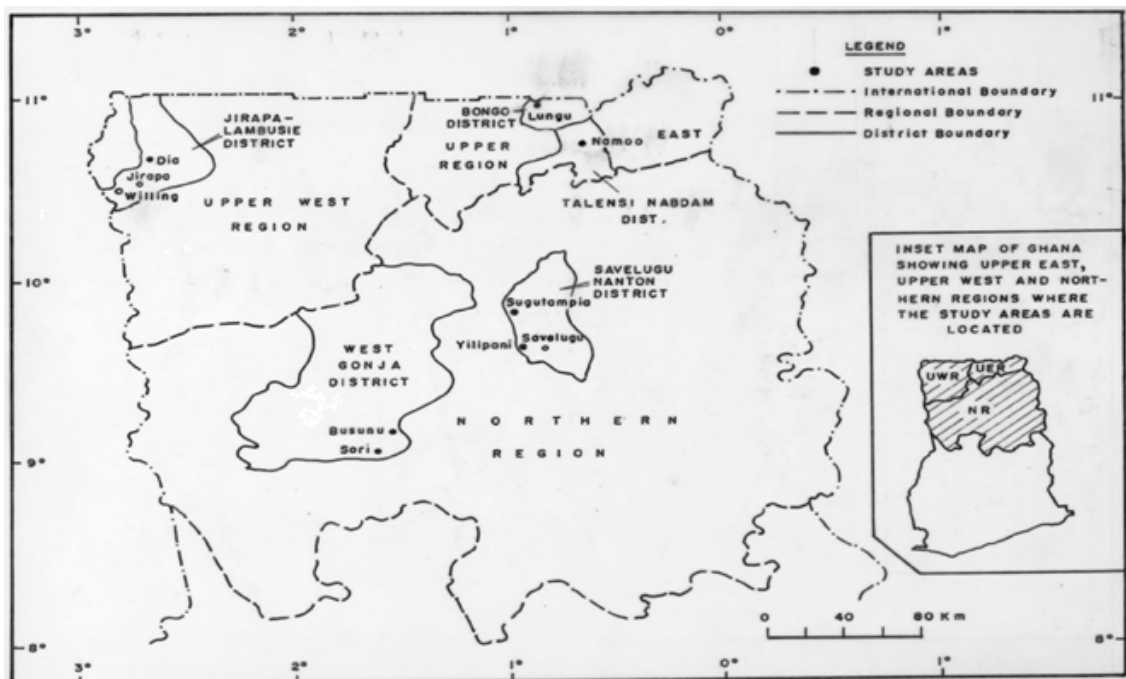


Figure 1. A map of Northern, Upper East and Upper West regions of Ghana showing the study areas

Source: elaborated by the Geographical Department of the University of Accra

The field work was conducted between April and June 2007. We employed a participatory approach combined with the collection and the analysis of secondary data sources. These included the *District profile* and the *Medium Terms Development Plans* produced by the local District Assemblies. These documents provide an in-depth analysis of the situation of each district, which serves as a basis to design development interventions. The district offices of the Ministry of Forestry and Agriculture, MofA, publish every year an *Agriculture Profile* of each district. Census data contain information on the access to services at a community level. Finally, we drew on the CWIQ, a survey undertaken in 1997 and in 2003 on a sample of 49,000 households, which is representative at the district level. All these documents and data have been extremely useful in gaining a better understanding of the distinct features of each district, and to provide evidence that the districts represent homogeneous units with respect to several key aspects, ranging from climatic conditions, soil characteristics and land tenure systems, to the prevailing demographic structure, health, water and sanitation conditions, education and sectorial distribution of the workforce. This homogeneity strengthened the validity of our choice to rely on districts as the basis for the random sampling of the communities where the field work was undertaken. Table 1 summarises some of the salient features of the five sampled districts, as they emerge from a number of secondary sources.

Table 1. Salient features of selected districts

	West Gonja	Talensi Nabdam	Jirapa Lamboussie	Bongo	Savelugu Nanton
Ethnicity	High fragmentation: 22 ethnic groups are recorded in the district.	Low fragmentation: almost the whole population is Dagbani (Frafra).	The majority of households are Dagaare, but a consistent minority are Sissala.	Low fragmentation: Almost the whole population is Dagbani (Frafra).	Low fragmentation: more than 90 per cent of population is Dagomba.
Religion	Marked preponderance of Muslims (more than 70 per cent of population).	Preponderance of traditional religions (50 per cent of population) and Christians. Small minority of Muslims.	Preponderance of Christians (50 per cent of population) and traditional religions. About 10 per cent of Muslims.	Preponderance of traditional religions (50 per cent of population) and Christians. Small minority of Muslims.	Marked preponderance of Muslims.
Population Density	Low population density (7.9 people per squared km).	High population density (110.6 people per squared km).	Moderate population density (58 people per squared km).	Very high population density (183 people per squared km).	Moderate population density (40.9 people per squared km).
Number and nature of communities	There are about 400 communities in the district. The 10 major communities host over 42 per cent of the population.	Roughly 190 communities belong to the district; only a few of them have more than 2,000 inhabitants.	There are about 200 communities of varying size, most of them are small and dispersed in rural area. 13.7 per cent of people live in urban areas.	There are 185 communities in the district. The town of Bongo hosts approximately the 18 per cent of the entire population.	The district includes approximately 150 communities; 46 per cent of population live in one of the six urban communities.
Accessibility	Difficult accessibility: all the northern part of the district is often inaccessible, especially during the rainy season.	Moderate accessibility: only a small part of the district is well connected to the main road Tamale-Bolga.	Quite good accessibility: most of the communities are connected by dirt roads.	Moderate accessibility: a lot of communities are cut off during the rainy season and there are several unabridged streams.	Moderate accessibility: the communities near to the main road Tamale-Bolga are the easiest to reach.

Sources: Author's elaboration on GSS (2005b, c, d), Savelugu Nanton D.A. (2006), Talensi Nabdam D.A. (2006), West Gonja D.A (2006), Bongo D.A. (2006), Jirapa Lamboussie D.A. (2007).

We have conducted an interview with a key informer and two focus group discussions in each of the eight selected communities. The interview with the key informer - generally the assembly man⁶ - aimed at collecting basic information on the community, and to understand to what extent the community resembled the picture about the district it belonged to drawn from the aforementioned secondary sources.

Group meetings are the most suitable methods to identify the main economic activities - including migration patterns - in which the community is involved, their characteristics, the problems and risks associated to them, their profitability, and their contribution to food security.

⁶ The assembly man is the individual who is elected by the people living in the area to represent them in the District Assembly.

The focus group discussions were based on a semi-structured interview, where the role of the interviewer was just to introduce the key arguments to be discussed, then letting the people to express freely their views and perceptions.

The semi-structured group discussions focused on the changes and trends over the last 15-20 years in five main areas of livelihood: agriculture (and services to agricultural activities), non-farm activities, migration, land and natural resources, perception on changes in community well-being⁷. We decided to conduct two separate, gender-specific, focus group discussions in each community, because of the reluctance that most women have in expressing their feelings in the presence of men, and to allow for the emergence of gender differences about the judgements of the main changes occurred within the community.⁸

The overall picture provided by secondary sources, key informers and group meetings allows identifying a broad portrayal of assets, access and activities, as seen from a community perspective.

ANALYSIS

In this section, the main findings of the field study are presented using the Sustainable Rural Livelihood Framework. We first analyse the livelihood resources; then, we analyse the institutions and organizations' influence on access to livelihood resources; third, we analyse the resulting livelihood strategies and finally, we analyse the outcomes.

Resources

Natural capital. The most important assets for the households of Northern Ghana are the natural resources. The land, the sources of water, the vegetation and the trees constitute the basis of their livelihood strategies.

The differences in land cover across districts give rise to differences with respect to the endowment of virgin land: the West Gonja district is the one with the largest

⁷ The traces of the interview with the key informers and the guidelines for the focus groups discussions are available from the author upon request.

⁸ We conducted our focus group discussions following the recommendations in Ellis (2000), who identifies some typical problems of focus group discussions and village meetings, which can imply that the picture of the community that emerges from the focus group discussion can be biased. The researcher should ensure that all social groups take part to the discussion, and he or she should be aware of norms and conventions that do not allow some community members to express their opinions; finally it is possible that a general discussion may hide - or at least fail to disclose - differences and cleavages across social groups. .

endowment of fertile virgin land, and it is also rich of wood, as it hosts two natural reserves, the Mole National Park and the Kenikeni Forest Reserve.

The most widespread varieties of trees in Northern Ghana are sheanut, dawadawa, baobab, and nim. Northern Ghana, together with Burkina Faso, produces the best quality shea butter, which is demanded by the cosmetic industry.

Gold deposits have been discovered in the mid-1990s in the Talensi Nabdam district, and this represents a new asset that could be exploited in order to create new occupational opportunities.

Water is a scarce resource in Northern Ghana: there are a few watercourses, and the most important, the White Volta River, has repeatedly created tensions between Ghana and Burkina Faso (Niasse, 2005). The construction of two dams in Burkina in the 1990s determined water shortages in Ghana. One of the communities in our sample, Sugutampia, was established in the 1950s by a group of fishermen along the shores of the White Volta River. Villagers now complain about the depletion of the fisheries in the river, which is attributed to the use of illegal fishing nets by the commercial fishing companies and to the decrease of the river flow after the construction of the Ziga dam in Burkina Faso.

The rainy season goes from May to September, with almost 60 per cent of the rainfall occurring between July and September. The pattern of the rainfall is erratic and it changes from one year to another, with a progressive decline in the average level of rainfall (see Assan *et al*, 2009 for the Upper East Region); Dazé (2007) reports an estimated 74 per cent decrease of rainfall in Guinea Savannah by 2100. This couples with a gradual increase in temperatures: Assan *et al.*(2009) estimate a temperature increase of 2-5 degrees in the Upper East Region by 2050.

Shocks and worrying trends related to natural capital have become more and more common over the last decades. People from all the communities stressed the increasing difficulties faced by farmers as a result of the decline in land fertility. Soil erosion was blamed as the main factor behind the decline in crop yields, as the plots of land are becoming increasingly sandy and display worrisome signals of a progressive desertification. The increasing unpredictability of the rains, coupled with a growing population, determines an ensuing pressure on the land, and these were also advanced as complementary explanations for the declining productivity of the land.

Financial capital. Access to bank credit is out of reach for almost everybody, and livestock represents a relevant buffer stock for the households: selling cattle is a crucial

way to obtain cash when needed. This is why owning livestock is considered to be crucial, and poverty is often defined as not owning animals. A farmer from Lungu said: “if you have cattle, you can always face a sudden risk”. Sometimes loans are provided by NGOs to groups of women involved in food processing.

Physical capital. This is essentially constituted by the tools used for farming, inputs and fertilizers, by the agricultural equipment and by the means of transport that people have access to. The endowment of physical capital is scarce in all the communities. The lack of inputs and fertilizers is a major complain by the farmers: almost invariably, they stress that their costs are unaffordable, while in the past they were distributed for free or sold at a highly subsidized price by MofA officers⁹. Nowadays, seeds and fertilizers are sold by private organizations in the main market centres but farmers have major problems in covering not only the direct cost of inputs, but also the cost of transportation to reach the market.

Another key service that the MofA officers used to provide and that was then suspended, or notably reduced, was the mechanical ploughing of the fields. Now the access to mechanical ploughing is harder for farmers, which have to rent them from private owners of the tractors.

In an area where the lack of water is one of the main problems that farmers face, as discussed above, irrigation systems would be essential. But, investments in irrigation have always been very poor in the past decades. Dams and dugouts for agricultural purposes are inadequate. Two of the communities we visited - Namoo and Lungo - are located not far from rivers or lakes, but that water has never been used for irrigation.

As there is only one rainy season in Northern Ghana and agriculture is rain fed, there is only one harvest, and this entails that storage systems are crucial, because food has to be preserved from pests and attacks by rodents. There are some farm produce that are particularly perishable, like vegetables, yam or cassava, which need major attentions. In the districts we visited there are only a few adequate facilities where people are able to store the food, so post-harvest losses are high.

In some areas, the road infrastructures have improved over the last 15 years, but the largest part of the roads are not motorable in the rainy season and there are several areas

⁹ Subsidies continued during the 1980s, but the user prices had already begun to rise, and the subsidies were fully removed in the early 1990s. The network that regulated the distribution of subsidized inputs was very good: there were deposits for fertilizers, well managed by the government. Extension officers sold fertilizers, seeds and tools directly to the communities. After the removal of subsidies, the system was privatized under prescription of the World Bank, and the MofA decided to provide only extension services through its local offices.

which are not accessible at all, especially in the Northern part of the West Gonja district. Bicycle is a common mean of transport, but only better off households own them. Public transports, such as buses, are not very common, and they pass only by the main roads, so that only the communities where there is a periodical market or that are located not too far from a main road can use them.¹⁰

Social capital. Reciprocal aid among villagers is widespread in our study area. People use to work together to the benefit of the entire community, or of one of its member, when necessary, and this is especially true for women. The formation of women groups can be considered as a form of social capital. NGOs aim at working with these groups, and women groups are at times formed in response to the pressures exerted by the NGOs.

The compound system can be considered as another form of social capital, since it allows some risk sharing across households: households generally live in circular compounds where each household has its own dwelling. There is a head of the compound, who is responsible for providing the food for the main meal, while senior women have the responsibility to provide the ingredients for the soup. The basic food production occurs in plot of land of the compound, where all the members are required to work. In addition, each member can cultivate individual plots in order to have additional food and cash income (Poulton, 1997).

Human capital. The labour force in Northern Ghana is generally characterized by a low level of education, precarious health conditions and a limited set of skills. Enrolment rates in primary schools are the lowest of the country, and youth literacy rates are well below the national average. One of the main difficulties for the school system is the lack of trained teachers, who often refuse to work in poor and remote areas (Konadu-Agyemang, 2000). Access to health facilities and the ratio of medical staff to the resident population are also well below the national average. Among the communities in our sample, only Busunu has a small health clinic, where there is a midwife, while people living in the other villages have to walk between 2 and 16 km to reach the closest health service.

Nevertheless, improvements in human capital accumulation have been registered in the last years, mainly thanks to inflow of international aid. Access to education and health recorded a significant improvement because of the investments in the construction of

¹⁰ Only in the communities we visited in West Gonja district, there is a local market; in all the other communities, people have to reach the nearest market by bicycle or by foot.

schools and health clinics; almost all the communities now have a primary school, while this was not the case in 2000, a few years ago (GSS, 2005b,c,d), and the wages of the teaching staff are often covered by NGOs.

The size of the labour force is increasing, along with the population density. These demographic changes can represent both an opportunity and a challenge: where the density is already high, population growth results in an increasing pressure on the fertile land, but population growth also creates human resources that can be employed in off-farm economic activities.

Institutions

Here, we briefly analyse the relevant institutional actors who have a role in shaping the access to resources for the rural population in Northern Ghana.

Government. The development of Northern Ghana was neglected in the design of national economic policies after the introduction of the structural adjustment policies in the early 1980s. The limited fiscal resources were directed towards the export-oriented sectors, but these are not located in the Northern part of the country (Hutchful, 2002, Shepherd & Gyimah-Boadi, 2005). The government thought it could compensate for the competitive disadvantages of this area relying on the availability of funds provided by international institutions willing to invest in the area (see below).

The government recently committed itself to reverse this long-standing neglect, accelerating the development of the Northern savannah belt of Ghana, by creating the Savannah Accelerated Development Authority (SADA), and by drafting a development strategy that has to be implemented by 2030 (CEPA & IPA, 2010).

Ministry of Agriculture. The MofA and its decentralized offices represent the most important government branches in Northern Ghana. Despite the reduction in the services provided by the MofA, which followed the generalized cuts to the fiscal budget, extension officers still provide technical assistance to the farmers, helping them to become familiar with innovative farming practices. The ratio between the number of farmers and the number of extension officers varies across districts. On average, there is one extension officer for approximately 1,500 farmers, while the optimal ratio should not exceed 500. The situation is particularly difficult in the West Gonja district, where this ratio stands at 3,308 (MofA, 2006a,b,c, Mofa, 2007a,b). The MofA also offers veterinary services, that are greatly appreciated by rural population: the increased user

costs of this service - due to the reduction of budgetary allocations to the MofA - is perceived as a major problem.

The extension officers of the MofA complain about limited knowledge of farming techniques and crop husbandry, and about the farmers' resistance to actually implement the recommendations they provide.

District Assemblies. District Assemblies were created in 1988 with the intention to strengthen the capacity of the local institutions to plan and implement development policies. This decentralisation of political authority should have transformed the regional *elite* from a purely claiming to a serving or responding one. The District Assemblies draw their resources from a dedicated fund, the District Assembly Common Fund, which receives no less than five per cent of annual national fiscal revenues (Shepherd & Gyimah-Boadi, 2005). In Northern Ghana, District Assemblies almost completely depends on government support, because, even if they could, they are not able to generate resources internally. Their limited resources and the strong control of central government of the executive branch of the districts¹¹ make them "nothing more than 'talking shops' with no real capacity to implement plans and programs" (Shepherd & Gyimah-Boadi, 2005, p.30).

NGOs. International aid flows financed such a large number of development projects that the role of NGOs and international donors become so important as to overshadow the role of the government institutions. International institutions financed infrastructures and strongly promoted the access to potable water and better health services. Several NGOs have been created by local politicians with the purpose to secure the money channelled by international donors to Northern Ghana. Mohan (2002) underlines that often local partners and rural poor are marginalized from the NGOs' decision making processes. There is a large debate on the overall impact of aid intervention; Sowa (2003) observes, for example, that it has been extremely moderated because market based policies have been applied in an area where subsistence economies prevail. Still, it is a fact that NGOs have been for years among the most important partners for the local populations, they are perceived as the main drivers of change and NGOs' initiatives were generally praised in the focus group discussions.

¹¹ 30 per cent of the members of the District Assemblies are appointed by the Government. Moreover, District Assemblies are strongly controlled by the Regional Coordinating Council (RCC), that are under the authority of Central Government (Shepherd & Gyimah-Boadi, 2005).

Traditional local authorities. These authorities still have an extremely important role in the rural communities, exercising their influence on virtually all the aspects of the life of the community. Traditional authorities have a specific role in land management: the control over the land resides with the *paramount chief* of each area, or with the *tendanaa* – which is a term which identifies the first settler of a village – who holds the land in trust for the people, and exercises this right through a hierarchy of local chiefs. The chief of the village allocates the land to compounds of different households. Any member of the community can demand to have access to virgin land for cultivation, and the right to use this land can be transferred to his heirs, but the purchase of the land is not permitted. Powers of political and traditional leaders often overlap.

Strategies

On-farm diversification. Agriculture is the most important activity in all the communities we visited. Agricultural production is mostly a subsistence activity; the sale of a part of the harvest - either raw or processed - in local markets is a growing phenomenon, but it is limited to only a few products. Such a choice is feasible – or at least easier – for those communities that host a local market, or that are well connected with nearby markets. Transportation of farm produce to the markets is a challenging task, as transport services are inadequate. Without good road connections, there are some traders, the so called middlemen, that reach the more remote communities to purchase the crops that are then resold with a substantial mark-up at the market; this entails that the price that farmers are able to obtain is closely determined by the geographical location of their own community. A good harvest does not suffice to obtain good earnings when the middlemen represent the sole opportunity to reach the markets, as this monopsony substantially reduces the farmers' bargaining power over the price of their products.

As agriculture is perceived as crucial for the survival of the households, it is not surprising that the first way to cope with the increasing difficulties in this sector is to resort to on-farm diversification. Data from the MofA show the evolution of cropped area and productivity for the main crops of each district between 1991/2 and 2006: maize, sorghum, millet, rice – some of the traditional crops – either declined or stagnated, while the production of groundnuts, yam, cassava and of some newly introduced crops, as cowpeas and soybeans, significantly increased (MofA, 2007c,d,e). Farmers introduced crops that are more resistant to droughts, and less dependent on

fertilizers, given the increased variability in the pattern of rainfalls and the increase in the cost of fertilizers.

The focus group discussions evidenced that soybeans were introduced in all the communities already in the 1980s. This newly introduced crop has several advantages: it does not require any fertilizer or compost, it does not reduce the fertility of the soil, and it has good nutritional properties.

Rice, a former cash crop, became a staple crop: its profitability decreased because of the competition of foreign-produced rice following the external liberalization implemented in the 1980s. Rice is now grown in almost all communities, but only a few of them still sell a part of the harvest.

All the communities in our sample no longer grow cotton. This was the major cash crop in vast areas of Northern Ghana since the early 1980s up to the end of the 1990s. Cotton production declined afterwards following the increase in the costs of production – mainly due to the increase in the users' price of fertilizers - with the liberalization of the market and the international competition and with the lack of coordination among cotton companies (Poulton, 2007). Producer price is now too low with respect to the costs of production that local producers face. Moreover, cotton companies provide credit to the farmers, giving them inputs and fertilizers in exchange for the harvest, so that the producers get paid only if the value of harvest exceeds the value of the initial loan. This system is hard to understand for farmers, who complain that they often do not receive the money that they expected.

On-farm diversification takes different forms: the introduction of new crops, for instance, is easier where the outreach of extension services is better, while the use of more advanced techniques is adopted only where there are sufficient funds to cover the initial costs.

Intensification or extensification in the use of the land are other strategies that households adopt to increase their earnings from agricultural activities. Where the land is scarce, land intensification is the preferred approach, while abundance of fertile land induces farmers to extend the size of the plots they cultivate. Only in the two communities that we visited in the West Gonja district, farmers had the opportunity to shift to new plots, letting the old ones to fallow.

Off-farm diversification. The floods that occurred in Northern Ghana, in September 2007 and again in 2009, that caused the destruction of a considerable part of the crops -

in addition to the destruction of houses and road connections between villages, the spread of health diseases and the death of more than 20 people - demonstrate that the households that do not have a real alternative to subsistence agriculture are extremely vulnerable to the risks associated to extreme weather events. The dependence of agriculture from the pattern of rainfall entails that if the only yearly harvest is not good, people are forced to rely on the markets to satisfy their basic consumption needs. In that case, they need cash, that can be obtained only from the sale of the livestock, or from earnings from non-agricultural activities. The need to earn cash to buy food, clothes and other goods is the main push factor that led to the increase in non-farm activities in the region.

Indeed, multiactivity, defined here as multiplicity of the income sources of an household, is typical of many households and communities in Northern Ghana, as documented by Yaro (2006) for the Kassena district. Our field work revealed that non-farm activities are on the raise almost everywhere, but with important differences across districts and communities. The most common non-farm activities practised in Northern Ghana are petty trading, food processing, weaving, carving, surface mining and tree cropping.

The lack of – or at best the extremely limited – access to credit represents the single most relevant hindering factor to the development of non-agricultural activities in Northern Ghana. To overcome this obstacle, the formation of groups – mainly constituted by women and often assisted by NGOs – has become increasingly common, as it is often instrumental for obtaining credit to start up or to develop an economic activity. Large traders make a profit out of the differential between the low price paid for the agricultural goods during the harvest season, and the high sell price they obtain during the drought season. This kind of trade rests on the availability of adequate storage systems, and it thus needs large start-up funds and it entails substantial risks, because of the fluctuations of the supply and demand for the traded good and because of the product spoilage. It is thus natural that large traders are generally regarded as the most affluent members in the community.

Conversely, minor trading activities can be set up with a limited amount of funds and can be relatively profitable. A woman by Sori said “today you can raise more money with petty trading than with agricultural activities”. Notwithstanding, the initial costs can still represent a major obstacle for most of the households, as the difficulty to

collect the initial resources often emerged in the focus group discussions as a binding constraint.

Women have always been involved in food processing activities or in weaving in all the communities, but these activities were not usually market-oriented. One of the biggest changes occurred in the last decades is that, almost everywhere, these traditional activities have become new sources of earnings for the households. Food processing is the non-agricultural activity that is more widespread among women: it is often conducted on a small scale, as larger scale processing requires investments which are out of reach. This activity is not immune to some specific risks, and it can also pose significant difficulties; when the raw material is available in the community, the operational costs that women face are relatively low, as they only need to purchase the equipment that is required for processing. With just a few tools, food processing is a time-consuming and often tiring activity for the women. Semi-mechanized processing is extremely rare, as, in the majority of the communities, adequate processing equipment are lacking because of its cost and of a limited know-how about non-traditional processing techniques. Water availability can represent a critical factor for food processing, as some activities – as shea butter processing and rice parboiling – are water-intensive.

The local availability of raw materials is also crucial for other hand-made activities such as weaving and fibre, as this allows reducing the transportation costs that could otherwise undermine the profitability of these activities.

The various non-agricultural activities performed by men differ substantially with respect to initial and operational costs, as they run all the way from wooden carving – that basically requires no up-front cost – to masonry, that cannot be performed without adequate tools, and to blacksmithing, that, besides the costly equipment, imposes high running cost to purchase the metals, that are often of poor quality.

Tree cropping is a newly introduced activity, that is often promoted by the NGOs, and that appears to be a promising one, as a small plot of land is often sufficient to begin the activity; still, it can also give rise to some conflicts within the community, as in Sugutampia, where the mango plantations are detrimental to women's activities because they are subtracting land to sheanut trees.

Timber and charcoal trade is rapidly increasing all over the region, even if transportation costs are high as these products are sold outside the community.

New off-farm job opportunities opened up where gold mines have been discovered. But mining activities are perceived as extremely dangerous for the miners, earnings are volatile, and conflicts among miners are frequent because of the ensuing competition.

It is important to stress that most of the non-farm activities are related to farm produce: it is the case of gari processing, pito brewing, dawadawa processing (made respectively from cassava, cereals and legumes), and of trading of food stuff. In the focus group discussions, people clearly said that the raw material required for these activities is too expensive and, in fact, they are usually undertaken only by farmers' households. The activities that are not dependent from the harvest, that are thus accessible even to households that do not have a satisfactory agricultural production, are shea butter processing, weaving, mining or charcoal selling.

Migration is a common strategy in almost all the districts we visited, but there are important differences across them. Migration is in fact considered as a relevant issue in the *District profiles* of the two districts in the Upper East region, and in the Jirapa district, while it is almost ignored in the profiles of the other districts (Savelugu Nanton D.A., 2006, Talensi Nabdam D.A., 2006, West Gonja D.A., 2006, Bongo D.A., 2006, Jirapa Lamboussie D.A., 2007). In Jirapa, women represent 60 per cent of population aged between 20 and 44, and the sex ratio remains low up to the age bracket 40-44, when it starts to recover, revealing a predominant pattern of temporary male migration. This pattern is common in the entire Upper West region (GSS, 2005d). The sex ratio drops significantly – from 107.8 to 86.2 per cent – from the 15-19 age brackets to the 20-24 one also in the former Bolgatanga district (GSS, 2005d). Conversely, West Gonja represents a destination area from other rural areas, because of the abundant availability of fertile land.

Focus group discussions provide a picture that is broadly consistent with these administrative and census data. The most common type of migration that is reported in the discussions is temporary male migration during the dry season, or in a drought period: young men temporarily move towards more fertile areas in search of land for farming, or for another job. This pattern of migration, that was described by the people of Lungu, Namoo, Willing and Die, is on the rise. It does not require an initial investment of the households and it is generally induced by the pressing need to increase low household incomes. Indeed, people generally traced back the rise of migration to the increase in the incidence of poverty within the community, and thus indirectly to the lower fertility of the soil. If young men, and to a lesser extent women,

are the first who migrate, also elderly people and married woman are sometimes compelled to leave their community on a temporary basis. Migration is generally regarded as an option of last resort: “we would rather work in the mines than leave our village”, a farmer of Namoo said.

Remittances sent by migrants constitute a complementary source of income in all the communities in our sample, that becomes crucial during the slack agricultural season. Their role is particularly important in the Upper West region: people in Willing say that remittances represents between 15-50 per cent of household income. Remittances are generally used to satisfy the basic consumption needs: food, health services, clothes, school expenditures, and inputs for farming, while they are rarely employed to set up a new economic activity.

To sum up, our field study evidenced that off-farm activities have not developed along the same lines all over Northern Ghana. Key differences with respect to the importance and to the kind of off-farm diversification emerge across the various communities that we visited. In the most densely populated areas, where there is lack of fertile virgin land – like the two districts in the Upper East region – the most common off-farm diversification strategy is to start non-farm activities, like food processing, trading, weaving and small scale mining. Migration is a less common strategy in these areas, especially in Talensi Nabdam, where people prefer to remain in the district working in the gold mines rather than to go away from their own village.

In areas where the population pressure is lower, but the availability of fertile virgin land is already scarce – like in the Jirapa district in Upper West region – households resort more to migration because there are not profitable opportunities to develop non-farm activities. In fact, in both the communities visited in Jirapa, people reported that diversification in non-farm activities has not increased a lot¹², while migration is now much more important than in the past. This pattern is confirmed by the study of Van der Geest (2003), who points out that in Upper West region there is not enough population to create profitable markets for non-farm activities.

Non-farm activities are also increasing in the areas where there is availability of virgin land, and farmers resort to land extensification, with the option to move from one plot to the other, like in the West Gonja district. Nevertheless, this is presented more as a

¹² In Jirapa district, people reported that the crisis of farming activities did not induce them to search for complementary activities because the hardships induced by the lower land fertility forced them to devote more time to agriculture than they used in the past. “When farming is good, you can do other activities, when farming is not good you cannot”, a woman of Die said.

choice rather than as a necessity: people said they wanted to exploit the new opportunities out of the farm sector. Migration is not so common here, this has been an area of immigration in the past, and this is reflected in the high ethnic fragmentation evidenced in Table 1.

Outcomes

In order to assess the outcomes of the various livelihood strategies, we assume that all households pursue a common basic objective, that is to maintain or to improve their well-being. The first criterion to evaluate the outcomes produced by the livelihood strategies undertaken in the sample communities is to understand whether they contributed to maintain or improve the well-being of the community. The livelihood strategies that rural households have adopted in order to cope with the changing economic, natural, and institutional environment appear to guarantee the short term preservation of their well-being. On farm diversification, together with the increase in non-farm activities, has been successful in assuring food security and in reducing livelihood vulnerability to natural shocks. This result is confirmed by Armah *et al.* (2010).

People perceptions about their actual well-being, compared to their well-being 20 years ago, are mildly positive. The common feeling among almost all the community members is that people are now better off than they used to be; men are not able to explain the reason for this improvement, while women have a clearer perception of this: they mention the better access to health and school facilities and to drinkable water among the key factors that led to the reported improvement. Moreover, women almost invariably argue to be more emancipated, as now they contribute more to household income generation, and this gives them a greater role in the decision making process within the family and within the community. “We do not fear anymore to express our opinion in front of men in the community meetings”, a woman of Busunu said.

These short-term positive outcomes notwithstanding, the changes in the livelihood strategies in Northern Ghana are also causing a number of environmental problems, that are only seldom reported by the people who live in the area. Not all the strategies are sustainable: activities as tree cutting for fuel wood, bush burning, sand and gravel winning are threatening the equilibrium of the environment, and the fertility of the soil. Land degradation is also due to inadequate farming practices, in particular to intensive

farming, overgrazing and to the constant removal of trees and shrubs without adequate replacement.

In a context where a further increase in the temperature and a decrease in rainfall have been predicted, and where extreme weather events are expected to intensify, these livelihood strategies could contribute to worsen the detrimental effect of desertification on the natural assets, and could become unsustainable in the long run, threatening food security.

CONCLUSIONS

Our field study clearly shows that the increasing role of non-farm activities and migration as income-generating strategies - as already pointed out by Yaro (2006) - is mostly a symptom of the crisis in the agricultural sector, and it can be hardly interpreted as a signal of economic development of Northern Ghana. The greater reliance on non-farm livelihood strategies occurred without major structural economic transformations. No significant modernization process occurred, but rather the incentives to develop the resources of this area worsened significantly as compared to the first twenty years after independence. The factors that have induced a greater income diversification and a lower reliance on subsistence agriculture are hindered by the absence of opportunities other than the market orientation of traditional economic activities. This explains why everywhere – except that in the areas where new mine fields have been recently discovered – only traditional non-farm activities have been on the rise.

A predominantly agriculture-based economy still represents the distinct trait of the area, where non-farm activities are closely intertwined with agriculture, the depletion of natural resources represents a serious threat to the livelihood strategies of rural households, and internal migration is emerging as a relevant coping strategy to meet households basic needs, so that it is unlikely to improve households socio-economic condition.

No wonder that this situation cannot be sustained for a long time. The recent creation of the SADA and a strategic plan are a first important step, showing that the government acknowledges the need of a broad strategy to promote the economic development in this backward region. It also signals that the government is now aware of the necessity to centre development policies on agriculture, which is the sector perceived as pivotal by the rural communities, and with the largest potential for growth. The main focus of the strategic plan is, in fact, the modernization of agriculture, and in particular the

investment in horticulture and tree crops. Improvements in the management of water resources and in the storage and processing systems are identified as other key priorities. The strategic plan also attempts to develop non-farm activities in the area through investments in road infrastructures and solar energy, and through the integration of Northern Ghana in a broader economic zone covering the Sahel - Burkina Faso, Togo and Ivory Coast (CEPA & IDA, 2010). Although the strategic plan is at an early stage, it presents some elements that suggest that it could be able to respond to some of the critical points that emerged from our field study. Still, we believe that when implementing the strategy, one should also take into account the differentiated patterns of livelihood strategies that characterize Northern Ghana, rather than considering the whole area as homogeneous, and a specific attention should be devoted to the environmental implications of the proposed interventions.

REFERENCES

- Armah, F., D. Yawson, G.T. Yengoh, J.O. Odoi and E.K.A. Afrifa. 2010. 'Impact of Floods on Livelihoods and Vulnerability of Natural-Resource Dependent Communities in Northern Ghana'. *Water* 2: 120-139.
- Aryeetey, E. and R. Kanbur. 2009. 'Ghana's Economy at Half Century: An Overview of Stability, Growth and Poverty'. In E. Aryeetey and R. Kanbur (eds.), *The Economy of Ghana: Analytical Perspectives on Stability, Growth and Poverty*. James Currey.
- Assan, J.K., C. Caminade and F. Obeng. 2009. 'Environmental variability and vulnerable livelihoods: minimizing risks and optimizing opportunities for poverty alleviation'. *Journal of International Development* 21: 403-418.
- Bongo District Assembly. 2006. *Medium Term Development Plan (2006-2009)*. Bongo.
- Carney, D. 1998. 'Implementing the Sustainable Rural Livelihoods Approach'. In D. Carney (ed.), *Sustainable Rural Livelihoods: What contribution can we make?*. London: Department for International Development.
- CEPA and IDA. 2010. *Sustainable Development Initiative for the Northern Savannah. Strategy and Work plan 2010-2030*.
- CEPA and ODI. 2005. *Economic Growth in Northern Ghana*. Revised Report prepared for DFID Ghana.
- Chambers, R. and G.R. Conway. 1991. 'Sustainable rural livelihoods: practical concepts for the 21st century'. *IDS Discussion Paper* No. 296. University of Sussex.
- Dazé, A. 2007. *Climate change and Poverty in Ghana*. Care International.
- DFID. 2001. *Sustainable livelihoods guidance sheets*. London: DFID.

- Dietz, A.J., D. Millar, S. Dittoh, F. Obeng and E. Ofori-Sarpong. 2004. 'Climate and Livelihood Changes in North East Ghana'. In A.J. Dietz, R. Ruben and A. Verhagen (eds.), *The impact of Climate Change on Drylands with focus on West Africa*. Dordrecht: Kluwer Academic Publishers.
- Dorurugu, N. 2010. *Speech to the NADMO- MAIDEN Meeting of the National Platform for Disaster risk reduction and climate change risk management*. 8-9 April 2010. Accra.
- Ellis, F. 2000. *Rural Livelihoods and Diversity in Developing Countries*. Oxford: Oxford University Press.
- Goldstein, M., E. Sadoulet and A. de Janvry. 2002. 'Is a friend in need a friend indeed? : inclusion and exclusion in mutual insurance networks in Southern Ghana'. *WIDER discussion paper* No. 2002/25. Helsinki.
- GSS. 1995. *Ghana Living Standard Survey (GLSS3) – Third Round*. Accra.
- GSS. 2000a. *Core Welfare Indicators Questionnaire (CWIQ) Survey (1997)*. Accra: Ghana Statistical Service.
- GSS. 2000b. *Ghana Living Standard Survey (GLSS4) – Fourth Round*. Accra.
- GSS. 2005a. *Ghana 2003 Core Welfare Indicators Questionnaire (CWIQ II) Survey Report – Statistical Abstract*. Accra: Ghana Statistical Service.
- GSS. 2005b. *2000 Population and Housing Census (Northern Region) – Analysis of District data and implication for planning*. Accra: Ghana Statistical Service.
- GSS. 2005c. *2000 Population and Housing Census (Upper West Region) – Analysis of District data and implication for planning*. Accra: Ghana Statistical Service.
- GSS. 2005d. *2000 Population and Housing Census (Upper East Region) – Analysis of District data and implication for planning*. Accra: Ghana Statistical Service.
- Hesselberg J. and J. A.Yaro. 2006. 'An assessment of the extent and causes of food insecurity in northern Ghana using a livelihood vulnerability framework'. *GeoJournal* 67:41-55.
- Hutchful, E. 2002. *Ghana's Adjustment Experience – The paradox of Reforms*. United Nations Research Institute for Social Development. Accra: Woeli Publishing Service.
- Jirapa Lamboussie District Assembly. 2007. *District Poverty profiling and mapping report*. Jirapa.
- Khor, M. and E Hormeku T. 2006. 'The impact of globalization and liberalization on agriculture and small farmers in developing countries: the experience of Ghana'. Third World Network.
- Konadu-Agyemang, K. 2000. 'The best of times and the Worst of times: Structural Adjustment programs and uneven development in Africa: the case of Ghana'. *Professional Geographer* 52, 3: 469-83.
- MofA. 2006a. *Agricultural Development Plan (3 year plan 2007-2009)*. District Agricultural Development Unit. Talensi-Nabdram district. Tongu.
- MofA. 2006b. *Jirapa Lamboussie District – Agricultural Development Plan (3 year plan 2007-2009)*. Facilitated by G. Asaasiba, O. S. Poku and M. Derigubah. Jirapa.

- MofA. 2006c. *Decentralised Planning Report (2007-2009)*. Submitted by District Director of Agriculture. MofA/CIDA Farmer Project. Bongo District Agricultural Development Unit. Bongo.
- MofA. 2007a. *Overview of Agriculture in West Gonja District*. District Agricultural Development Unit. Damongo.
- MofA. 2007b. *Savelugu Nanton District-Agricultural Profile*. District Agricultural Development Unit. Savelugu.
- MofA. 2007c. *Regional food production, yield and area estimates of selected crops. Upper East Region. 1987-2005*. Statistical office of Bolgatanga Bolgatanga.
- MofA. 2007d. *Production, yield and cultivated area figures for some selected commodities in Northern Region*. Statistical office of Tamale. Tamale.
- MofA. 2007e. *Production estimates for major crops in the Upper West Region*. Statistical office of Wa.Wa.
- Mohan, G. 2002. 'The disappointments of civil society: the politics of NGO intervention in Northern Ghana'. *Political Geography* 21, 1: 125-54.
- Moser, C.O.N. 1998. 'The asset vulnerability framework: reassessing urban poverty reduction strategies'. *World Development* 26, 1: 1-19.
- Niasse M. 2005. 'Climate-Induced water conflict risks in West Africa: recognizing and coping with increasing climate impacts on shared watercourses'. *International Workshop on Human Security and Climate Change*. 21-23 June 2005. Oslo.
- Obeng, F.K. 2005. *Things are hard for us, but we see a way out of them - Impact of climate variability on geographical and occupational mobility and the effect of mobility on social organization in farming communities in North-eastern Ghana*. Ph.D. Dissertation, Faculty of Social and Behavioral Sciences. University of Amsterdam.
- Poulton, C. 2007. *The Cotton Sector in Ghana: the dynamics of competition in a system of interlocking transactions*. Department of Agricultural, Economics and Business Management, Wye College. University of London.
- Savelugu Nanton District Assembly. 2006. *Medium Term Development Plan (2006-2009)*. District Planning and Cordination Unit. Savelugu.
- Scoones, I. 1998. 'Sustainable Rural Livelihoods: a framework for analysis'. *IDS Working Paper* 72. University of Sussex.
- Shaffer, R., A. Ziebarth, J. Farnham, S. Wraith and L. Tigges. 1996. 'Linking Community Resources to family survival strategies'. *Staff paper* No. 96.6. Center for Community Economic Development. University of Wisconsin.
- Shepherd, A. and E. Gyimah-Boadi. 2005. 'Bringing the north and south divide in Ghana?'. *Background paper for the 2006 World Development Report*. Washington D.C.: World Bank.
- Sowa, N.K. 2003. 'An assessment of poverty reducing policies and programs in Ghana'. *MIMAP – Ghana Research Report* 002.

Talensi-Nabdam District Assembly. 2006. *First Medium Term Development Plan under the Ghana growth and poverty reduction strategy. 2006-2009*. Tongo.

Van der Geest, K. 2003. *Rural Migration and livelihood security in Ghana*. International Workshop on Migration and Poverty in West Africa. University of Sussex.

West Gonja District Assembly. 2006. *Medium Term Development Plan (2006-2009)*. Damongo.

WFP and UDS. 2004. *Food security and vulnerability analysis of five regions in Ghana*. Rome: WFP-VAM.

Yaro, J.A. 2006. 'Is deagrarianisation real? A study of livelihood activities in rural northern Ghana'. *Journal of Modern African Studies* 44, 1: 125-56.

Yeboah, R.N. 2005. *Climate variability and small farmer's economic decision making processes: the case of Bongo district, Upper East Region, Ghana*. Ph.D. dissertation. Department of Geography and Resource Development. University of Ghana.