The differentiated impact of agricultural transformations on livelihood strategies

A case study in the South West Region of Cameroon

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Abstract

The geography of rural areas in development countries has undergone some major changes in the last decades. Agricultural transformations are often seen as one of the main contributors to those changes. Besides, during those last decades the sustainable livelihood approach has been developed to sketch out the relationships between different aspects of poverty and to analyze people's livelihood strategies. This thesis considers agricultural transformations and the impact on livelihood strategies in the context of four areas in the South West Region of Cameroon. This rural, and mainly agricultural region is highly influenced by those transformations, which causes many changes on household level of livelihood strategies. In the literature several livelihood strategies can be distinguished. For this study diversification and specialization as important strategies are most relevant. The aim of this research is to explain to which extent changes of livelihoods and livelihood strategies are influenced by agricultural transformations. Besides a comparative analysis is done to see if there are significant differences between the four subregions of this study. In order to explain changes of, and the impact on livelihood strategies, the socio-economic and livelihood characteristics of households are examined. In this research it is argued that agricultural transformations have a differentiated impact on livelihood strategies, dependent on certain aspects. It depends on the characteristics of several agricultural transformations, on the geographical context of a subregion in the South West Region, and particularly on the socio-economic characteristics and the livelihood assets of individual households.

Keywords: Agricultural transformations, Livelihood strategies, Livelihood assets, Diversification, Specialization, Socio-economic characteristics, South West Region of Cameroon

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Introduction

Agriculture is Africa's backbone, and it holds great promise for future growth and job creation. It employs 65–70% of the African workforce and accounts for roughly a third of the continent's GDP. Women make up more than half of Africa's farmers and produce up to 90% of the continent's food. Promoting agricultural production and food security is therefore one of the most effective ways to drive inclusive growth and reduce poverty (African Development Bank, 2013).

There are powerful forces around the world driving changes in agricultural systems. A growing world population, combined with economic and social development, will continue to lead to increased demand for the outputs of agriculture – food, fodder, fuel and fiber. Simply increasing the amount of land dedicated to agriculture to meet this demand is neither desirable nor feasible. Instead, it has become essential to grow more with the same, or fewer, inputs of water, energy and chemicals; lose less of what is produced; maintain the long-term health of the land, ecosystems, people, plants and animals involved in agricultural production; and deliver prosperity. These are the ingredients of sustainable agricultural intensification. Agriculture is of pivotal importance, not only providing food and income for the rural poor, but also meeting the food needs of growing urban populations. Higher outputs must be accomplished by increasing the productivity of the agricultural sector, especially for smallholders in developing countries (Nicholls e.a., 2013, pp. 1-2).

Agriculture is still the main occupation of the majority of the population and generates important export earnings as well as food for both rural and urban populations. However, in Sub-Saharan Africa ongoing agricultural transformations are often leading to increasing wealth as well as increasing inequality and social polarization. It is expected that these latter outcomes in many cases result in new livelihood strategies of local people.

Agricultural transformations, among other things impacted by globalization, and related policies have mixed effects on rural households mobility strategies. Agricultural transformations could be seen as key drivers of the current processes of human mobility. Mobility and migration of Africa's rural areas are in many cases not characterized by only uni-directional movements from rural to urban areas, but also include people's temporary movements, whether daily, weekly and/or seasonally. It is argued that migration should be seen as just one of the livelihood strategies open to households, that it is often combined with other strategies, and that it is frequently a two-way process in which migrants maintain close links with their areas of origin over a much longer period than is frequently assumed (McDowell & de Haan, 1997).

According to the report of Cottyn, Schapendonk & van Lindert (2013) on underlying processes and policies for mobility, recent transformation processes in agriculture and land distribution have greatly contributed to changes in the livelihoods of rural households. There are multiple factors influencing rural households to diversify their livelihoods. Some examples are increasing scarcity of productive land for agriculture, land fragmentation, land concentration, land grabs and new forms of agricultural production. Agricultural transformations are also influenced by national-level policies. In Cameroon there are now regulations for prioritizing agricultural productivity and the production of export crops, and for land tenure reforms and land use. Also attention is given to agricultural schemes from the period of colonization. As a consequence, the resulting patterns and processes of mobility are highly complex and multifaceted (Cottyn, Schapendonk & van Lindert, 2013).

Cameroon, characterized by a diverse set of environments, different climates, a lot of different people who are most involved with agriculture. Cameroon is therefore suitable for a thesis about agricultural transformations and the impact on livelihood strategies of rural households. In this research four geographically different rural areas in the South West Region of Cameroon are examined. The purpose is to explore different livelihood strategies as a reaction on agricultural transformations in rural areas. Furthermore the role of migration and mobility is discussed whether this is part of livelihoods strategies.

This research has a scientific relevance, because no previous studies, whereby relations between agricultural transformations and livelihood strategies are analyzed, has been done in Cameroon. Moreover, this research has a social relevance, by addressing poverty and rural development in the South West Region of Cameroon. Rural households in Cameroon engaged in cultivation of food from their farms have been facing serious difficulty marketing and selling their products in the local, national and international markets thereby keeping 95% of them under the poverty threshold. Generally producing cocoa and coffee as cash crops and yam, cassava, plantains and bananas as the main food crops, agriculture is the livelihood basis for over 70% of the population.

Related to the research area of the RurbanAfrica project in Cameroon, rural households in the South West Region are also faced with difficulties in marketing and selling their products from the farms. This is a reason for the increase in rural poverty in this region. By dealing these challenges it is possible that local people search for alternatives as migration or rural livelihoods transformations.

Research objective and research question

In this thesis a comparison is made between four different geographical areas. The impact of agricultural transformations on different livelihood strategies is examined to get a better understanding of what kind of impact agricultural innovations have on poverty reduction and local development in the South West region of Cameroon.

According to scientific literature, livelihood strategies are influenced by different factors. In this study the role of agricultural transformations on different livelihood strategies is analyzed. In this thesis the following research question is answered: *"To what extent there is a differentiated impact of agricultural transformations on livelihood strategies in four subregions in the South West Region of Cameroon and how can this be explained?"*

The supposition is that various agricultural transformations take place in the South West Region of Cameroon, having an direct impact on different livelihood strategies of local people. Besides, the assumption is that those livelihood strategies are influenced by access to several livelihood capitals. In order to find an answer on the main research question, four sub-questions are formulated*:

1)   *What is the socio-economic situation of the households in the region and how can this situation be explained?*

First of all, it is important to figure out what the socio-economic situation is in the research region.

2)   *Which different livelihood assets are present in the South West Region and what importance?*

Besides the socio-economic situation it is necessarily to know which different livelihood assets can be identified and in which extent they have an impact on extending and new livelihood strategies in the research region.

3)   *To which extent do different characteristics of households, different livelihood assets and agricultural transformations effect household's livelihood strategies in the South West Region?*

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* In this section only a small description is given of the four sub-questions. In chapter 3 about the methodology of this research, those questions are further elaborated.

This research is about different livelihood strategies. It is important to know the characteristics of individual households and their livelihood assets to assess the livelihood strategy of each household to explain differences in strategies. Thereby the role of agricultural transformations is also assessed.

4)   To which extent livelihood assets and livelihood strategies are changed in the last ten years?

Furthermore this research concentrates on changes in livelihoods, in livelihood strategies and changes in the agricultural situation. With this question it will be clear in which extent things are changed in a sustainable way.

Outline of the thesis

The thesis is divided in different chapters to find answers on the research question and the sub-questions in a structured way. First, the theoretic framework is elaborated on relevant scientific literature about agricultural transformations, the rural livelihood approach and livelihood strategies. This chapter concludes with a conceptual framework as the basis for this research. After the theoretical framework, the regional context of Cameroon is covered to give an overview of Cameroon. This chapter ends with a description of characteristics of the South West Region. Hereafter, the methodology chapter provides a more detailed explanation of the sub-questions, an operationalization of used variables, and an explanation of used methods and techniques.

The subsequent chapters presents the results of the fieldwork beginning with a socio-economic overview and the livelihood assets of households in the South West Region in chapter four. This is followed, in chapter five, by an analysis of livelihood strategies and finally by a comparison of the current situation in terms of livelihood assets and livelihood strategies in comparison with ten years ago in the sixth chapter. In the seventh chapter the final answers on the research question and sub-questions are answered in combination with a comparison with relevant literature. This chapter ends with a discussion about the research results accompanied by some limitations of this study and some recommendations for further research.

1   Theoretical Framework

This chapter provides an overview of the main characteristics of agricultural transformations, the rural livelihood approach and different livelihood strategies. The section about agricultural transformations argues what agricultural transformations are and which different forms can be distinguished. By addressing the main drivers of agricultural transformations it is possible to find some explanations. In the second section the development and the significance of the rural livelihood approach is pointed out. Following this, in the third section different livelihood strategies are listed.

1.1   Agricultural transformations

Agricultural transformations can roughly be defined as processes by which individual farms shift from highly diversified, subsistence-oriented production towards more specialized production oriented towards the market or other systems of exchange (e.g., long-term contracts) (Staatz, 1998). Many agricultural systems are undergoing multiple and sometimes rapid structural transformations. Following economic reforms of the past two decades as well as the increasing commercialization and globalization of African agricultural production, agricultural production systems are undergoing significant transformations (Tacoli, 2002). Those transformations can occur in different forms. This is evidenced from the great changes taking place in land tenure systems, the intensification in use of labour- and non-labour input, resort to non-farm activities, forms of market integration, new forms of enterprises (Bosc e.a., 2012).

Carswell (1997) argues that agricultural intensification is a strategy for achieving sustainable livelihoods, comparing evidence from a number of areas that have undergone such a process - in particular, the introduction of Green Revolution methods. The Green Revolution was essentially a package of inputs (fertilizer, high yielding seed varieties etc.) which were designed to lead to agricultural intensification (Carswell, 1997).

Intensification of agricultural production is therefore an important transformation. This transformation has created a tendency to expand the size of holdings and increase the number of hectares per active farmer and in many cases to large-scale farms. In a given territory, the first two ways of increasing productivity can only be understood in terms of the developments taking place in production units as a result of changes in production practices, and between production units as a result of changes in the distribution of resources, capital and incomes (Bosc e.a., 2012).

Anderson Djurfeldt & Djurfeldt (2013) have analyzed three processes of agrarian transformation for the period 2002 to 2008: intensification of grain production, commercial diversification from staple crops and income diversification out of agriculture. As their research shows, farmers have, however, raised productivity through the more intense use of labour resources rather than through technological change, while political commitments to agriculture have not improved the production environment. Rather, economic growth and commercialization emerge as strong drivers of intensification, both at country and household levels. Tendencies towards distress-driven income diversification out of agriculture appear to have abated somewhat in the face of more dynamism in the grain sector, with households moving between the farm and non-farm sectors in response to shifts in producer incentives and non-farm opportunities. Diversification processes within agriculture, meanwhile, point to both push- and pull-driven diversification occurring simultaneously. Grain markets, crop diversification and non-farm opportunities complement one another over time (Anderson Djurfeldt & Djurfeldt, 2013).

Education is one of the most important aspects to develop diversification of non-farm activities. Headey, Taffesse & You (2014) argues that investments in education should be the central pillar of diversification and transformation strategies. Education is a direct investment in very young populations found in Africa, and one likely to generate assets and income sources (such as remittances) that are far less vulnerable to covariate shocks, and even more mobile than pastoralist livestock (Headey, Taffesse & You, 2014). This latter should also be the case in Cameroon, because they have a very young and a very mobile population. Diversification is one of the most important transformations that are taking place in the South West Region of Cameroon.

To increase agricultural production and to connect local production with larger markets a greater reliance on input and output delivery systems and thereby an increased integration of agriculture with other sectors of the domestic and international economies is necessary (Staatz, 1998). Therefore large-scale farms are implemented by the state. From the allocation of land and natural resources alone these land acquisitions raise various problems. These include the increasing displacement of smallholder farms, the type of technique production model and the process for developing rural lands (Bosc e.a., 2012).

From a relatively humble position in the previous period, large-scale estate and even large-scale state farms have been reinstated as the main drivers of agricultural transformation, and foreign direct investments in land and agricultural production facilities are again welcomed. Moreover, large-scale agriculture is considered to take the lead for the commercialization of peasant/smallholder commercialization, such as through the establishment of contract farming and the outgrower model (Fold & Prowse, 2013, pp. 99). Outgrower schemes are defined as a

contractual partnership between growers or landholders and a company for the production of commercial agricultural products. Those outgrower schemes, usually prescribed in formal contracts, vary considerably in the extent to which inputs, costs, risks and benefits are shared between growers and companies (FAO, 2001).

A report of the International Food Policy Research Institute (2007) shows that the pro-growth and pro-poor performance of agriculture will continue to depend on the broad participation of smallholder farmers, and that food staple growth generates more poverty reduction than other agricultural subsectors do. However, due to globalization, African farmers face new and different challenges than those encountered by Asian and Latin American countries during their agricultural transformations. The ability of African farmers to find pathways out of poverty and to contribute actively to the growth process depends on improving infrastructure and education, distributing key technologies and inputs, and promoting producer and marketing organizations that link small farmers to new market chains (Diao e.a., 2007).

However, nowadays in Africa there are several agricultural transformations taking place which could be beneficial for local people. In many cases policymakers in Africa respond to low agricultural productivity and rural poverty by promoting agricultural modernization and commercialization. For example in Uganda and Kenya the promotion of high value cash crop production is often considered as the solution to land management problems since farmers are expected to have more incentive and ability to finance use of fertilizer and organic inputs and to make land improving investments on cash crops than on subsistence food crops (Pender e.a., 2009).

1.2   Rural livelihood approach

Origin

The promotion of sustainable livelihoods is one way of achieving poverty reduction. Concepts of poverty have evolved over the decades. Before 1970 poverty was largely defined in economic terms, as a lack of income or Gross National Product per capita. During the 1970s the concept of basic needs evolved. Basic needs included access to certain consumer goods as well as to collective goods (such as education and health services), and broader elements of well-being. In the 1980s the basic needs approach was partially abandoned and more general interpretations of well-being gained ground. People's ability to fulfill various functions and to develop and deploy their capabilities were considered to be critical dimensions of poverty. New thinking emerged on both 'entitlements' to resources and the vulnerability of poor people to changes in the ecological, economic and political environment. It was recognized that poverty is a relative concept that is

intimately connected with political, moral and cultural values in a given society and the condition of 'social exclusion' relates to all these (Krantz, 2001, p. 5). In the 1990s poverty, and the processes that lead to poverty, are conceived as multi-dimensional (economic, ecological, social, cultural, political) and highly context-specific. The poor are no longer considered to be a homogeneous group. Poverty Assessments have evolved, moving beyond the characterization of poverty and towards the analysis of the processes that cause poverty at various levels.

The sustainable livelihoods idea was first introduced by the Brundtland Commission on Environment and Development, and the 1992 United Nations Conference on Environment and Development expanded the concept, advocating for the achievement of sustainable livelihoods as a broad goal for poverty eradication (Krantz, 2001, p. 6).

Most development agencies adopt the definition of Chambers and Conway (1991) of livelihoods which holds that:

"*A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the long and short term*".

According to Chambers & Conway (1991) a livelihood comprises people, their capabilities and their means of living, including food, income and assets. Tangible assets are resources and stores, and intangible assets are claims and access. A livelihood in its simplest sense is a means of gaining a living (Chambers & Conway, 1991, p. 5-7).

The sustainable livelihoods approach is a holistic approach that tries to capture, and provide a means of understanding, the fundamental causes and dimensions of poverty without collapsing the focus onto just a few factors (e.g. economic issues, food security, etc.). It tries to sketch out the relationships between the different aspects of poverty (Sustainable Livelihoods Support Office, 1999).

Livelihood Framework

The ability to pursue different livelihood strategies is dependent on the basic material and social, tangible and intangible assets that people have in their possession. Drawing on an economic metaphor, such livelihood resources may be seen as the 'capital' base from which different productive streams are derived from which livelihoods are constructed (Scoones, 1998, p. 7). Based on the Sustainable Livelihood Framework designed by Chambers & Conway certain components or assets are required to make a living (figure 1.1).

Figure 1.1: The Sustainable Livelihood Framework (SLF)
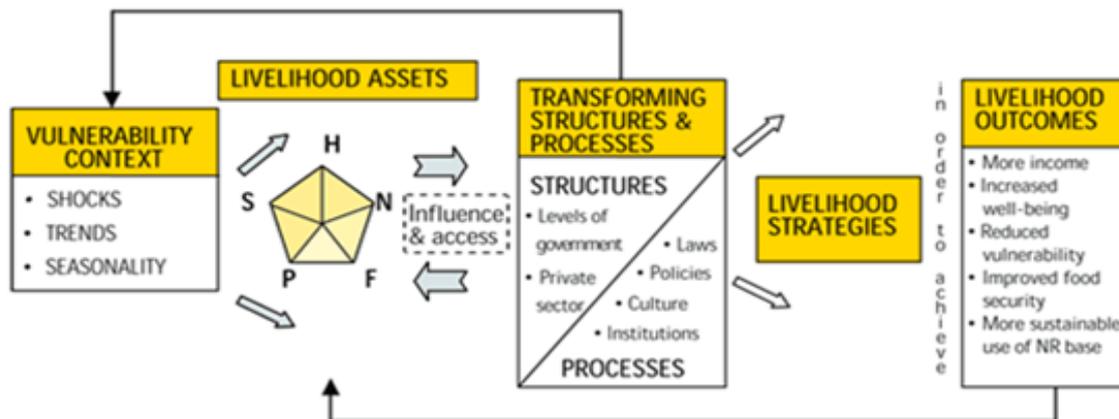
Source: Practical Action, 2014

Although the five livelihood assets are mostly interrelated, in this thesis they are analyzed separately. Livelihood capabilities are divided into five capitals but this is only a schematic representation of reality. In practice the different aspects that make up a livelihood are interrelated. These relationships between different capitals give the livelihood approach its holistic understanding. In other words, someone's livelihood is more than just the sum of all parts (De Haan & Zoomers, 2005). These assets can conveniently be divided into five main groups for ease of analysis:

➢ *Human Capital*

➢ *Natural Capital*

➢ *Financial Capital*

➢ *Physical Capital*

➢ *Social Capital*

Human capital

Human capital represents the skills, knowledge, capacity to work and good health that together enable people to pursue different livelihood strategies and achieve their livelihood outcomes. Human capital is important in its own right; health, knowledge and skills help create sustainable livelihoods. Human capital is also necessary to be able to make use of the other five types of assets.

Natural capital

Natural capital is the term used for the natural resource stocks (e.g., land, water, forests, clean air, coastal resources) upon which people rely. The benefits of these stocks can be direct and

and/or indirect, and they are tightly linked with property and user regimes. Rural livelihood strategies are often heavily reliant on the natural resource base (Scoones, 1998, p. 11).

Financial capital

Financial capital is defined as the financial resources that people use to achieve their livelihood outcomes. These are resources in the form of available stocks and regular inflows of money (for example, livestock and the related flow of income). Producers require capital to augment their livelihoods and to enhance linkages. Poor access to finance is another constraint to farming and to non-farm activities in rural areas (Saraje, 2007).

Physical capital

Physical capital comprises the basic infrastructure and physical goods that support livelihoods. Infrastructure consists of changes made to the physical environment that help people to meet their basic needs and to be more productive.

Social capital

Social capital is defined as the social resources upon which people draw in pursuit of their livelihood objectives. These social resources are developed through (1) interactions that increase people's ability to work together, (2) membership of more formalised groups governed by accepted rules and norms, (3) relationships of trust that facilitate co-operation, reduce transaction costs and can provide informal safety nets.

Social capital is an important aspect of rural livelihoods. Social networks and institutions as well as the interpersonal interactions that sustain them are important aspects of farmers' livelihoods. These relationships form a valuable resource for the conduct of social affairs, and provide people with aspects of their daily life (Cosyns e.a., 2013, p. 2). A study of Cosyns e.a. (2013) has shown that social capital can be improved through external interventions. It is stressed that to create effective and sustainable social capital farmers should experience other benefits which improve their livelihoods significantly. To obtain sustainable changes, it is of major importance for farmers to create a solid social organization (Cosyns e.a., 2013, pp. 17-18).

The sustainable livelihoods approach provides an analytical framework that promotes systematic analysis of the underlying processes and causes of poverty. It is not the only such framework, but its advantages are that it focuses attention on people's own definitions of poverty and it takes into account a wide range of factors that cause or contribute to poverty. The five livelihood assets of the household are at the center of the framework. The access to livelihood assets are on the one hand impacted by external shocks and developments in the context of the household.

On the other hand, they are influenced by structural rules, regulations and processes creating possibilities and obstacles in the access to livelihood assets. The way households deal with both factors defines their livelihood strategy. Households are assumed to reduce vulnerabilities but are also recognized to have their own agency, meaning that they are not mere subject to structural transformations and can come up with creative and unexpected solutions of their own. A successfully designed livelihood strategy will thus lead to more sustainability. The sustainable livelihood framework stresses also the need to maintain an 'outcome focus', thinking about how development activity impacts upon people's livelihoods, not only about immediate project outputs.

1.3   Livelihood strategies

Livelihoods analysis is an important component for many scientific disciplines. Many of the researchers affirm that the SLF provides a useful conceptual base for understanding urban and rural poverty, and is an effective tool for analyzing the impact of regulations on their livelihoods. It can be used to analyze the coping and adaptive strategies pursued by individuals and communities as a response to external shocks and stresses such as drought, civil strife and failed policies and anti-poor regulatory frameworks (Majale, 2002).

In its simplest form, the sustainable livelihood framework views people operating in a context of vulnerability (figure 1.1). Within this context they have access to various assets or poverty reducing factors which gain their meaning and value through the prevailing social, institutional and organizational environment. Livelihood strategies - the ways in which people combine and use assets in pursuit of beneficial livelihood outcomes that meet their own livelihood objectives - are also influenced by this environment. The viability and effectiveness of livelihood strategies is dependent upon the availability and accessibility of assets, services and opportunities which can be positively enhanced or adversely undermined by ecological factors, social structures or institutional processes. The SLF is able to handle the complexities of local realities, livelihood strategies and poverty outcomes, and the dynamic interrelations between them (Majale, 2002).

Livelihood strategies reflect the range and combinations of activities and choices that people make in order to achieve livelihood outcomes and goals. Livelihood strategies evolve from implicit and/or explicit decision-making, which is informed by inner and outer realities of livelihood. Livelihood strategies are diverse and in a constant process of change and adaptation. Within the sustainable livelihoods framework three broad clusters of livelihood strategies are identified. These are: livelihood diversification or specialization, agricultural intensification or extensification, and migration (Scoones, 1998, p. 6).

De Haan & Zoomers (2005) argue that constructing livelihoods is not just a matter of building a shelter, making money transactions or the cultivation of land. Constructing livelihoods incorporate also a matter of management of relationships, identity and status-quo embedded in structurally enforced rules and regulations, norms and values (De Haan & Zoomers, 2005). In essence every household can create his own livelihood strategy. Although, because of certain constraints, this is not always easy.

It is important to keep in mind that livelihoods research, of its nature, is essentially carried out at household and at community level. It involves empirical investigation of combinations of assets of livelihoods and, above all, of the relations between them.

Diversification and specialization

With the livelihood capitals in mind, it is argued that every household has the capacity to make use of certain livelihood capabilities in order to create a livelihood strategy. Households always weigh some decisions against others, in order to get the best possible outcome notwithstanding a form of trade-off between available opportunities, existing capabilities and structural constraints. It is suggested that development efforts that aim to improve forest and farm incomes in rural livelihoods need to consider the diversification in livelihood strategies (Zenteno e.a., 2013).

Although most farmers still regard agriculture as their main activity, many of them diversify their sources of income and therefore derive most of their income from different sources. Despite their common involvement in multiform activity, farmers are far from being a homogeneous group. Strategies of rural households vary among communities and among families, and socio-economic differentiation is considerable (Zoomers, 1999).

Nowadays, many researchers are arguing that diversification, and not specialization, is the norm of livelihood strategies. Although most countries show significant levels of household specialization in agricultural activities but in non-agricultural activities as well. To make a clear distinction between specialization and diversification those terms are defined. A household is categorized as specialized when it receives more than 75% of its income from a single source and a household is diversified when it receives less than 25% of a single source (Davis e.a., 2007).

According to Barrett, Reardon and Webb (2001) only a few households collect all their income from one source, hold all their wealth in the form of any single asset, or use their assets in just one activity. There are several motives that prompt households and individuals to diversify assets, incomes and activities. Diversification is driven by limited risk bearing capacity in the

presence of incomplete or weak financial systems that create strong incentives to select a portfolio of activities in order to stabilize income flows and consumption, by constraints in labour and land markets. In addition, diversification is also driven by the fact that local engines of growth such as commercial agriculture or proximity to an urban area create opportunities for income diversification in production- and expenditure-linkage activities. The consequence is widespread diversification (Barrett, Reardon & Webb, 2001).

On the contrary missing markets can also discourage diversification. In remote areas where physical access to markets is costly and causes factor and product markets failures, households diversify their sources of income, but by missing credit markets diversification may be impeded. Households are not able to afford purchasing different production assets (Omamo, 1998).

The extent of specialization in one income generating activity varies by country and wealth status. But it has to be said that not only poor households are diversifying their economic activities in order to make ends meet as best they can. Richer households also diversify their economic activities, as for example in the case of people with salaried employment in the service sector, who are farming in the weekend as a additional economic activity (Murray, 2001).

Agricultural activities are still the most common type of specialization. Agricultural based sources of income remain critically important for rural livelihoods around the world. This is both in terms of the overall share of agriculture in rural incomes as well as the large share of households that still specialize in agricultural sources of income (Davis e.a., 2007). The tremendous importance of migration and non-agrarian activities has been of major influence for increasing importance of diversification strategies (Zoomers, 1999).

It is also important to note that migration for work elsewhere is one typical mode of diversification in the livelihoods of the rural poor (de Haan, 1999). In this research migration is categorized as an aspect of diversification, because migration provides differentiated sources of income. Migration in Cameroon can be explained by several factors that deter potential immigrants and reduce migration flows into Cameroon, and cause the departure of Cameroonians. Indeed, like most developing countries, Cameroon has been experiencing development difficulties since the 1980s due to poverty, economic crisis, soaring population growth, external debt burden, the poorly controlled urbanization of cities and adjustment policies that are often not suited to the national situation (OIM, 2009, p. 23). Migration can be seen as a household utility-maximizing strategy, because a decision to migrate is hardly made by one person alone. All household member can play a role in the decision of migration. Age, number of children, number of other dependents in the

household, education, skills, job security and the origin of the migrant household are identified as major determinants of rural-urban migration (Fleischer, 2007).

Migration as a livelihood strategy is also mediated by access to assets. Those who move tend to be young, physically fit and often better educated than average, and have access to urban-based social networks. Over time, migration may erode village networks as migrants become part of urban networks, and remittances tend to decrease. Within specific regional contexts, while there is potential for rural-urban linkages to contribute to poverty reduction, this will only occur in a climate in which policies, social relations and institutions allow an equitable access to the assets (physical, natural, social and financial) necessary to support sustainable livelihoods (Tacoli, 1998).

1.4   Conceptual model

It is clear that agricultural transformations are taking place in Cameroon, in the Western regions especially. These transformations have an impact on rural livelihood strategies as diversification and specialization. As described, a household can opt for different livelihood strategies, dependent on their capitals. However, the role of governance, with policies and institutions, should not be ignored.

Identifying what livelihood resources (or combinations of 'capitals') are required for different livelihood strategy combinations is a key step in the process of analysis. For example, successful agricultural intensification may combine, in some circumstances, access to natural capital (e.g. land, water etc.) with economic capital (e.g. technology, credit etc.), while in other situations, social capital (e.g. social networks associated with drought or labour sharing arrangements) may be more significant. Understanding, in a dynamic and historical context, how different livelihood resources are sequenced and combined in the pursuit of different livelihood strategies is therefore critical (Scoones, 1998, p. 9).

Based on findings in the theoretical framework and the regional context, a conceptual model is built to illustrate the impact of agricultural transformations on livelihood strategies in rural areas in Cameroon. This conceptual model is shown in figure 1.2. Five agricultural transformations were identified in the theoretical framework. Although, during the research, it seemed that there was no improvement of seeds and planting material in the selected villages. In this research four transformations are analyzed. In the theoretical framework three main livelihood strategies were identified and five different capitals to measure the sustainability of rural livelihoods.

Figure 1.2: Conceptual model
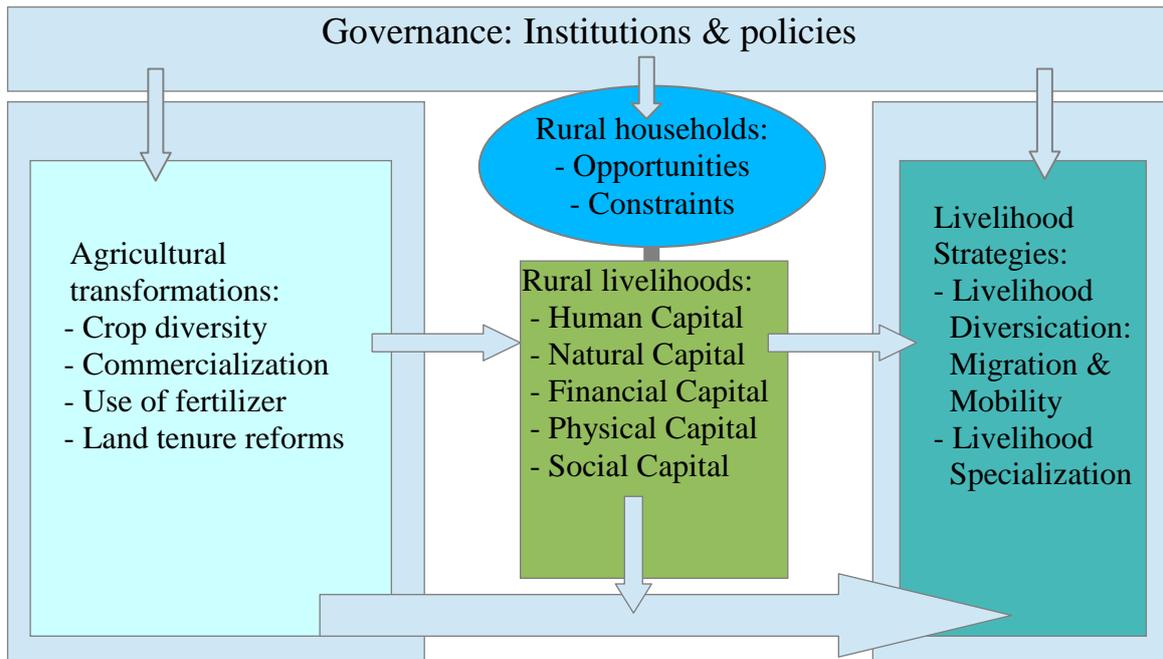
Hypotheses

Agricultural transformations and related policies have different outcomes on livelihood strategies of rural households. Some agricultural transformations will have a direct impact on some livelihood capitals, which will influence certain livelihood strategies. For this research some hypotheses have been drawn. The overarching hypothesis is, that there is a relation between households with more livelihood capitals and households with more sources of income. One derivative hypothesis is that there is a relation between households with more sources of income and households with more natural capital. Another derivative hypothesis is that there is a relation between households with more financial capital and households with more sources of income. The last hypothesis is that there is a relation between households with more physical capital and households with more sources of income.

Substantial evidence has been produced in the literature that points to the increasing importance of multi-activities and diversification of employment (Epo & Baye, 2013). This is because rural households tend to participate in both farm- and non-farm activities in order to buffer shortages in income. Rural households can reach out to new livelihood opportunities but are also restricted by structural constraints. These opportunities and constraints will determine the ability to adapt new livelihood strategies caused by some agricultural transformations. It is possible that the conceptual model does not show all agricultural transformations taking place in the research region. But it is assumable that most of these agricultural transformations have an positive impact on rural livelihoods, but that some transformations can have negative outcomes for the rural population.

2   Regional context

This chapter is about the regional context of Cameroon. First of all a short description of Cameroon and the Cameroonian history is presented in the first section to get a clear view of Cameroon. Hereafter, in the second section, a profile on national scale is provided with information about the political, economic and social situation of Cameroon. An overview of the current agricultural situation is elaborated in the third section. The fourth section provides information about the characteristics and the institutional situation in the research area. This last section ends with a description of the selection of the research areas.

2.1   Cameroon

Cameroon is an African country situated in Central Africa, surrounded by Nigeria in the west, Chad in the north, the Central African Republic in the east, and Congo Brazzaville, Gabon and Equatorial Guinea in the south (figure 2.1). Cameroon is divided in ten regions: Center, Adamaoua, North, Extreme-North, East, South, Littoral, West, North-West and South-West (figure 2.2). The capital is Yaoundé, in the Center Region, and the biggest city is Douala, at the coast in the Littoral Region. A series of volcanic mountains lead from Bioko Island (Equatorial Guinea) off the coast and continue as part of a volcanic intrusion that crosses the South West Region and the North West Region as far as the wild and unfertile Mandara Mountains in the far north of the country. Close to Buea, in the South West Region, the active volcano Mount Cameroon, at 4095 meter is the highest peak in West Africa.

Figure 2.1 & 2.2: Geographical maps of Cameroon

Source: OIM, 2009, p. 13.

Historical overview

At the end of the 15th century Portuguese explorers became the first Europeans who arrived at the coast of Cameroon. They set-up sugar plantations and began a 400-year slaves and good trade with local chiefs, which would later also involve the British, Dutch, French and Germans. From the late 1870s the whole continent was being transformed by the influx of European powers, known as the 'Scramble for Africa'. In 1884, Cameroon became a German colony (West, 2011).

Eventually, the First World War made an end of German hegemony. A league of Nations divided Cameroon in 1919 between Britain and France. After the Second World War anti-British and -French political parties were formed and grew in strength, including the Union of Cameroonian Peoples. Eventually French Cameroon achieved independence in 1960, as the Republic of Cameroon. At this time Cameroon seemed to be a typical African nation ripe for a period of significant political, social and economic problems due to their multi-ethnic and multi-religious population (West, 2011).

Through the years there were several political problems because of unrest and growing discontent of the population. Another problem still is the high corruption grade. Even though the continuous presidency of Paul Biya since 1982 has given the country considerable political stability and the country enjoys a functioning relationship with its African neighbours and with Western countries, corruption is still present at all levels of government. Today, the risk for environmental problems remain high in Cameroon. Large areas of forests are allocated for logging, which means that this could have implications on both men and the flora and fauna (BBC News, 2014).

2.2   Country profile

Cameroon is often described as being 'the melting pot of Africa' or 'Africa in miniature'. This is because the country consists of a very diverse set of environments, different climates and different people. Geographical contrasts could be recognized by lush rainforests in the south to near-desert in the north, with upland areas with montane forests and grasslands in between. This variety reflects also in different climates, from tropical along the coast to semi-arid and hot in the northern plains and the Sahel region with a very long dry season. The great variations in rainfall from one region to the next are astonishing. For example, the coastal city of Douala has on average about ten times as much as rainfall than Yaoundé, the capital about 230 km to the east. These two cities are furthermore the cities with the largest populations (West, 2011).

Economy of Cameroon

In comparison with its neighbours, Cameroon's economy is quiet buoyant, due to its varied natural resources, which include petroleum and timber. There are sizeable but unexploited deposits of iron ore, bauxite, copper, chromium, uranium and other metals. Agriculture, mainly subsidence and small-scale farming, is the country's principal economic activity, employing about 80% of the population. The main agricultural products are cocoa, robusta and arabica coffee, bananas, cotton, palm oil, wood, tobacco and rubber. Hydro-electricity covers almost all of Cameroon's energy needs so that oil and gas are largely treated as export products (West, 2011)..

Despite the many agricultural opportunities, widespread poverty exists in Cameroon. Cameroon is characterized by a low gross domestic product (GDP) per capita, with 40 percent of the population living below the poverty line and concentrated primarily in rural areas (FAO, 2012).

Population of Cameroon

In Cameroon there are over 275 ethnic groups. According to the US Department of State (2010), the population is made up of western highlanders, or grassfielders, including the Bamileke, Bamoun, and many smaller groups in the northwest; coastal tropical forest peoples, including the Bassa, Douala, and numerous smaller entities in the southwest areas; southern tropical forest peoples, including Beti subgroups the Ewondo, Bulu, and Fand, and Maka and 'pygmies', officially known as Bakas; predominantly Islamic peoples of the northern semi-arid regions and central highlands, including the Fulani; and the 'Kirdi', non-Islamic or recently Islamic peoples of the northern desert and central highlands. Roughly the people could be divided into groups occupying the south, west and north.

In the littoral region the population density is the highest in whole Cameroon. Furthermore in the center, the western regions and the far north region there is a population density which is much higher than the population densities in the southern, the eastern and the northern provinces (figure 2.3). Those higher population densities can be explained by the fact that those areas have more urban areas.

Figure 2.3: Population density in Cameroon, 2012.
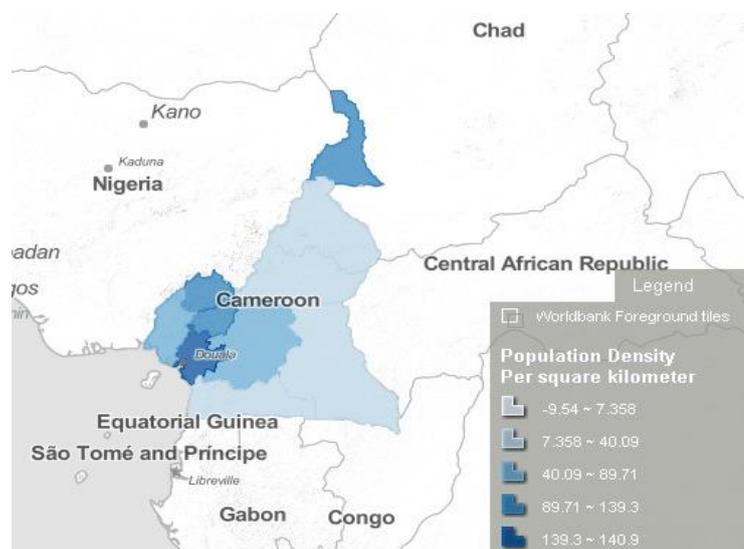
Source: World Bank, 2012.

Migration and mobility in Cameroon

Introduction migration and mobility

Migration can be seen as an aspect of development. The debate on migration and development changed over time, from developmentalist optimism in the 1950s and 1960s, to neo-Marxist pessimism over the 1970s and 1980s, towards more nuanced and pluralist views in the 1990s (de Haas, 2010, p. 1). Migration is a dualistic theme in development. On the one side, optimists scholars argue that migration has an positive impact on development by means of flows of money, products, knowledge and values to development countries. On the other side, many scholars seems somewhat pessimistic about migration because migration is often seen as increasing spatial inter-region and international disparities in development levels (de Haas, 2010, p. 6).

Migration in Cameroon is also a two-sided theme. Migration in Cameroon has an impact on the national economy. Remittances sent by Cameroonian emigrants helps to fight poverty and Cameroonian migration also has an impact on the labour market. The increase in the transfer of funds led to the expansion of the banking system and the multiplication of banks and money transfer companies, thus generating thousands of jobs (Organisation International pour les Migrations, 2009, p. 23-24).

Although, the other side of emigration is that it leads to brain drain. According to statistics provided by the Organisation for Economic Co-operation and Development, in 2005 Cameroonian migrants in European countries numbered 57,050. Some 42.3 per cent of these are thought to be highly qualified. This phenomenon specifically concerns doctors and academics (OIM, 2009, p. 23-24).

Perspectives and characteristics

In Cameroon, current migration flows take the form of a general movement from the countryside to the cities, on the one hand, and a tendency to emigrate to Europe, particularly France, on the other. The country also serves as a destination for migrants, because of its relative political stability and socio-economic potential, even though it is losing its attractiveness. Migration therefore seems to be rather balanced in Cameroon, given that, according to the United Nations Population Division, the net migration rate (per 1,000 persons) was zero during the 1995-2000 period, – 0.1 during the 2000-2005 period, – 0.2 for the 2005-2010 period and – 0.1 for 2010-2015 (OIM, 2009, p. 21).

The decision-making process is motivated by a desire from economic improvement or security (Fleischer, 2007). Migrants who settle in urban areas generally are motivated by the better employment opportunities and services they expect to access. People also move for family-related

reasons. However, it is a common stereotype that all domestic mobility is a unidirectional movement from rural areas to cities. Nor can such migrants always be characterized as permanent migrants. On the contrary, many people move temporarily, whether on a daily, weekly or seasonal basis. Mobility also occurs between rural areas, between cities, and from urban to rural areas (Cottyn, Schapendonk & van Lindert, 2013).

Many people move from the northern regions to the south and from the western part of the country to Douala and Yaoundé for reasons related to the economic and agricultural crisis. Cameroon has one of the highest rates of internal migration in Central Africa. It becomes clear that there are different reasons for Cameroonian people to migrate. The way in which migration decisions depend on the decisions taken by their kin. Migrants do not solely move to pursue their own goals and fulfill their own purposes, but also those of their extended family. Migration decision-making in Cameroon is strongly affected by social and cultural institutions such as extended families, communities and local associations (Fleischer, 2007).

2.3   Current agricultural situation

The agricultural sector of Cameroon has its own characteristics in comparison with other African nations, due to their history, their governance systems and their agro-ecological and socio-economic development. The diverse natural resource base of Cameroon creates the agriculture, mining, forestry, fishing, oil and gas sectors on which the economy depends. The diversified Cameroonian economy is dominated by agriculture: 48 percent of the working population still depends on agricultural activities for their livelihood. Agriculture is responsible for 19 percent of Cameroon's GDP in 2011 (FAO, 2012).

Cameroon would benefit by upgrading the agricultural sector, through some agricultural transformations. The agricultural sector is vital to the country's economy. In 2005, it accounted for nearly 41 per cent of GDP and provided employment to roughly two thirds of the labour force. An estimated 95 per cent of the country's food needs are covered by domestic production (International Fund for Agricultural Development, 2007, p. 3). In 2008 the primary sector employs 60% of the work force and contributes 21% to GDP. The growth of this sector is, however, handicapped by the poor quality and inadequacy of rural infrastructure, constraints related to the financing of production and the remoteness of the production areas in relation to the consumption centers (African Development Bank, 2009, p. 2).

Agriculture in Cameroon is dominated by small farmers who mix their production of cash crops and food crops on average farm size of about 2 hectares. Irrespective of the zone, most production, whether food crops or cash crops, comes from small farmers (Teboh, 2006).

For future economic development in Cameroon, intensification of smallholder agriculture is critical. With a current population of about 16 million projected to reach 20 million by 2020, the task for Cameroonian agriculture will be to meet the ever increasing demand for food and fiber in a sustainable way. Cameroon is making efforts to increase agricultural production by increasing productivity. In modern agriculture special emphasis is placed on improved techniques of crop production. Improved varieties play a prominent role in increasing per hectare yield. However, full potential of the improved varieties can be realized only if essential inputs, particularly fertilizers are applied both in requisite quantities and in a timely manner (Teboh, 2006).

The agriculture sector is comprised of cash crop and food crop cultivation. Cocoa and coffee are grown on smallholdings, normally on cleared forest land. Other commodities (palm oil, rubber, tea, bananas) are grown on larger plantations, initially concentrated primarily in the southwest and along the coast, and now increasingly established in the central and south-central regions as well.

Besides agriculture agroforestry in Cameroon is an important sector. Many of these agroforestry products serve many purposes including medicine, cultural uses and they are sold to generate income and have important local, regional and international market potential. Despite their importance, the market chains for these and many other agroforestry and non-timber forest products (NTFPs) are not well developed as a result of bottlenecks such as poor product development, packaging, standardization, high transaction costs and lack of market information (Facheux e.a., 2012).

Modern agriculture has deprived local communities in the tropics of their natural life-support systems and this has not been replaced by employment opportunities or social services. A research done by Neba (2007) in the Bamenda Highlands of Cameroon, located in the North-West region, gives an indication of the problems. The Bamenda Highlands has an important diversity of flora and fauna and considerable water resources. There are some settlements in this area with a variety of population density. Although there is a huge pressure on available cultivable land. Due to high population growth, farmers have to migrate (Neba, 2007). Most of those farmers migrate to the South West Region, because of the Anglophone character, a lower population density and above all more agricultural opportunities.

To meet the high demand for food, villages in Cameroon's South West Region are now facing difficulties in adapting to rapid demographic growth, increasing market orientation of agricultural production, the ongoing economic depression with unattractive prices for agricultural products, and ecological marginalization. There is an urgent need to consider linkages in the region, between the process of forest destruction, on the one hand, and the crisis and the lack of alternative employment and income generating opportunities, on the other (Neba, 2007). As a result some

scholars have tried to find solutions for these problems. They found that multifunctional agriculture delivers social, economic and environmental sustainability and raises poor people out of poverty, malnutrition and environmental degradation (Asaah e.a., 2011).

Also, the government is looking for solutions. Land policies and agricultural transformations are impacted by both liberalization measures and public regulation. Through the liberalization of regulatory instruments, new land tenure systems were put in place which can ensure security of tenure on one hand, but also promote large-scale foreign investments on the other. At the same time, development programs implemented by the government at the national and local levels are put in place to tackle the socio-economic marginalization and exclusion of vulnerable groups (Cotula, 2007; FAO, 2012).

Attention should be given to the various implications of agricultural transformation for rural households, including income diversification. Incomes from agriculture by small scale farmers may diminish as a consequence of increasing land scarcity, climate variability, soil degradation, population growth and competition from large-scale commercial agriculture. On a more positive note, access to non-farm employment and alternative income generating activities has increased for rural residents. This does not mean that the importance of agriculture should be underestimated; the majority of households still depend on agricultural activities for their livelihood sources (Cottyn, Schapendonk & van Lindert, 2013, p. 14).

The latter is why the agricultural sector remains strategic in Cameroon's development. The increased demand for the outputs of agriculture – food, fodder, fuel and fiber, because of a growing world population, combined with economic and social development is the most important factor (Nicholls e.a., 2013). This is why the budget allocated to this sector is constantly rising.

With its significant contribution to growth and potential for poverty reduction and improved food security, the rural sector continues to dominate the economy and been assigned a central role in Cameroon's strategy. The Government plans to implement large-scale programs for agricultural growth with a view to meet food security for the population and of agro-industry (IFAD, 2011). In 2011 there were directives of a major agricultural policy reaffirmed by the head of state. They are (FAO, 2012, p. 4):

❖ to establish a fertilizer production unit;

❖ to set up an assembly plant for agricultural machinery;

❖ to improve seed farms;

❖ to prepare land reform to adapt to the needs of second-generation agriculture;

❖ to strengthen the system of rural finance by opening the Agricultural Bank and a bank for small- and medium-sized enterprises and industries.

The policy challenge lies in making the opportunities extant in much of the non-farm economy accessible to the majority of rural Africans who haven't the education, skills, or financial or social capital to get into the many lucrative niches available across the continent (Barrett, Reardon & Webb, 2001). While a law on the orientation of decentralization was passed in 2004, it was only in 2010 that the transfer of resources and knowledge from the state to the regional and local levels was implemented. Municipal councils now manage the following sectors: agricultural production and rural development, the promotion of farming and fishing, and the provision of services including water supply and waste management (Cottyn, Schapendonk & van Lindert, 2013, p. 13).

It seems that nowadays there are increasing opportunities for agricultural products in the domestic, regional and export commodity markets. Farmers have not been able to take full advantage of these market opportunities owing to numerous inefficiencies. These inefficiencies have resulted from various factors, including high collection costs due to scattered supply sources and the poor organizational skills of farmers; high transport costs between the production zones and consumer markets because of the poor quality of roads and numerous roadblocks erected by some officials; limited access to market information, which tends to benefit traders at the expense of farmers; and non-tariff barriers between Cameroon and some of its neighbours such as Gabon and Equatorial Guinea. In addition, smallholders are constrained by the lack of storage facilities and related techniques, which cause the loss of nearly 40 per cent of their production. As a result, they tend to sell the bulk of their production soon after harvest when prices are at the lowest, thereby depressing the returns to their production activities (IFAD, 2007, pp. 3-4).

2.4   Research area: the South West Region

Characteristics of South West Region

The South West Region together with the North West Region are the only Anglophone regions in Cameroon. The region is characterized by different geographic characteristics. The volcanic mountain range with Mount Cameroon as highest peak is most obvious. This volcanic mountain range provides a very fertile soil ideal for agriculture. Throughout the region, small holder agriculture is one of the most important activities. Besides small holder agriculture, the region has some rich economic potentials such as its vast agro industrial plantations. There are large plantations of rubber, banana, coco, palmtrees and tea that extend over several hectares.

Above all, another economic potential is its richness in petroleum deposits that are being exploited around Limbe. In this area there is an offshore petroleum refinery, controlled by Sonara, transforming crude oil into several primary products that are exported out of the country (Nzembayie & Kisito, 2009). The oil-rich Bakassi Peninsula at the border with Nigeria has been the subject of a long-standing dispute between Cameroon and Nigeria. Since 2008 its officially transferred to Cameroon.

Moreover there is an enormous potential for tourism in the South West Region. The proximity this region shares with Douala, enables it to easily benefit from services offered by the international airport and international seaport of Douala. The tropical beaches, protected forest areas with a huge diversity of wildlife, and the volcanic mountain range offers a wide variety of touristic potential (Nzembayie & Kisito, 2009). However, because of poorly developed infrastructure in this region it is difficult to travel outside towns like Limbe, Buea or Kumba.

The South West Region also attracts lots of migrants from within and out of the country. The University of Buea and many agricultural opportunities are important pull factors. Several migrants in this region were attracted by this education opportunity and by job opportunities at plantations.

Institutional context of South West Region

Caused by many migrants coming to the South West Region, population growth is nowadays a key factor to environmental degradation in this area. The area around Mount Cameroon is one of the sites where the equatorial rainforest is disappearing at a fast pace due to agricultural plantation expansion and urban development. Many activities of local people leading here to environmental degradation. This is why the government of Cameroon with assistance from international NGOs has created projects to develop and implement landuse plans for sustainable management of natural resources in the South West Region, and especially in the Mount Cameroon area (Naburo, 2000).

In this area the Cameroon Development Cooperation (CDC) is the major stakeholder. Part of the area is developed with industrial agriculture, dwelling units, infrastructures and the other part is still covered with rainforest. Eventually this will be used for future plantation expansion (Naburo, 2000). On this moment there still is a conflict between economic development and natural resource conservation in the South West Region.

Selection of research areas

In collaboration with Professor Martin Kuete from the University of Dschang a plan of action was made. For this research data is collected from February 2014 to the end of April 2014 in four different geographical rural areas in the South West Region of Cameroon. With the assistance of two geography lecturers from the University of Buea, Mr. Epalle and Mr. Tepoule, two more or less similar and adjacent villages in each geographical area of approximately 200-300 households were selected in order to draw a random sample. The selected villages were demanded to have most people working in the primary sector in order to be relevant for the impacts of agricultural transformations on different livelihood strategies. The reason to select two villages was to create a broader spectrum of households, whereby a random sample was possible. In every village 25 questionnaires were done, and thus 50 questionnaires in each different area.

In this research the selected villages were carefully chosen, by geographical characteristics, size and accessibility. Because of the geographical variability in the southern part of the South West Region, there was no problem to identify four different areas (figure 2.4):

➢ Mountainous area at the slope of Mount Cameroon: the villages *Bova* and *Bonakanda*;

➢ Coastal area: the villages *Batoke* and *Bakingili*;

➢ Forest area: the villages *Ediki* and *Mbalangi*;

➢ Delta area: the villages *Mudeka* and *Mussellele*.

Each area has differences in soil, climate and temperature, which means that each region has its main crops, dependent on the possibilities of the soil, the climate, the season and temperature. All of these villages, except Mbalangi, Mudeka and Mussellele, consisting of about 200 households. Mbalangi consists of about 400 households and Mudeka and Mussellele of about 300 households.

Furthermore it was important that the selected villages were easily accessible by any means of transport like taxi, motorbike, train or bus. The reason for this is that the raining season in the South West Region usually starts during March. This can cause a lot of problems to reach some villages.

Figure 2.4: Geographical map of Fako and Meme Division in South West Region of Cameroon, 2014.
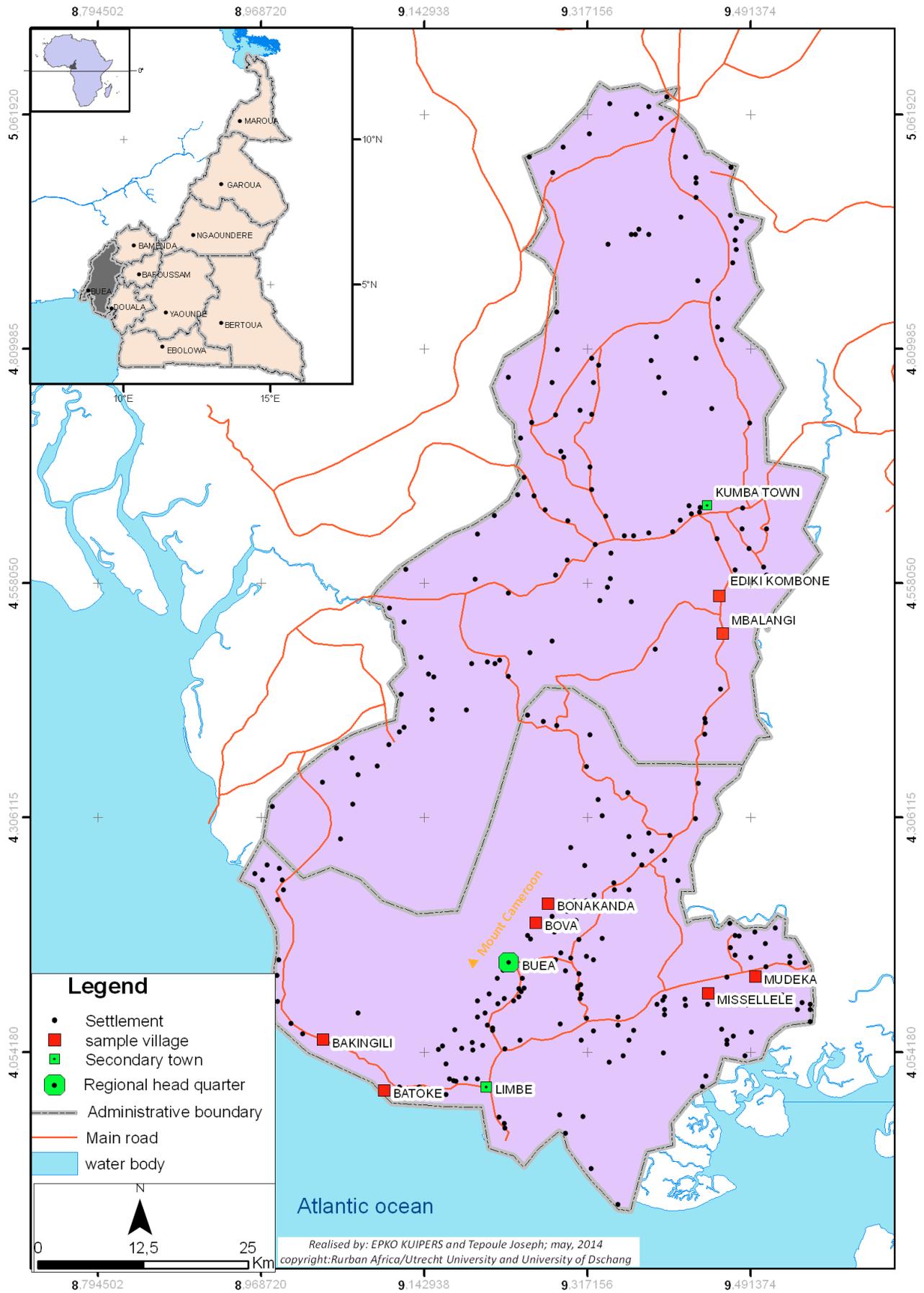
Source: GIS/Data, University of Buea: Tepoule Joseph.

3   Methodology

In this chapter the methodology of the research is elaborated. As mentioned in the introduction, the first section provides a more detailed explanation of the sub-questions. In the second section the variables of the research are operationalized. In this part not directly measurable variables are changed into measurable variables. The third section consists of a description of used methods and this chapter ends with sections about limitations and risks, and the host organization.

3.1   Introduction to sub-questions

For answering the research question, four sub-questions are included in this research. Those sub-questions are all separately elaborated in four different chapters. First of all, it is important to figure out what the socio-economic situation is in the research region. In chapter 4 the question *"what is the socio-economic situation of the households in the region and how can this situation be explained?"* is answered. A clear categorization of households and migration are useful for the research and included. To give an answer to this sub-question three smaller questions are drawn:

- What is the current socio-economic situation in the region?

- In which way can households be categorized?

- In which extent is migration of importance?

Also in the fourth chapter livelihood assets are analyzed to find an answer on the sub-question *"which different livelihood assets are present in the South West Region and what importance?"* Besides the socio-economic situation it is necessarily to know which different livelihood assets can be identified and in which extend they have an impact on extending and new livelihood strategies in the research region. This chapter is primarily focused on households per area and not specific households. To simplify the sub-question two more questions have to be answered:

- Which different livelihood assets can be identified?

- How can differences between areas in the South West Region be explained?

In chapter 5 a detailed analysis of individual households is elaborated. This chapter answers the question *"to which extent do different characteristics of households, different livelihood assets and agricultural transformations effect household's livelihood strategies in the South West Region?"* Each household has a different motive for choosing a livelihood strategy to maximize a household's sustainability. Therefore two smaller questions are made in order to find an answer:

- Which different livelihood strategies can be identified?

- How can differences in livelihood strategies between households be explained?

The sixth chapter consists of a comparison with ten years ago of several characteristics. This research concentrates on changes in livelihoods and therefore the question *"in which extent livelihood assets and livelihood strategies are changed in the last ten years?"* is answered. Livelihood strategies are changing continually, dependent on the local situation. Changes in the agricultural situation, changes in politics, changes in income can all have impact on the current livelihood strategies. With this question it will be clear in which extent the situation is changed in rural areas in the South West Region of Cameroon.

3.2   Operationalization

In this research, different terms are addressed. This section provides an clear overview of all different aspects. It is necessary to change not directly measurable abstract terms into measurable units. Only after doing such a operationalization it is possible to do an analysis.

Livelihoods

As described in the theoretical framework there are five different livelihood assets (figure 3.1). Each household has one or more livelihood capitals and each capital has several measurable characteristics.

Figure 3.1: Livelihood assets
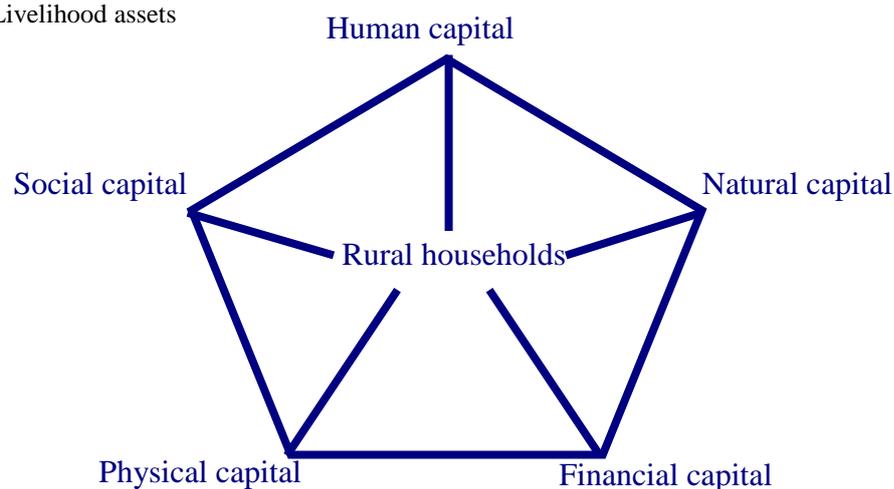
- ❖ **Human Capital**: human capital consists of the level of education completed by all household members, by knowledge and skills and the capacity to work of income generating household members. Health of all household members is another important indicator for human capital.

❖ **Natural Capital**: the natural capital of a household is indicated by the amount and size of (farm) plots, ownership of land, the type of crops and the output of crops, and different types of livestock belonging to a household.

❖ **Financial Capital**: the financial capital consists of the total amount of all wages, savings, remittances and pensions in a household.

❖ **Physical Capital**: physical capital can be assessed as the type of construction materials used for housing of a household, access to electricity and potable water, and moreover the types and accessibility of communication and transportation.

❖ **Social Capital**: social capital of a household consists of relationships with family members, but are also based on access to networks and connections with community members.

3.3   Research framework: methods

In this research both qualitative and quantitative data are used to collect data about household characteristics, farming and other daily activities and livelihood strategies. In the last decade qualitative and quantitative research methods have begun to merge together (Desai & Potter, 2006). Across different disciplines, scientists have been encouraged to combine qualitative and quantitative approaches to gain new insights. Quantitative data provides statistical data and the basis for showing 'what' and for this reason it is highlighting significant variables. Qualitative data is used to get deeper insights in 'why' and 'how' something is happening. Furthermore it is emphasizing variety and differences within the range of human experiences (Desai & Potter, 2006).

Quantitative research methods are applied through a rural household survey in the selected villages, using a questionnaire with open and closed questions, created by the RurbanAfrica Project (appendix A). This questionnaire has to give insight in compositions of households, daily activities, farming practices, non-farm employment and mobility of rural households in those villages. In addition to the household questionnaires, qualitative research methods are used to collect more specific data about problems occurring in daily activities and farming processes. This information will be collected by doing semi-structured interviews with local people about their daily activities.

To overcome problems with communication with local people, two bachelor students in geography were selected to assist during the fieldwork. They were equipped in both English and the local language, Pidgon, and both were familiar with doing questionnaires in the area of research. During the fieldwork, they were of great importance and in return they get the opportunity to learn more about the subject of this research, so that they are able to use this knowledge in their future study career.

Quantitative method

As mentioned in the previous chapter, the selection of the rural villages is based on four different geographical areas, size of the villages and accessibility. For selecting the households a random stratified sample is used, so that the selection includes both farmers and people with other daily activities. The latter was important in order to gain a right and unbiased insight in the livelihood of all rural households.

However, according to the GIS lecturer of the University of Buea, there was no adequate population list available of the rural population in the selected villages. So, it was not possible to create a sampling frame by using a sampling frame in the form of a population list. It was necessary to find an alternative way of sampling the households that would provide data which is representative and statistically significant for a larger population. Using self-required GIS-data by the University of Buea, it was possible to estimate the size of different villages. After doing this, we went to those different villages to explore the current situation and checked whether those villages were satisfying for the research by counting and estimating the amount of households.

When the villages were carefully chosen, it was possible to draw a possibility sample. With a probability sample, every household of the research population has an equal (or known) chance of being included in the sample.

Qualitative method

As shown in the conceptual model, some different agricultural transformations take place in the South West Region of Cameroon. Although, the questionnaire did not cover everything of the current agricultural situation, so another way of getting information about the agricultural situation and different transformations was necessarily. The best way to collect information about those topics is to hold some semi-structured interviews with local farmers. Beforehand, it was thought that especially local farmers could provide a lot of information about the agricultural situation a couple of years ago and about the current situation. Interviewed farmers were selected based on duration of living in their village. It was important that farmers living at least ten years in the village, so they were able to get a good overview of the situation.

3.4   Limitations and risks

This research had several limitations and risks. Each research has its limitations, because different factors can have an influence on the research and the results. Therefore it is necessary to be aware of and to minimize the impact of those factors. First of all, as being one of the first students from Utrecht University doing research in Cameroon, there was a risk of doing research without any assistance. In retrospect it can be said that the assistance in Cameroon was very good. By getting in touch with lecturers and students from the University of Buea it was more easy to set up the research, because they were able to assist and advise by setting up and doing the research.

Secondly, there was the risk of not finding a suitable area of research and moreover the limitations of the research methods selected. For this research it was necessary to find and do surveys and interviews at small rural villages in the South West Region of Cameroon in which most households have agriculture as their main activity. Only in this way it was possible to find out in which extent agricultural transformations has impact on different livelihood strategies. However, some households were not willing to participate in surveys or interviews. This can lead to a lack of information and therefore can be seen as a limitation.

In advance the time frame and the language barrier were considered as other important limitations of the research, because it was suggested that doing surveys and interviews can take longer than was thought beforehand, because local people have another language. Nevertheless, because of assistance in the field with translations and a strict schedule this was not the case. However, it must be considered that some information might be lost due to the fact of translations.

3.5   Host organization

The host organization of this research is the University of Dschang, situated in the West region of Cameroon. In collaboration with other universities they are part of the RurbanAfrica Project. This is an research project, initiated in April 2012. The purpose of the project is to explore the connections between rural transformations, mobility, and urbanization processes and analyze how these contribute to an understanding of the scale, nature and location of poverty in sub-Saharan Africa. The RurbanAfrica project will advance the research agenda on rural-city connections in sub-Saharan Africa by addressing a range of crucial components: agricultural transformations, rural livelihoods, city dynamics, and access to services in cities.

4   An introduction to the households

To get a good understanding of the characteristics of the population in the research area, and different livelihood assets of the households, this chapter provides an overview of different socio-economic characteristics and of different livelihood assets. The research is based on 200 questionnaires and complemented by some interviews with local people. In this chapter an overview of socio-economic characteristics of the households of the respondents of the questionnaires is shown to give an answer to the first sub-question: "*what is the socio-economic situation of the households in the region and how can this situation be explained?*" and the analysis of livelihood assets is done in order to answer the second sub-question: "*which different livelihood assets are present in the South West Region and what importance?*".

In the first section different socio-economic characteristics of the population are elaborated. This is about the composition and the size of the households, the distribution of men and women, the age of people in the households, the place of birth and previous place of residence. This section is followed by a section about livelihood assets. All different livelihood capitals are analyzed separately. In this section, also some hypotheses are tested. This is done by finding relationships between livelihood assets and the amount of sources of income. The amount of sources of income is based on a categorization on diversification of income, and therefore extensively discussed in the next chapter on livelihood strategies.

4.1   Households: a socio-economic overview

This study uses the concept of *stretched households,* which means that the survey is not only about those who live in the house, but also about those members who live elsewhere but contribute to the household's livelihood. In total 1103 people belong to the 200 households of the research.

This section gives a socio-economic overview of the households. This section is divided in five separate topics. First, the household composition and the size of the households is described to show how different areas differ from each other. The four different areas of research are compared. Hereafter the topic of gender is discussed to find out what the distribution is of men and women. This is followed by an overview of age. Population pyramids are drawn to compare the four different areas with the total area. Hereafter the place of birth and previous place of residence of people from the households are analyzed to see in which extent the population consists of migrants or local born people.

Household composition and size

The composition and size of households are good indicators to see how the population is structured. The rural-based households of this survey are mostly (46%) nuclear households with 4-6 household members. This proportion of nuclear households is more or less the same as in Cameroon itself. In Cameroon (2004) 51% of all households were nuclear (International Conference on Population and Development Beyond 2014, 2012). Besides these households there are a few extended households. For instance sometimes elderly live together with their relatives in the same household. Or other relatives who cannot afford their own place to live, are living in such extended households.

Graphic 4.1: Male- and female-headed households in different rural areas in South West Region, 2014.

Nuclear households, in general, are not female-headed, but there are many female-headed households in Cameroon's South West rural areas. In the research are 42 households (21%) are female-headed and 158 households are male-headed. This corresponds more or less to national data, because the proportion of female-headed households in Cameroon is 24% (ICPD, 2012). In the mountainous area there are more female-headed households than in the other areas (graphic. 4.1). In the mountainous area almost 15 households are female-headed and in the delta area not even ten households are female-headed. This can be explained by a high proportion of elderly women, whose husbands are deceased or because of divorcement. In many cases of divorces women remain behind and men are tend to move to other places. Besides it is difficult for divorced women to find a new partner, so many women stay behind alone, which is leading to many female-headed households.
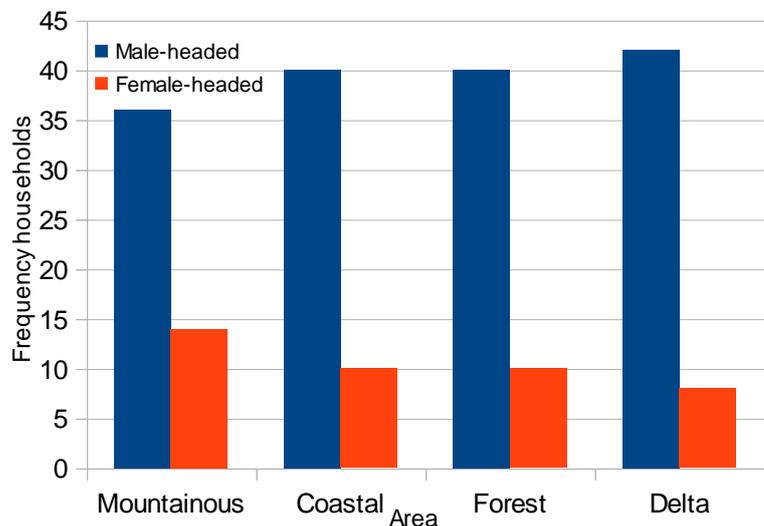
Gender

To get a clear view of the socio-economic situation in the area of research, the topic of gender cannot be absent. In total 1103 persons belong to the households. It is remarkable that women make up more than 53% (590 women) of the population and men less than 47% (513 men). Normally, they are equally distributed. To find out how these differences are possible, the four areas of research are analyzed individually.

When a subdivision is made between the different research areas, differences in the distribution of men and women can be observed. In each area there are more women than men (table 4.1). In the mountainous area the differences are remarkable. The research population in this area consists of 281 people and only 42,3% are men and 57,7% are women. The distribution in the forest area also differs slightly. Of the research population of 294 people, almost 46% are men and the other 54% are women. Only in the coastal area and the delta area the distribution of men and women is more or less equal, with almost 50% men and 50% women.

Table 4.1: Frequency of men and women per area in South West Region, 2014.

	Men		Women		Total
	Freq.	%	Freq.	%	Freq.
Mountainous area	119	42,3	162	57,7	281
Coastal area	134	48,9	140	51,1	274
Forest area	135	45,9	159	54,1	294
Delta area	125	49,2	129	50,8	254
Total	513	46,5	590	53,5	1103

It is very difficult to find explanations for these huge differences in distributions of men and women, but it is well known and therefore assumable that men in Sub-Saharan Africa die at a younger age than women. Based on observation and interviews with local women, also the fact that a lot of men in rural villages in Cameroon drink too much alcohol can be an explanation. Men go to their farms very early in the morning. When it is finished they go to local bars to drink big bottles of beer or palm wine during the rest of the day. Some women were telling that they are afraid for the amount of alcohol those men are drinking. According to them alcohol abuse is a big problem in rural areas of Cameroon.

Age

In line with the last section, a division of gender in age categories is important to get a clear understanding of the demographic situation in the research area. Although it was very difficult for some respondents to give the exact age of certain people in their household, they were in most cases able to give an estimation. Because of the fact that some respondents in the coastal area and in the forest area had difficulties to give the age of certain household members. Nevertheless, based on the available data a population pyramid of the research area is elaborated (graphic 4.2). The wide base of the pyramid in comparison with its narrowing top suggest a large proportion of young people,

characteristic for developing countries. The narrow top of the pyramid represent the relative small proportion of elderly people. There are more men than women in the age category of 41 to more than 70 years of age. This is in contrast with the previous section about gender, where it was argued that man die at a younger age than women. The population pyramid shows a majority of women in the age categories of 0 to 30 years. This means that there are a lot of girls and young women in the research area.

Graphic 4.2: Population pyramid of sampled area in South West region, 2014 (n = 1074).
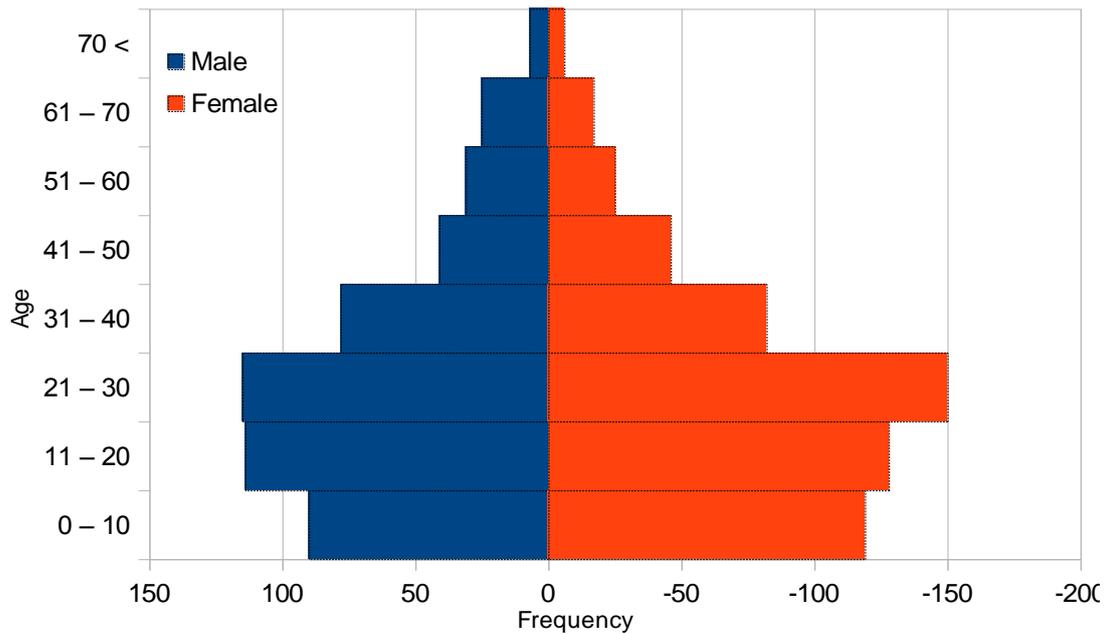
In order to determine whether these proportions also occur in separate population pyramids, a population pyramid of each area is made. Because of the fact that some respondents in the coastal area and in the forest area did not want to give the age of certain household members, these pyramids can be a little bit different in comparison with the others.

Graphic 4.3: Population pyramid of mountainous area, 2014 (n = 281).
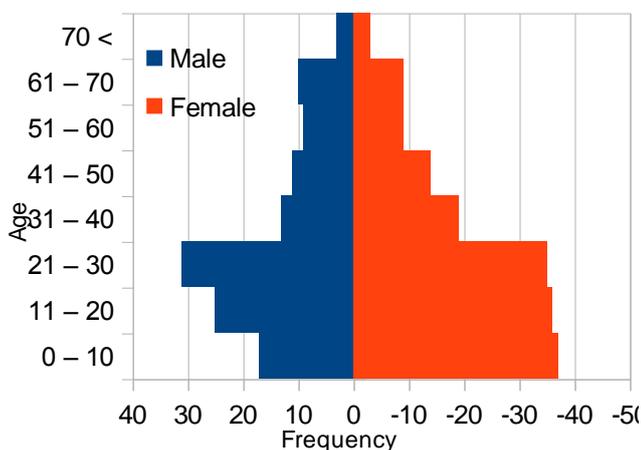
Graphic 4.4: Population pyramid of coastal area, 2014 (n = 266).
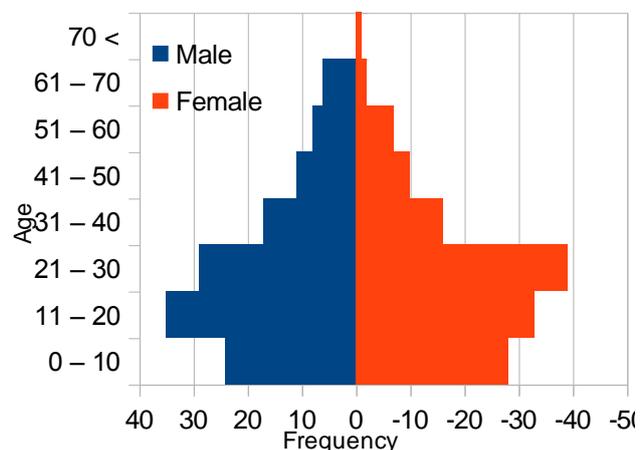
In the mountainous area there is a remarkable distribution of young men and young women from 0 to 30 years. There are considerably more girls and young women than boys and young men (graphic 4.3). In comparison with the whole area, the amount of girls is very large in this area. It seems that in this area more girls are born. The population in the coastal area is more or less equally divided in age and gender. The amount of men and women in age category 0 to 30 is almost the same (graphic 4.4). Just as in the mountainous area, the amount of young women in the forest area is larger than the amount of men. There is a huge difference between the amount of women and men in the age of 0 to 30. In this age category there are only some 80 young men and more than 90 women (graphic 4.5). This is also occurring in the delta area (graphic 4.6). Although, in the delta area there are more men older than 50 than women.

Graphic 4.5: Population pyramid of forest area, 2014 (n = 273).
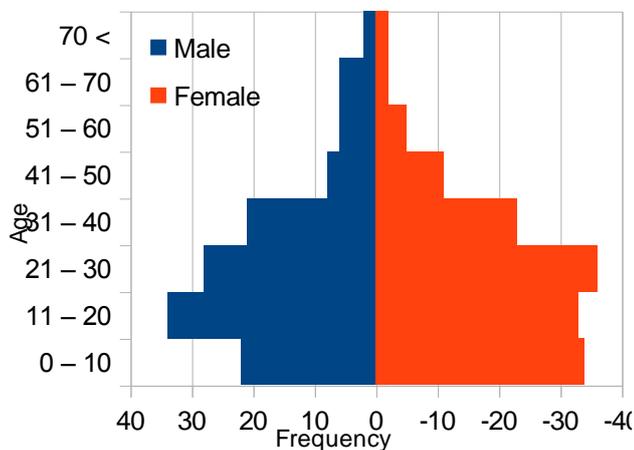
Graphic 4.6: Population pyramid of delta area, 2014 (n = 254).
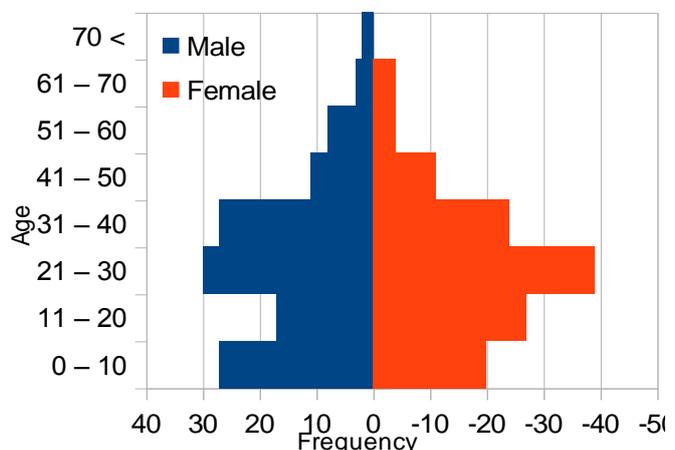
It is clear that the research area has a very young population, with a majority of women. The amount of female-headed households can be partially explained by this majority of women. An explanation for the smaller amount of men that is more likely can be, that men are moving to other places and in some cases not be part of the (stretched) household anymore. This latter is for instance possible due to divorces. Nevertheless the difference between the amount of young boys and young girls is difficult to explain. Probably it is just based on coincidence.

Place of birth and previous place of residence

The place of birth and the previous place of residence of all household members are good indications to find out if people in the research area tend to move and therefore are mobile. To identify if people are born in the same place as their current residence or somewhere else, three categories are constructed. There are people who are born in their current place of residence, there

are people who are born in the same region and there are people who are born in other regions like the North West or the Littoral region. In total 742 people in the research area are born in the same place as their current residence (table 4.2). Especially in the mountainous area most people (235 of 281) are born there. In the other areas many people are living there while they are born in another region. In total there are 216 people who are born in another region. In the coastal area even 27% (72 of 265) is born in another region. Most of those people who have come from other regions are from cities and villages in the North West region, like Bamenda, Bafut, Bali and Kumbo. There are only a few people coming from Adamaoua region (Ngaoundéré), Central region (Yaoundé) or Littoral region (Douala).

Table 4.2: Place of birth of the population per area, 2014.

Place of birth	Frequency per area									
	Mountainous		Coastal		Forest		Delta		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Same as current place of residence	235	83,6	160	60,4	186	66,2	161	63,4	742	68,6
Same region	29	10,3	33	12,4	30	10,7	31	12,2	123	11,4
Other region	17	6,1	72	27,2	65	23,1	62	24,4	216	20,0
Total	281	100,0	265	100,0	281	100,0	254	100,0	1081	100,0

To see if the population is moving from one place to another, the previous place of residence is analyzed. By doing this it is possible to analyze some mobility patterns. The majority of the people in the research area is living in their place of birth. But there are differences between households in different areas. People from other regions than the South West Region are moving more than people from the South West. There is more immigration than emigration in the South West Region. When looking at previous places of residence, it is clear that especially those migrants who are now living in the coastal and delta area are moving more often. They are in search for work in larger cities, but cannot afford it to live in those cities, like Limbe or Douala. The people in the mountainous live a little bit isolated in terms of migration. Most people in this area are only moving within the area in cases of marriage or in search of an appropriate accommodation.

The reason for those big differences between incoming migrants in different areas are location-specific. The mountainous area for instance does not have much employment opportunities and the plots of land are relatively small. On the other hand the delta area is close to Douala and is often seen as a place to live for people who cannot afford to live in Douala. Many people from other regions also go to the coastal area, because of the fertile soil in this area. The soil at the southern slope of Mount Cameroon is very fertile due to some volcanic eruptions in the past.

4.2   Livelihood assets

In this section an overview is given of the different capitals of households whereby the second sub-question is answered: *"which different livelihood assets are present in the South West Region and what importance?"* First the human capital is analyzed. Secondly the natural capital, followed by the financial capital. As fourth physical capital is examined, and finally the social capital of households. Despite the fact that a livelihood is divided into five capitals this is only a schematic representation of reality. In reality all five aspects that make up a livelihood are interrelated. These relationships between different capitals give the livelihood approach its holistic understanding. In other words, someone's livelihood is more than just the sum of all parts (De Haan & Zoomers, 2005). Nevertheless, in this section the different capitals will be discussed separately.

4.2.1 Human Capital

Human capital represents the skills, knowledge, capacity to work and good health that together enable people to pursue different livelihood strategies, and achieve their livelihood outcomes. In this part education is elaborated extensively.

The educational system in Cameroon is divided into primary school, three different levels of secondary school and university. In Cameroon education starts with primary school. Education is compulsory through the age of 12 years, when 6 years of primary schooling are completed (Education in Cameroon, 2014). After primary school, children go to secondary school and if it is possible and their capabilities permit to go through, they go to high school: doing ordinary level or advanced level. Only by completing advanced level, people have the opportunity to attend university.

Graphic 4.7: Level of education completed in percentages in South West Region, 2014.

Most people in the research area have at least attended primary school. In each area only 3% of the population has had no education (graphic 4.7). As the level of education increases, fewer people have completed such forms of education. Between the different areas there are major differences in levels of
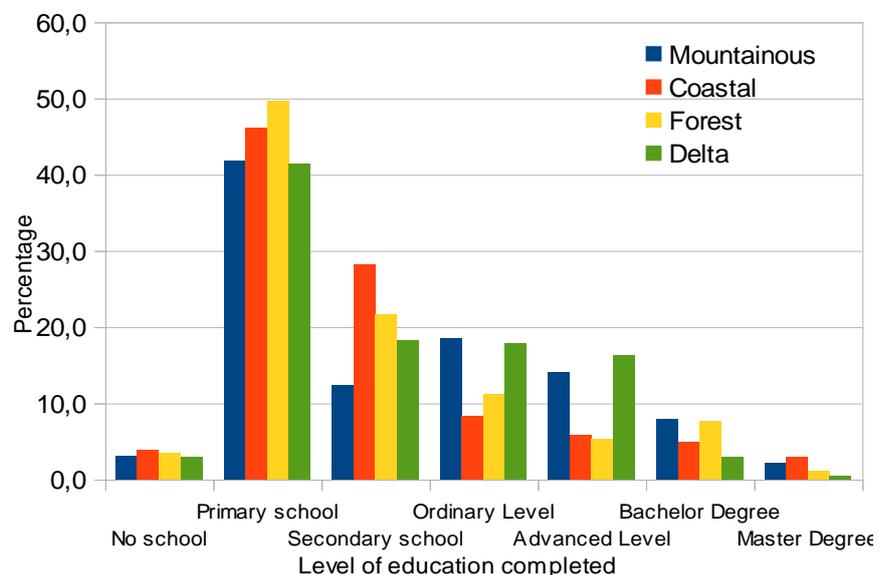
education completed. The proportion of people with secondary school as highest level of education completed is clearly highest in the coastal area. In this area the share of people with higher levels of education is more limited in comparison with the delta area and the mountainous area. In these areas the proportion of people with ordinary level and advanced level is larger. On the other hand the percentage of people in the delta area with university degree is lower than in the other three areas. Therefore it can be said that there are huge differences between the different areas in terms of levels of education completed.

In general in Cameroon there is a high primary school attendance (99,6% for boys and 87,4% for girls), but a lower secondary school attendance. Only 40% of the boys and girls go to secondary school (Unicef, 2013). In terms of education, human capital in Cameroon is improved in the past decades. But education from secondary school and higher is more challenging, because of the costs and location of schools. Another important variable that explains differences in human capital is the household size, because a larger household reduces the chances of a good education. According to some respondents, they do not have enough money to give all children an equal opportunity to continue school after primary school. In those cases only the eldest children, irrespective of gender, get the opportunity to continue school. In Cameroon there is a difference in the amount of men and women who have completed primary school. 85% of the men have completed primary school, but only 72% of the women. This difference is not forthcoming in the research area. In the research area in the last years gender differences are improved, boys and girls attend classes in all different levels of school without a problem.

Many people in the areas of research only went to primary school, but they have learned how to improve their skills and to increase their knowledge to earn a living. Based on interviews and observation, for example, it became obvious that knowledge about farming is transmitted from generation to generation. In the past many people could not afford to send their children to school. Nevertheless, nowadays school is compulsory and most parents support their children to go to school. Interviews with some parents revealed that they see education as a way to achieve something. They hope that their children with a good education can find a good job in order to support the family.

Besides education, knowledge and skills, good health is an important aspect of human capital. Without good health it is almost impossible to go to school or to improve skills. Moreover, those people without good health do not have full capability to work. In the area of research people facing different problems regarding health. Because of a high infant mortality rate, last year the Cameroonian government has implemented free vaccinations for newborn up to ten months preventing infections and even deaths (Cameroon Tribune, 2014).

4.2.2 Natural Capital

In every research area, people assess different sources of natural capital, mostly based on the geographical location of the villages. In this paragraph the relation between the amount of sources of income and characteristics of natural capital is analyzed. The hypothesis is that households with more sources of income have more natural capital. This analysis involves the amount and size of (farm) plots, ownership of land, type of crops and livestock to measure the amount of natural capital. Besides, attention is paid to agricultural transformations and in which extent these transformations are influencing livelihood strategies of rural households.

Amount and size of (farm) plots

The amount and size of (farm) plots is a good indicator to measure natural capital. In rural areas in Sub-Saharan Africa, having land usually indicates more sustainability than not having land. This is why the hypothesis is, that households with more sources of income have more plots of land. More than 80% of the rural population in the South West Region of Cameroon has at least one farm plot and about 12% of the households do not have plots (graphic 4.8). In total all rural households in the research region have at least 428 farm plots.

Graphic 4.8: Plots per household in percentages in South West Region, 2014.

The amount of plots of households is not determined by the amount of sources of income in a household. Households with less sources of income can have more plots of land than people with more sources of income. By doing statistical analyses it is possible to find out if and in which extent there is a relation between households with more sources of income and households with more plots. A statistical correlation test shows that the relationship between the amount of sources of income and the amount of plots is weak: the correlation coefficient is only 0,138 (appendix C). This means that only a very small percentage (1,9%) of the variance in the amount of plots per household is determined by the amount of sources of income and that the hypothesis then has to be rejected.
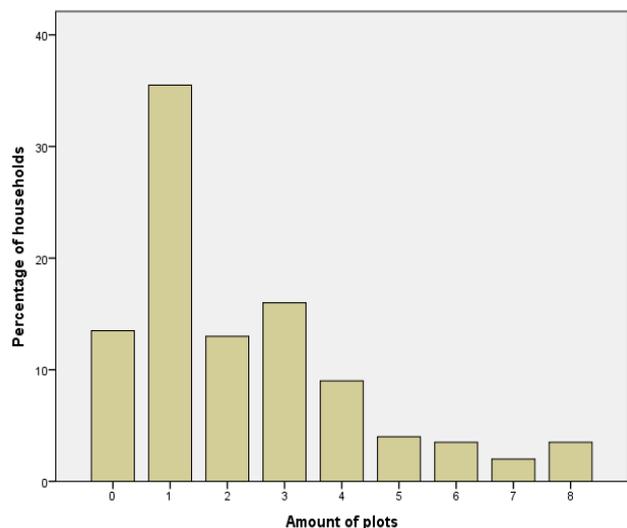
Because of geographical differences between the four areas of research it is assumable that there are large differences in the amount of plots between them. In the mountainous area, forest, coastal area and delta area, almost every household has one or more (farm) plots. Only in the delta

area less households have one or more plots (graphic 4.9). There are different reasons for those differences. First of all, the soil and the climatological circumstances in the delta area are less suitable for small-holder crop cultivation. Secondly, land that it suitable for agriculture is nowadays owned by the Cameroonian Development Cooperation (CDC), making huge banana and rubber plantation from it in this part of the South West Region.

Graphic 4.9: Frequency of plots per area per household in South West Region, 2014.

The Cameroon Development Corporation is an Agro-Industrial Complex that grows, processes and markets tropical export crops. It operates from Limbe in the South West Region of Cameroon in the Central African sub-region. It is a parastatal company and its operations management is directed by a General Manager and governed by a Board of Directors also headed by a Chairman. Currently its plantations cover a total of approximately 41,000 hectares of land, 38,000 hectares of which is mature and of production stage. The corporation constitutes a workforce of over 15,700 employees, including temporal workers, making it the second highest employer after the state of Cameroon. Its major products include banana, semi-finished rubber, palm oil and palm kernel (CDC Cameroon, 2014).

In total 173 households (86,5%) own some land, 27 households (13,5%) don't. Altogether those 173 households with land have more than 800 hectares of land, ranging from 0,1 ha to 40,0 ha, with a mean of 4,2 hectares (table 4.3). Most households have 2,0 hectares of land. The skewness of 3,0 indicates outliers with high values. Some plots are fallow or forest, but most plots are cultivated. The size of the land depends highly on the surface of the area.

Table 4.3: Data about sizes of land (in hectares) in research area in South West Region, 2014.

	Mountainous	Coastal	Forest	Delta	Total area
Total land	225,5	213,7	286,6	106,2	831,9
Minimum	0,2	0,2	0,2	0,1	0,1
Maximum	32,0	40,0	30,0	27,0	40,0
Mean	4,5	4,3	5,7	2,1	4,2
Median	2,3	2,0	4,0	1,0	2,0
Skewness	2,6	3,8	1,9	4,9	3,0

In the forest area, the size of the plots of most households are in absolute terms (286,6 ha.) and on average (5,7 ha.) larger than plots in other areas. A plot of 4,0 hectares is the most common in this area, and a skewness of 1,9 indicates a symmetric distribution with few outliers. Households in the delta area altogether have with only 106,2 ha the smallest amount of land. On average, households in the forest area have the most land. In the mountainous and coastal area, households have on average more or less the same amount of land (4,3 ha). In the delta area households have on average the smallest amount of land (2,1 ha).

Another hypothesis related to natural capital, is that households with more sources of income have on average more land in hectares. By doing statistical correlation tests no relationship between the sources of income and the size of land in hectares is found. The correlation test demonstrates that the correlation coefficient is very weak: 0,016. The hypothesis has to be rejected: there is no relation between the amount of sources of income and the total size of land. Households with more sources of income do not have more land than households with only one or a few sources of income. The most obvious explanation is that households with a lot of land are most likely farmers with only one or two sources of income. Households with small sizes of land probably are households without farmers and consequently have more sources of income.

Ownership

Ownership of land is an indicator for natural capital. It is assumed that households who own land are more sustainable than those who rent land. In the area of research the 200 households of investigation altogether have a total of 458 (farm) plots. Of these 458 plots, 390 are owned by households and 66 plots are rented by households. This means that 14,4% of all plots in the research area is rented by households. Only two households have other kind of land, like state land (table 4.4). Households in the mountainous area and in the forest area have considerably more plots of land than households in the coastal and delta area. Especially households in the delta area only have 15% of all plots in the research area.

Table 4.4: Arrangement of ownership in South West Region, 2014.

Ownership	Frequency per area				Total
	Mountainous	Coastal	Forest	Delta	
Owned by household	146	80	119	45	390
Rented	0	20	22	24	66
Other	0	1	1	0	2
Total	146	101	142	69	458

In the mountainous area, every household has its own land. In the coastal area almost 20% of the plots are rented. 20 plots are rented and 80 plots are owned by households. In the forest area about 15% of the total amount of plots is rented. In the delta area 24 plots are rented corresponding to almost 35% of all plots in this area. Some households both own (farm) plots and some rent plots. The hypothesis is that there is a relation between households with more sources of income and households having their own land. To test this hypothesis a statistical analysis is necessary. By doing a statistical Chi-square analysis, it is necessary to assume that there is no relation between households with more sources of income and having own land. The final result is a Pearson Chi-Square of 22,610 with an exceedance probability of 0,125. This means that the assumption, that there is no relation, is right and that the hypothesis has to be rejected. Because, with a certainty of 95%, there is no significant statistical relation between households with more sources of income and having own land. The reason is that most people with more sources of income do not have more land than people with less sources of income. Besides, households with rented land use it as if it is their own land.

Crops

In the four areas there is a wide variety of cultivated crops. In this section an overview of different crops in four different areas is given. Respondents were asked to name their main crops, with a maximum of five. Consequently, the figures below are based on the main crops. It is possible that some farmers are cultivating more than five crops. This means that there is a slight possibility of missing data.

Picture 4.1: Plot with plantain trees in Bonakanda in the mountainous area, South West region, 2014.

The kind of crops that are cultivated depends on certain important factors. First of all, the soil is of major importance. In the mountainous area, in the villages of Bova and Bonakanda at the slope of Mount Cameroon, the volcanic soil is extremely fertile. Because of the altitude (around 1500 meters above sea level) the climate is different in comparison with the other areas of research. The farmers are mainly cultivating plantains (picture 4.1), yams, vegetables, cocoyams, coco (cacao) and corn (figure 4.1).

Figure 4.1: Frequency of main crops in mountainous area   Figure 4.2: Frequency of main crops in coastal area
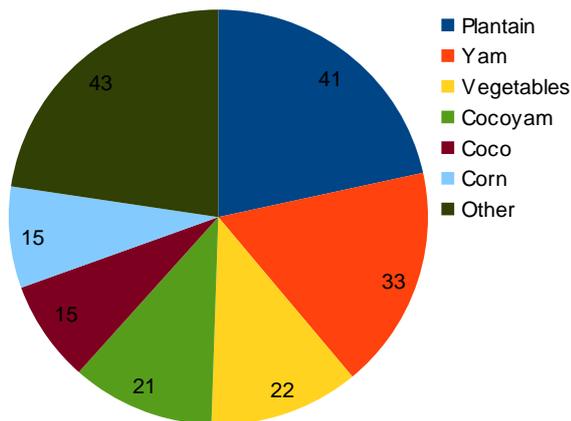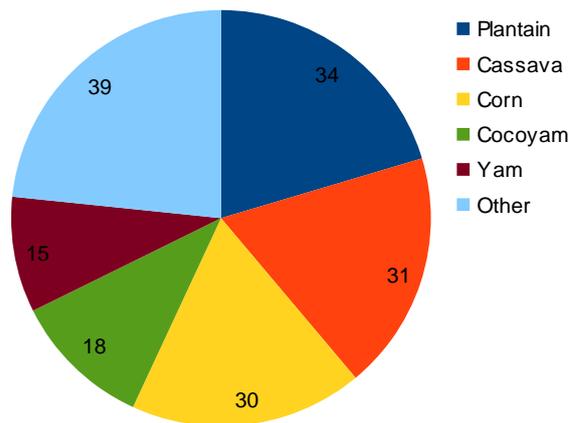
In the coastal area, in Batoke and Bakingili, farmers are mainly cultivating plantain, cassava, corn, cocoyams, and yams (figure 4.2). The output of crops is highly dependent on climatic circumstances. Farmers in this area were saying that because of breezes they have to abandon certain crops like plantain. Despite abandoning plantain, it is still the most cultivated crop in this area. In comparison with the mountainous area, in this area more cassava and corn (picture 4.2) is cultivated, but less yam and vegetables.

Picture 4.2: Drying corn and palm-nuts with on the background some plantain trees in Bakingili in the coastal area, South West Region, 2014.

Farmers in the forest area mainly cultivate coco, plantain, cassava, palmtrees and cocoyam (Figure 4.3). Because of very high temperatures in this area it is difficult for farmers to increase their output. In this area more farmers are cultivating rubber and palmtrees than in all other areas. Less farmers are engaged in cultivating plantains, cocoyams and yams.

Figure 4.3: Frequency of main crops in forest area   Figure 4.4: Frequency of main crops in delta area
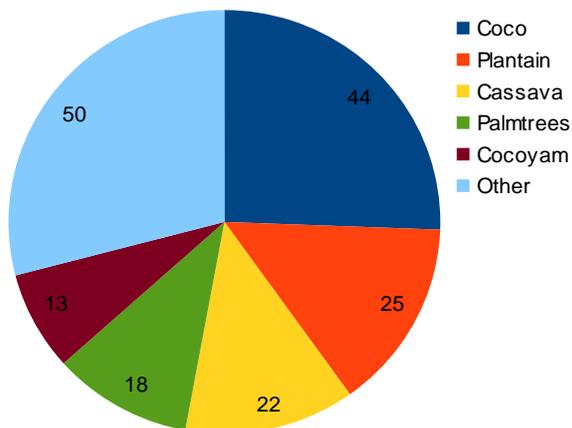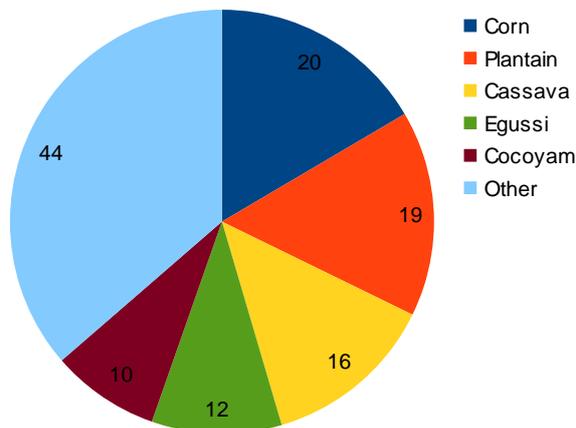
In the delta area in the villages of Mudeka and Mussellele crops they grow are mainly corn, plantain, cassava, egussi and cocoyam (figure 4.4). In comparison with the other three areas there is more variety in the kind of cultivated crops. This is due to the soil in the delta area. It is a sandy soil which causes difficulties in cultivating crops. Due to this soil, farmers are forced to try cultivating different crops. Nevertheless, in this area, relatively many villagers are employed at the Cameroonian Development Cooperation (CDC). They work as security or as plantation workers at this company.

Farmers in Cameroon have been facing serious difficulty marketing and selling their crops in the local, national and international markets. Most farmers in the research area only sell their crops at the local market to other villagers and local traders. They do not have the facility to sell their crops at other places and to other buyers. The main reasons are lack of infrastructure and high transport costs (Teravaninthorn & Raballand, 2009). Besides, people in the delta area were complaining about the market situation. They were saying that it is too difficult to sell their products, even on local markets, due to the increasing presence of plantations managed by the CDC.

Only in the forest area in Ediki and Mbalangi and in the delta area in Mudeka and Mussellele some farmers are selling their output of rubber to bigger cooperatives and even to CDC. But even in this area most output is sold in local markets.

Livestock

Like land livestock is an important natural capital. Livestock can be sold, traded or consumed. Only a few households in the research area actually have livestock. The most common kind of livestock is fowl (chicken, hens, geese and ducks). These are held by 61 households and 40 households have goats. Besides, there are 18 households holding pigs both for consumption and sale. Two households have some cows and 8 households have other animals like dogs (table 4.5). The amount of livestock per households differs for example from only one chicken to a farm with 80 chickens. People use them both for consumption and for sale, dependent on the extent of their livestock and their own need.

Table 4.5: Livestock staple by area in South West Region, 2014.

Livestock	Frequency per area				
	Mountainous	Coastal	Forest	Delta	Total
Cows	1	0	1	0	2
Pigs	4	2	5	7	18
Goats	17	7	12	4	40
Fowl	21	16	17	7	61
Other	2	0	3	3	8
Total	45	25	38	21	129

As shown in table 5.3, 129 households in the research area have some livestock. In the mountainous area (90%) and in the forest area (76%) the majority of households have livestock. In the coastal area (50%) and in the delta area less households (42%) have animals.

4.2.3 Financial Capital

The financial capital consists of the financial means of a household. There are different ways to assess the total financial status of a household. The financial capital consists of income by wages, savings, remittances, pensions and others.

In this research people have different sources of income as shown in the previous chapter. In this part the total amount of incomes are based on the sum of agricultural production, livestock, self-employed work, salaried employment, remittances, pensions and others. Financial capital is measured through an indication of the different income sources of households. Financial income is difficult to validate because people may boast about their income or find it difficult to estimate how

much they earn because their income isn't fixed. It is considered that respondents do not exactly know how much money they earn or receive in a certain time of period. This is because they do not write it down and because in many cases the income is undergoing fluctuations, dependent on the time of the year. Nevertheless, based on estimations of the respondents about their own total income a year a classification is made (table 4.6). The income is converted from CFA francs into Euros.

The classification is roughly based on the poverty line of one dollar a day (very poor) and two dollar a day (poor). Households with a maximum of € 762 a year can be considered as very poor. Households with an income between € 763 and € 1.524 can be considered as poor. When households have an total income of more than € 1525 a year, they can be considered as sustainable. Households earning more than € 2.288 a year can be seen as rich and very sustainable.

In the four different rural areas in the South West Region of Cameroon, 30% of households can be considered as very poor and have a total income of less than € 762 a year. About 35 percent of the rural households can be considered as poor and they face problems in sustaining their own livelihood. 68 households can be considered as rich and very sustainable.

Table 4.6: Income classification in €* a year in South West Region, 2014.

Incomes	Frequency	%
0 – 762	59	30,0
763 – 1.524	70	35,5
1.525 – 2.287	29	14,7
2.288 and more	39	19,8
Total	197	100,0

> ➢ € 0 – € 762: considered as very poor;

> ➢ € 763 – € 1.524: considered as poor;

> ➢ € 1.525 – € 2.287: considered as sustainable;

> ➢ € 2.287 and more: considered as rich and very sustainable.

Overall can be concluded that people have a lack of financial capital due to earlier mentioned problems as difficulties selling products, but also because of a lack of employment opportunities. To find out in which extent the amount of different sources of income have an impact on the financial situation of the population a statistical test is used.

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* € 1 = 656 CFA francs (1.000.000 francs corresponds approximately to € 1524). CFA is the Central African Franc. It stands for *Coopération financière en Afrique centrale* (Financial Cooperation in Central Africa).

The hypothesis is that there is a relation between households with more sources of income and households with more income. Diversification spreads the risk in comparison with households mainly based on one or two sources of income. It is therefore assumable that those households are more vulnerable. The assumption in this is, that when households have diversified their sources of income they have more financial capital.

To validate this assumption, a Chi-square analysis is done. In this analysis the assumption is that there is no statistical significance. By doing a statistical Chi-square analysis, Pearson Chi-Square is 27,350 with an exceedance probability of 0,007. With a certainty of 95%, there is a significant, but statistical weak relation (Cramers's V = 0,215) between households with more sources of income and the level of income (appendix C).

The calculation above shows that there is a relation between the amount of sources of income and the financial capital. Thus, when households have more sources of income, they have more financial capital. According to those findings it can be recommended for most households to try to diversify their sources of income.

Between the four regions, there are huge differences in incomes. In the mountainous area, the coastal area and in the delta area most people are very poor because they have a yearly income of less than € 1.524. The people in the forest area have more financial income and can be considered as more sustainable in their livelihoods (graphic 4.10).

Graphic 4.10: Total income a year per area in South West Region, 2014
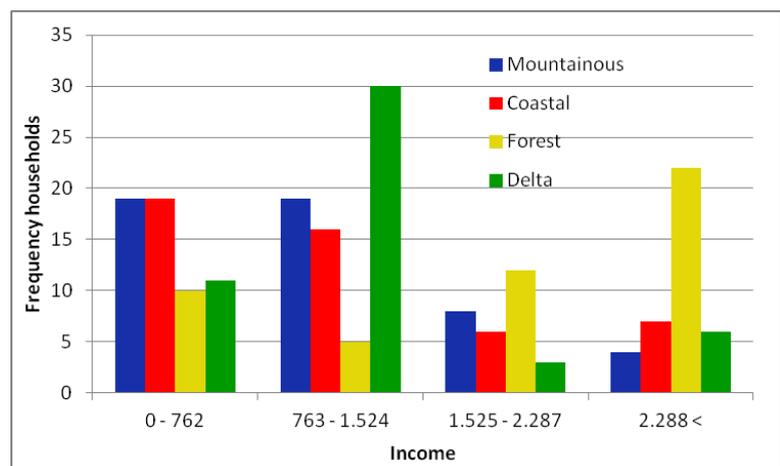
4.2.4 Physical Capital

Physical capital comprises the basic infrastructure and physical goods that support livelihoods. In this paragraph physical aspects at the household level like construction materials for housing, access to electricity and potable water is elaborated. Besides, ownership of and access to different forms of communication and transportation is pointed out. Moreover, differences between the mountainous, coastal, forest and delta area are explained.

Housing

Housing is an important aspect of physical capital. The size of people's main house and construction materials of their walls, roofs and floors are good indicators to measure the physical capital through housing. First of all the size of the main house is analyzed. The size is based on the estimated size of the floor surface in square meters (m^2). Kitchens outside, sheds and extra houses are not included in this calculation.

There are major differences between sizes of houses in the research area. The size is ranging from 4 m^2 to 96 m^2, with a mean of 22,6 m^2. A house with an area of 10 m^2 is most common (table 5.5). 50% of the households have a maximum size of 16 m^2 and only 25% have an house of at least 30 square meters.

There are also many differences between the size of houses in the four different research areas (table 4.7). The houses in the forest area are the largest, with an average of 33,0 m^2. The houses in the coastal and delta area are on average the smallest with a mean of respectively 16,7 m^2 and 15,4 m^2. The houses in the mountainous area are like those in the forest bigger on average than the houses in the whole research area.

Table 4.7: Data about sizes of households (in m^2) in research area, South West Region, 2014.

	Mountainous	Coastal	Forest	Delta	Total area
Minimum	7,0	4,0	4,0	4,0	4,0
Maximum	85,0	60,0	96,0	66,0	96,0
Mean	25,1	16,7	33,0	15,4	22,6
Mode	16,0*	10,0	24,0**	10,0	10,0

* Multiple modes exist: 16,0/20,0/25,0.

** Multiple modes exist: 24,0/30,0/40,0/60,0.

The construction materials for housing in Sub-Saharan Africa are important indicators for a healthy environment. Healthy households are more sustainable than others. In this way, it is important for households to construct their floors, their walls and their roofs with good materials.

In general good floors are made of concrete, cement or tiles. The percentage of people in sub-Saharan Africa who lives in houses with those types of floors is very inconsistent. Floors of cement, concrete or tiles provide comfortable living, but more importantly, it significantly improves children's health (United States Agency for International Development, 2013; Habitat for Humanity,

2014). In the research area more than 75% of the houses have a floor of cement. The rest of the floors is made of mud (8%), concrete 7 (%), wood (5%) and tiles (4%). The floors of mud are only found in the mountainous area and the forest area. In the delta area almost every house has a cement floor.

Walls are another important aspect of good housing. Badly built walls allow diseases, vermin and parasites to enter the house. The assumption is that good houses are made of modern materials like brick or cement. Nevertheless, available or traditional material such as wood can make good walls, only when used properly (Habitat for Humanity, 2014). In the research area almost 43% of the walls are made of concrete blocks, 45% is made of wood, 8% is made of burnt bricks and only 3,5% is made of mud bricks. In the delta area almost every house has a concrete wall (picture 4.3). This is in contrast with the construction material of walls in the three other areas. In the mountainous and coastal area, most walls are made of wood (70% each) (picture 4.4). In the forest area walls are made of concrete blocks (30%), burnt bricks (32%) and wood (34%). In this area is the most diversity of walls.

Picture 4.3: House with concrete wall in Mudeka in the delta area, South West Region, 2014.

Picture 4.4: Houses with wooden walls in Bonakanda in the mountainous area, South West Region, 2014.

Finally, the roof is of major importance. Well-built roofs not only prevent that vermin comes in, but it also provides protection against rain and cold. Typically poor houses have leaky roofs made of traditional materials such as thatch, sticks and leaves. In Sub-Saharan Africa corrugated iron sheets are associated with having a descent roof (Habitat for Humanity, 2014). In the research area, 98% of the roofs is made of corrugated iron sheets (picture 4.4). For Sub-Saharan standards, those roofs are of descent quality.

Overall, most houses in the research area are built of descent materials, like floors of cement, walls of concrete blocks and roofs of corrugated iron sheets. Only a few houses are made of

mud. A statistical Chi-square analysis shows a final result of a Pearson Chi-Square of 22,610 with an exceedance probability of 0,125. With a certainty of 95%, there is no significant statistical relation between households with more sources of income and households with better construction materials (appendix C). There is a weak relation between the amount of sources of income and the construction material of floors (Cramer's V = 0,168), a very weak relation between sources of income and the construction material of walls (Cramer's V = 0,115). Besides there is a weak relation between the amount of sources of income and the roofing material (Cramer's V = 0,132). Nevertheless, in most cases households with more sources of income have construction materials of better quality, but the differences between construction materials of households with one or two sources of income and households with more sources of income are minimal.

Electricity

Besides construction materials, access to and availability of electricity is an aspect of physical capital. In the South West region of Cameroon, most households (92%) in the research areas have access to electricity. However, electricity is instable and is out regularly. On those moments, there is *no light*, according to local people. Electricity is not seen as such, but as light. But nowadays, they do not use it only for light anymore. In Cameroon electricity becomes more important every day, because it provides besides lighting, the possibility to watch television, to use computers and the possibility to charge cellphones. All households have the opportunity to access electricity equally. Notwithstanding equal access to electricity in all villages in rural Cameroonian areas and the small amount of households without electricity in the research areas, there is a significant weak relation (Cramer's V = 0,215) between access to electricity and sources of income in a household (appendix C). This means that when households have more sources of income, there is a better chance that those households have access to electricity.

Access to potable water

In contrast with the access to electricity, access to water is a huge problem in rural areas in Cameroon. The water company of Cameroon (CDE) is present in 106 urban centres (Great agglomeration) of the country: a total of 312 cities larger than 5,000 inhabitants. It is estimated that only 39% of the population has direct access to potable water. In the absence of the Cameroon Water Corporation (CRC), the Cameroon Water Utilities (CAMWATER) and drinking water sources, people are forced to turn to other, less reassuring sources in developing tactics and strategies according to social standards (Ediamam Epalle, 2014). The majority of households (88%)

has to collect water from public taps or pumps. Only some households in the delta area, in Mudeka and Mussellele have to collect water in streams. In the research areas a lot of respondents were complaining about water supply. A 60 year-old widow from Bonakanda who's working as cleaner in the hospital said the following:

> *"Here in Bonakanda we have a big problem with water. There is only one pump down the road. For me it is too hard to collect drinking water. I can walk down with an empty bucket, but I am not able to carry a full bucket of water up to my home. They have to make another pump to simplify access to water"*.

In many cases, only one or a few pumps or water wells are available. In the Delta area, the government has provided a new well (picture 4.5), but according to locals, this well has never worked.

It is assumed that there is a relation between more sources of income and better access to drinking water. By doing statistical analysis this hypothesis has to be rejected. There is only a significant and very weak relation (Cramer's V = 0,144) between sources of potable water and sources of income in a household (appendix C). This means that households with more sources of income does not provide better sources of potable water than households with less sources of income.

The conclusion is that the sources of potable water are place specific and not income related. Everyone in a village or specific area has the same way to collect drinking water.

Picture 4.5: Water pump in Mussellele, South West Region, 2014.

Communication & transportation

Communication and transportation are the final important features to assess households physical assets. As a result of a relatively good electricity supply, most households have one or more mobile phones, a radio and a television (table 5.5). As of 2008 Cameroon was, with the Democratic Republic of Congo, a top leading market for mobile telephony in Central Africa, with around 4,5 million subscribers (30% of the total population) (Dominguez-Torres & Foster, 2011).

The last years the use of mobile phones has only increased. The number of subscribers has risen to approximately 9 million subscribers (45% of the population) in 2012 (iHub, 2012).

In the rural households of the research area, almost 93% of all households have one or more mobile phones. Especially in households with people between 16 and 40 years there are many mobile phones. Only households with elderly people have less mobile phones. Televisions and radios could also be found in most households in the research area. This is in contrast with internet access. Especially rural people do not have access to internet. This is also the case in the research area.

Besides communication, transportation is an aspect of a livelihood's physical capital. Having own transport may indicate more welfare and sustainability of households. As shown in table 5.5 most households in the area of research do not have their own means of transportation. Only 28 households have motorbikes (14%) and 18 households (9%) have cars at their disposal. In comparison with statistics of households in Yaounde (2010), whereby 44% of the households have personal cars or motorbikes (Valérie & Epo, 2013), only 23% of the households in the area of research have personal cars or bikes (table 5.5).

Because of the high costs to have cars or motorbikes only a few households can afford it. In the forest area there are more households with their own transport than in the other areas. As seen in section 4.8 about the financial capital, households in the forest area have on average a higher income than those households in other areas. This is the reason why people in this area can afford it to buy a motorbike or a car for own use. People without own means of transport make use of taxi's and taxibikes for short-distance transport to towns, markets and family or friends. For longer distances people make use of public transport busses.

Table 4.8: Frequency of households with physical assets: communication & transportation in South West Region, 2014.

Communication	Frequency per area				Total
	Mountainous	Coastal	Forest	Delta	
Mobile phone	43	48	45	49	185
Radio	33	25	28	29	115
Television	41	38	43	43	165
Transportation					
Motorcycle	2	5	14	7	28
Car	5	3	7	3	18
Bicycle	0	0	2	2	4

4.2.5 Social Capital

Social capital is defined as the social resources upon which people rely in pursuit of their livelihood objectives. It is generally interpreted as the degree of trust, co-operative norms and networks and associations within a society. Shortly, social capital comes down to the people you know and the people who know you. In general it is complicated to measure social capital in statistics, but with qualitative data through interviews and observation it is possible to create an image of relations between people and households. According to Coleman (1988) two types of social capital can be distinguished: family social capital and exterior social capital (Coleman, 1988).

In rural Cameroon the role of the family is very important. In many households, the traditional division of roles between men and women still exist. In nuclear households, the head of the household is the man, who makes all decisions for expenditure. Only in a few cases decisions are taken by the family. This means there is still some gender inequality in the research area. Despite the fact that more and more girls are going to school, they often get children at a young age. Many of them continue living in the family home and continue their education. This illustrates the fact that sometimes many generations can live in one household in the research area.

Some people said that if it is possible that families have to take care of other family members. According to them this is an unwritten rule in Cameroon. But some people of households with members living elsewhere in Douala or Yaoundé (usually absent) see a change of mentality. They notice more and more individualism of those usually absent members. In the beginning they receive remittances, but over time this is becoming less. Thus, family social capital is still very important in the four areas of research, but it is diminishing at some families with household members living and working elsewhere.

Besides the role of families, exterior social capital is recognized. Connections between other villagers are important in the area of research. This exterior social capital consists of the quality, structure and density if social relationships and interactions between households.

To start with, each village has its own chief. Those chiefs have a special status in the villages. Even though they are not officially designated as mayor, they are in the eyes of the residents very important. The chiefs determine what is happening in the villages and in cases of disputes, they judge. Upon arrival in some areas of research it was necessary to ask the chief permission to do surveys and interviews. This means that in those rural villages there is an informal hierarchy. This hierarchy is mainly maintained by original inhabitants. Most people coming from other areas and regions have less affinity with those local chiefs.

Moreover, it seems that connections play an important role in the livelihood of households. For rural people in small villages it is important to know their way in the rural community by knowing some informal agreements, information and norms. In view of the fact that more and more people from the North Western region migrate to rural villages in the South West, it is very difficult to maintain certain connections and relations and build some connections of trust. For those migrants it is difficult to get involved and understand the social community of their new living area. Moreover, social cohesion in villages is of major importance to create peasant organizations. Only those peasant organizations can count on possible support from government institutions for improving their situations.

4.3   Conclusion

This chapter showed that there is a wide variety of households in terms of size, composition, gender, age, and place of birth. Al those aspects contribute to a broad overview of all households in the research area. Most households are male-headed and nuclear with 4-6 household members. There are a few extended families and almost 25% of the households are female-headed. The high number of female-headed households can be explained by a high proportion of women in the research area. Especially the amount of young women is much higher than that of young men. The gap between the amount of boys and girls is difficult to explain and it is assumable that it is just based on coincidence.

The place of birth and previous place of residence are good indicators to see whether people are tend to move. The majority in the research area is born in the same place as the current place of residence. Although there are many people who are born in the North West region and not originated from the South West. These people most likely move to the coastal, the forest and the delta area. The coastal and forest area are actually perfect for agriculture. The reason why migrants also go to the delta area is because of its location, close to Douala, the economic center of Cameroon. Only a few people migrate to the mountainous area. The people in the mountainous area do not move to often and when they do, they move within the area. People in the coastal area and in the delta area are more dynamic and are roughly said continually moving between and within different areas.

In this chapter also the influence of five different forms of capital on livelihoods is analyzed to give an answer on the question "*which different livelihood assets are present in the South West Region and what importance?*"

The human capital based on education is important for livelihood strategies. Based on the level of education households have options to improve and try to sustain their livelihood. In many cases migration is in line with the improvement of livelihoods by education. Institutions of higher education are mainly based in cities and not in the rural areas of the South West region. Moreover, people with higher levels of education completed are more able to diversify their sources of income or to improve at least one source of income. In this way human capital can be seen as the beginning, but also as a result of livelihood diversification.

Natural capital is in general the capital to identify in which extent agricultural transformations impact livelihood strategies. People in the mountainous area have on average less (farm) land than people in the forest area, coastal area or delta area. In the coastal and delta area, a lot of people make use of coastal resources, for example through fishing. In the forest area, in Ediki and Mbalangi, people have more access to forest and this is why they can easily use wood to build their houses.

Ownership of land is also an indicator for natural capital. Despite the fact that households in the mountainous area and forest area mostly own their land, there is in the whole area no relationship between the amount of sources of income and ownership of land. In the coastal and delta area, many households are renting their plots.

The kind of crops cultivated in the four areas differs due to the geographical location. Farmers in the higher situated mountainous area have other main crops than farmers in other areas. Despite the very fertile volcanic soil, farmers in the coastal area have to abandon certain crops because of breezes. In the forest area there is more coco and rubber cultivation due to significantly higher temperatures. Those farmers are then able to sell those crops to larger companies. Compared with farmers in the other areas, they are not completely dependent on local markets.

Notwithstanding some weak relations between the amount of sources of income and the assets of natural capital, statistics show that there is no single relation, with a certainty of more than 95%, between the amount of sources of incomes in households and the natural characteristics of the households. Natural characteristics do not determine the amount of sources of income. Natural capital in this situation can therefore best be used to see in which extent this kind of capital is changed in the last years. In chapter 7 these changes are elaborated.

The financial capital has the biggest influence on livelihood strategies. Income determines the level of sustainability. Income is highly dependent on the amount of sources of income in a household. Lower income will without questions lead to new livelihood strategies. Households with high incomes will continue their strategies because their strategies are leading to sustainability.

Physical capital is important, but does not lead to different livelihood strategies. The construction materials of houses, the availability of electricity or potable water is not causing migration or income diversification. In this way, physical capital is in the South West area of least importance. The majority of houses is built with descent materials. Besides electricity is available everywhere, despite regularly failures. Most important for local people is better access to potable water.

For people in the research area social capital is an important asset to measure their sustainability. Having family, friends and other relations, households are more sustainable. Moreover, social capital is important for changing the agricultural situation in those rural areas. In line with that and together with creating peasant organizations in the rural areas is key.

5   Livelihood strategies

This chapter examines different sources of income and different livelihood strategies. In this chapter the third sub-question "*to which extent do different livelihood assets and different characteristics of households effect different household's livelihood strategies in the South West Region?*", is answered. The previous chapter was about households by region, but to point out a clearly in-depth analysis per household. As mentioned in the previous chapter, the first section of this chapter elaborates on sources of income of individual households. The amount and differentiation of sources of income is essential for analyzing livelihood strategies. Therefore the livelihood strategies of individual households are analyzed in the second section.

5.1   Sources of income

There are a lot of different households in the South West Region of Cameroon. They differ in number of people, head of households, gender and age of household members, place of birth and economic activities. In this section the main economic activities, but also the additional economic activities are elaborated. The kind of main activities, but also the kind of additional activities give an indication in which extent those households depends on a certain way of living. Many of the households consist of people with both main economic activities as well as additional economic activities. Those additional economic activities are often necessary to get a more sustainable income. In some cases, only a main income activity is not enough to sustain the household.

In line with this part about main and additional economic activities a categorization for sources of income is made, because it is difficult to categorize households on their level of income. As mentioned before, through making a categorization of households it is possible to find relations between households and different livelihood assets.

Categorization of main activities and additional economic activities

In this section an overview of main economic activities and additional economic activities of the research population is given. In this part, only the activities of *resident* household members are examined, because this research is about daily activities, farming practices and non-farm employment in the selected rural villages.

According to the previous section 932 people from the 200 households of the research are residents. In those 200 households there are 343 resident household members with a main income activity and 155 members with an additional economic activity (table 5.1). Because the villages are

rural-based, it makes sense that most people are involved with agricultural activities. More than 50% of the people with a main economic activity is a farmer. In addition, the percentage of people who are farming as an additional economic activity is even higher with more than 60%.

Table 5.1: Frequency of people having main economic activities and additional economic activities in South West Region, 2014.

Main economic activity	Frequency	%	Additional economic activity	Frequency	%
Farming	175	51,0	Farming	97	62,6
Business	40	11,7	Business	23	14,9
Seamstress	14	4,1	Fishing	5	3,2
Teacher	14	4,1	Seamstress	3	1,9
CDC*	12	3,5	Building	3	1,9
Hairdresser	11	3,2	Sandmining	3	1,9
Other	77	22,4	Other	21	13,6
Total	343	100,0	Total	155	100,0

* Cameroonian Development Cooperation (CDC)

Picture 5.1: A business (small shop) in Bonakanda in the mountainous area, South West region, 2014.

In the research area 40 persons have a business as a main economic activity and 23 persons as an additional economic activity. In this context a business is a small shop, bar or restaurant, next to people's home (picture 5.1).

Furthermore, in the column of people with an main economic activity, there are 14 seamstresses, 14 teachers, 12 persons who work at the Cameroonian

Development Cooperation (CDC) and 11 hairdressers. Eventually there are 77 people with other kinds of employment, like doctors, midwifes, taxi drivers, policemen, architects and technicians. Some people in the delta area are doing sandmining as an additional economic activity. Due to the geographical location of this area, there is a lot of sand that can be used as construction material. There are also 21 people with other kinds of additional economic activities, like shoemaker, cleaner or hairdresser.

Categorization of sources of income

This part points out a categorization of sources of income, because it was difficult to make a reliable categorization on levels of income. Respondents of the household survey had difficulties to precisely tell their total income in one year. It is clear that expenditures are measured with greater accuracy than incomes, especially in the case where a large part of these incomes originate from the agricultural and informal sector. This observation is particularly pertinent for a developing country like Cameroon where, according to a national survey only 8.6% of the households surveyed declared having earned incomes higher than their expenditures (Epo & Baye, 2013; Fambon & Baye, 2002). Consequently, it is impossible to make a categorization on income level. This explains the exclusion of income as a means of comparison.

Therefore, a categorization on diversification of income is used in this research. Substantial evidence has been produced in the literature that points to the increasing importance of multi-activities and diversification of employment (Epo & Baye, 2013). This is because rural households tend to participate in both farm- and non-farm activities in order to buffer shortages in income.

The composition of household incomes are divided in different subgroups of income:

➢ Agricultural production: the amount of money earned by selling crops.

➢ Livestock: amount of money earned by selling livestock and fishery.

➢ Self-employed work: income earned by informal activities as hairdressing or businesses.

➢ Salaried employment: income earned in the formal sector.

➢ Pension: money received after retirement.

➢ Remittances: money received from family members, friends or other.

➢ Other: other means of income.

Among the 200 households of this research there is a broad variation of incomes. In these households, there are 474 people who are receiving an income. In general, 163 persons have income through their agricultural production and 28 households only have income through their agricultural production. 56 persons have income by selling their – or parts – of their livestock. Income through livestock is in most cases a source of additional income, because there is only one household whose income is entirely dependent on livestock. 129 persons have income by self-employed work and 6 households only have income through self-employed work. Only 51 persons have income by salaried employment (table 5.2), while 4 households have salaried employment as only source of income. Almost 75% of the rural population in the research area has income from the informal

sector, which means that their income is not taxed or monitored by any form of governmental institution. In this case people with agricultural production, livestock and self-employed work are not taxed. These therefore belong to the informal sector.

In the research area 20 people are receiving a pension and there is no single household that only has income by pensions. 54 persons say that they get remittances from family members of friends. Only two households have only income through remittances. The amount of this type of income can differ from reality, because not everyone is willing to share information about received remittances.

Table 5.2: Frequency of people with certain type of income in South West Region, 2014.

Sources of income	Frequency	%
Agricultural production	163	34,4
Self-employed	129	27,2
Livestock	56	11,8
Remittances	54	11,4
Salaried employment	51	10,8
Pension	20	4,2
Other	1	0,2
Total	474	100,0

It is important to mention that one household can have more sources of income. Therefore a division is made between households with a certain amount of sources of income. There is no household with no sources of income. Every household has at least one source of income (table 5.3; appendix B). There are even 41 households with only one source of income. This can be explained by the fact that for instance a household is completely focused on agricultural production. Because the area is rural-based, this is often the case. It can also occur that a household only gets income from its self-employed work, like a business. Because when a business is doing well, it is not immediately necessary for a household to have more sources of income. More than 75% of the households have at least two sources of income. Most of those households have two sources of income and there are only 3 households with five sources of income.

Table 5.3: Income diversification in households in South West Region, 2014.

Amount of sources of income per household	Frequency	%
1	41	20,8
2	86	43,7
3	49	24,9
4	18	9,1
5	3	1,5
Total	197	100,0

As mentioned in chapter 1, the hypothesis is that a higher amount of sources of income is indicating a more sustainable livelihood. According to the theory it is arguable that households with more than one source of income have diversified their livelihood and have more financial capital. When households have more financial capital, they will be more sustainable. Consequently, the level of sustainability depends in this research on the amount of sources of income. However, it is necessary to keep in mind that households with only one source of income can have a high income. A household that totally depends on farming can have a high level of income when it has a lot of fertile farmland that allows to cultivate and produce a lot of crops. Overall, a categorization on the amount of sources of income will be a good indicator for the sustainability of households in the South West Region of Cameroon.

There are differences between amount of sources of income in four different research areas. In the forest area, in Ediki & Mbalangi, most households have only one source of income. Overall, in the forest area, the household have in comparison with the other areas less sources of income (graphic 5.1). The mountainous area has the most households with different sources of income. They have the largest amount of household based on 3, 4 and even 5 sources of income. In this area, people differentiated their sources of incomes the most of all areas. In the forest area there is the smallest amount of differentiation.

Graphic 5.1: Income diversification in four areas in the South West Region, 2014.
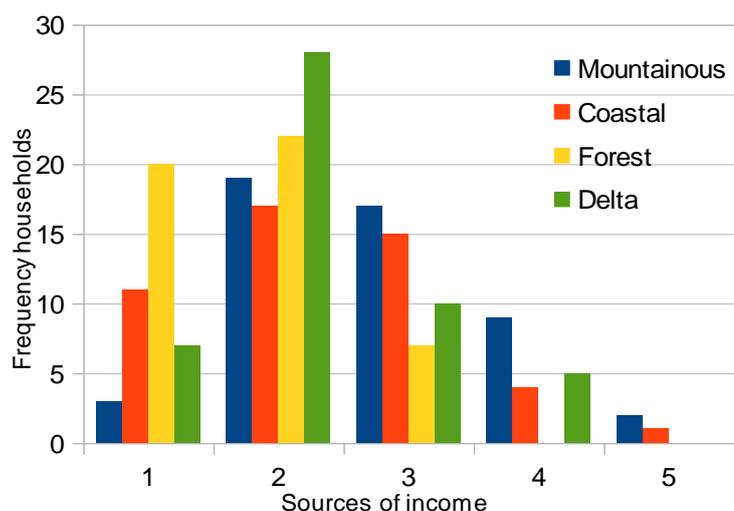
5.2   Livelihood strategies

According to the theory discussed in previous chapters there are several livelihood strategies. In general, individual households can be divided in a particular category of livelihood strategies. As discussed in the theoretical chapter, in this research migration is categorized as an aspect of diversification, because migration provides differentiated sources of income. Therefore in this chapter attention is paid to two important livelihood strategies:

o   Diversification;

o   Specialization.

According to the theory, a household is categorized as diversified when it receives less than 25% of its income from one single source and specialized when it receives more than 75% of their income from one single source. In this analysis a diversified household receives less than 50% of its income from one single source. Specialization is another important livelihood strategy and those households can be categorized as such when they receive more than 50% of its total income from one source.

5.2.1 Diversification

Diversification is one of the most important livelihood strategies. By diversifying sources of income, households are able to reduce risks leading to less vulnerability. Moreover, diversifying their sources of income gives them opportunities to earn more income, because they are not reliable anymore on only one or two sources of income.

Migration

The previous chapters pointed out that diversification is an important strategy in the South West Region of Cameroon. As described in chapter 2 about migration strategies, rural-urban migration nowadays is a highly studied phenomenon. In Cameroon, current migration flows take the form of a general movement from the countryside to the cities, on the one hand, and a tendency to emigrate to Europe, particularly France, on the other. Many people move from the northern regions to the south and from the western part of the country to Douala and Yaoundé for reasons related to the economic crisis and some agricultural transformations.

Cameroon has one of the highest rates of internal migration in Central Africa. It becomes clear that there are different reasons for Cameroonian people to migrate. The way in which migration decisions are made depends on the decisions taken by their kin. Migrants do not solely move to pursue their own goals and fulfill their own purposes, but also those of their extended

family. In Cameroon, decision-making for migration is strongly affected by social and cultural institutions such as extended families, communities and local associations (Fleischer, 2007).

In the four areas of research inward and outward migration is continuous. Many people nowadays living in the South West originated from the North West region. The Bamenda Highlands in the North West has an important diversity of flora and fauna and considerable water resources. There are some settlements in this area with a variety of population density. Although there is a huge pressure on available cultivable land. Due to high population growth, farmers have no choice but to migrate. Because of their agricultural background, those people want to have their own plots of land to cultivate crops and have some livestock. This is one of the reasons why there are many people from the North Western living in the rural villages in the South West. These incoming migration puts a lot of pressure on the available farm land in the South West. Therefore, some households in the research areas have to change their migration strategies. So, in a lot of cases some household members are absent in the rural villages, but by remittances they do contribute to the household livelihoods.

Consequently, the number of people that contribute to the households, but those who are mostly absent, can be used as a good indicator for migration strategies. According to the theory about migration in Sub-Saharan Africa migration as a livelihood strategy is also mediated by access to assets. Those who move tend to be young, physically fit and often better educated than average, and have access to urban-based social networks. As shown in the latter section, the 200 households consists of at least 1103 people. In the research area, 932 people are resident and 171 people are usually absent. This means that 15,5% of the people are usually absent.

The people who are usually absent have migrated to different places: nearby villages, villages in the same district, towns or city and abroad for education, work or other reasons (table 5.4).

Table 5.4: Frequency of usually absent people for current location and reason of leaving in South West Region, 2014.

	Education		Work		Total	
	Freq.	%	Freq.	%	Freq.	%
Nearby village	24	32,9	31	31,6	55	32,2
Village in same district	7	9,6	15	15,3	22	12,9
Town/ city	36	49,3	37	37,8	73	42,7
Abroad	6	8,2	15	15,3	21	12,3
Total	73	100,0	98	100,0	171	100,0

Most people are migrating to a nearby village, a town or a city. There are 24 people who migrate for education to a nearby village and 31 people for work. Almost 50% of the people who leave for education have migrated to a town or city like Yaoundé, Douala or Bamenda. These cities have more educational, but also more employment opportunities. Only 21 people in the area have migrated to foreign countries like neighbouring countries like Equatorial Guinea, Nigeria or Congo or countries like South Africa, the United States or Germany.

Migration is in many cases in the South West Region the last option for a new livelihood strategy. As described in the theoretical framework, migration as a livelihood strategy is also mediated by access to assets. Those who move tend to be young, physically fit and often better educated than average, and have access to urban-based social networks. It should be said that many young people just migrate for better education. Overall, there are 19 households with diversification strategies who are focused on migration as an additional strategy.

Size and type of a diversified household

The size and the type of households are indicators for analyzing different livelihood strategies. In this chapter the size of a households includes households members who are usually absent: it is about *stretched* households. More than 60% of the households involved with diversification have between three and six household members. Only 20,3% of all diversified households are female-headed. Those female-headed households consist in most cases of one to five household members (graphic 5.2).

Graphic 5.2: Frequency of male- and female-headed households with a diversification strategy per size in the South West Region, 2014.
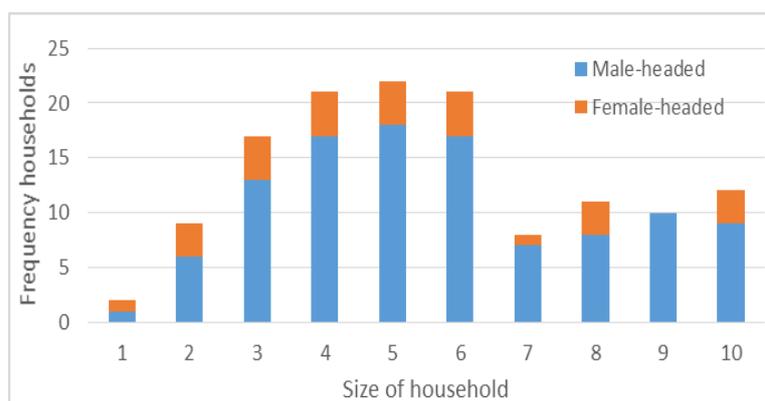
In the cases of households with migration strategies most children of a head of a household and his spouse are migrants working somewhere else. For example, there is one household with members working and living in the same region in Tiko and Buea, but there are also households with migrants working in other countries. There is one family, consisting of 9 members, with children working in Douala, the United States and South Africa. Only in a few cases the head of a house or his wife are migrants and are working somewhere else. In one case the spouse is working in Libanon and in another case the head of the household is working in Congo.

Level of education

The level of education is also an important aspect for choosing a livelihood strategy. Households involved with diversification have huge differences in level of education. In nuclear households, primary school is the highest level of education completed by most parents. In many cases their children have completed or are still completing higher levels of education. Some of those parents have completed higher levels of education like advanced level or are even graduated from university. The level of education has an impact on different sources of income. When members in households have completed higher levels of education, they are more capable to diversify their sources of income.

In line with the previous, most household members involved with migration have higher level of education completed. In some cases, the parents only have completed primary school, but most children and people below 40 years have at least completed the Ordinary Level or Advanced Level and most members living in foreign countries have even graduated from university.

As mentioned earlier, many households have children living somewhere else for educational purposes, but those households are not categorized as households with migration strategies. Because of increasing awareness of the importance of good education, many parent in the South West Region are sending their children to other towns with better educational institutions hoping that their children get education of a high level. This should eventually lead to employment and a higher income level than the parents are used to.

Sources of income

In line with the previous, the sources of income are an important factor of diversified households. As mentioned earlier, households with migrants and households with less than 50% of their total income received from one single source of income are diversified households. Most households have a combination of incomes from agricultural production and self-employed work. Besides there are some households who get an income from salaried employment, self-employed work and agricultural production. All those combinations are neither related to the size of the household nor related to the fact if a household is male- or female-headed. The diversification of sources of income is highly related to level of education. Household members with salaried employment have completed higher levels of education than those household members with agricultural production or self-employed work. This can be explained by the fact that it is necessary to have qualifications in order to find salaried employment. People with a lower level of education complete, are more involved with agricultural production and self-employed work like businesses and restaurants.

In the case of migration strategies, most households do not have many sources of income, because they receive remittances from members who are working somewhere else. Besides those remittances some households get some income from agricultural production or by doing self-employed work. There are even households involved with salaried employment.

Level of income

Most households focused on diversification of their sources of income fall into the lower income classes. Almost 36% of the diversified households have an income less than € 762 a year and 28,2% of the households have an income between € 763 an € 1.524 a year (table 5.5). More than 35% of the households have an income of more than € 1.525 a year. It can be concluded that diversification of income does not automatically leads to higher levels of income. Nevertheless households with migration strategies are in many cases very sustainable households. Migration and the additional remittances ensure sustainable livelihoods. Especially those households with migrants working and living in foreign countries have higher levels of income.

Table 5.5: Distribution of income for households with a diversification strategy in South West Region, 2014.

Income classification	€ 0 – € 762	€ 763 – € 1.524	€ 1.525 – € 2.287	€ 2.288 and more	Total
Percentage households	35,9	28,2	16,8	19,1	100,0 n = 131

Diversification per area

There are almost no differences between the amount of households with diversification strategies in the four different areas in the South West Region. In the mountainous area 31 households have diversification strategies whereby 8 households are also involved with migration (table 5.6). The coastal area has also 31 household with diversification strategies, but only three households with migration as a extra strategy. In the forest area 33 households have diversification strategies and in the delta area even 38 households. In those two areas there are 4 households each involved with migration.

Table 5.6: Diversification per area in South West Region, 2014.

Diversification	Mountainous		Coastal		Forest		Delta		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Households	31	23,3	31	23,3	33	24,8	38	28,6	133	100,0

Conclusion

In the research area it is clear that most diversification strategies can be explained by levels of education and that size and type of households does not play an important role for choosing diversification as a livelihood strategy. However, larger households with more educated children and households with members who have completed higher levels of education have more opportunities to diversify their sources of income. Although this diversification does not directly leads to higher levels of income in Cameroon's South West region.

Ongoing migration is an important aspect to determine some migration strategies. Most of the people in the research area migrate to a nearby village, a town or a city. Only a few migrate to foreign countries, most likely for education and employment. Households in the South West Region of Cameroon with migrated members are in general more sustainable. Most households with migrants have highly educated members who are able to find employment in cities or even abroad. By having salaried employment somewhere else, those migrants are able to send remittances to their household. Because of those contributions, households with members who are usually absent can make a sustainable living. It can be concluded that the theory about migration is true in the case of South West Cameroon. Migrants from this region are often young, physically fit and often better educated than average.

5.2.2 Specialization

As the opposite of diversification there is the strategy of specialization. Specialization of one source of income can lead to a high income level when the economic income activity is highly profitable. Households with only one source of income and without additional economic activities are categorized as households who have a strategy of specialization. Following this definition there are 65 households in the research area with a specialization strategy.

Size and type of household

Like the previous section, the size and type of households are analyzed in order to find an answer in which extent the size and type of a household determine a household's strategy. Regardless the size of households, specialization of sources of income can be found anywhere. Almost 22% of the specialized households are female-headed, but also this is neither an indicator for specialization strategies, because female-headed households can be found in households with all kind of sizes (graphic 5.3).

Graphic 5.3: Distribution of male- and female-headed households with a specialization strategy per size in the South West Region, 2014.
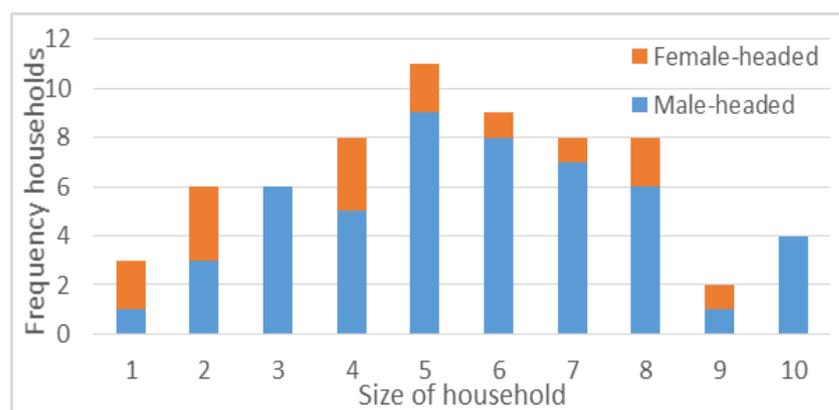
Level of education

Households members involved in households with a specialization strategy has completed different levels of education. However, most household members only have completed primary school. Especially older household members have lower levels of education completed. Although most younger people in those households do not have high levels of education completed. This low level of education in those households results in specialization strategies.

Sources of income

Most households with specialization strategies are specialized in agricultural production. This is a way of having an income without having high levels of education. Many households are completely focused on agricultural production and in several households, each income generating member is involved in that production. Besides, there are some households with only self-employed work. These are households with a restaurant or a shop. The kind of sources of income is not related to the type of a household with a specialization category. Female-headed and male-headed households are equally concentrate on only agricultural production or self-employed work. It seems that households with more members are more specialized than households with less members. The share of households with 4 or more members is larger for specialized households then for diversified households.

Level of income

Specialization is a strategy used by many households, almost one third of the research population. More than 50% of the households with a specialization strategy has an income between € 763 and € 1.524 (table 5.7). 12 specialized households can be considered as very poor with an

income lower than € 763 CFA a year and even 13 households (20%) have an income of at least € 2.288 a year. In most cases specialization leads to higher levels of income and in several cases to sustainability.

Table 5.7: Distribution of income for households with a specialization strategy in South West Region, 2014.

Income classification	€ 0 – € 762	€ 763 – € 1.524	€ 1.525 – € 2.287	€ 2.288 and more	Total
Percentage households	18,7	51.6	9,4	20,3	100,0 n= 64

Specialization per area

Like the distribution of diversified households there are no huge differences between the amount of households with specialization strategies in the four different areas in the South West Region. In the mountainous area and in the coastal area 18 households have diversification strategies (table 5.8). The forest area has 17 households with specialization strategies, and the delta consists of only 12 households with specialization as main strategy. Households in the delta area are less focused on specialization, because the geographical circumstances do not allow them to focus entirely on agricultural production. This is the main reason why households in the delta area try to diversify their sources of income.

Table 5.8: Specialization per area in South West Region, 2014.

Specialization	Mountainous		Coastal		Forest		Delta		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Households	18	27,7	18	27,7	17	26,2	12	18,4	65	100,0

Conclusion

In comparison to households with a diversification strategy, specialized households have higher levels of income. This is strange when having completed levels of education in mind. It is assumed that households with higher levels of education completed are more diversified and therefore have higher levels of income. But this assumption appears not to be entirely true. Households consisting of more members and having lower levels of education completed, are almost all focusing on agricultural production, which often leads to higher incomes. The assumption that only diversification leads to more sustainable households is not true. Specialization appears to be a good option for households with many members having lower levels of education completed.

5.3   Conclusion

Employment and other economic activities are important indicators for the sustainability of a household. In this research a categorization of households is made in order to make a statistical analysis of livelihood assets compared to the economic situation of a household. Farming is the most important economic activity. More than 50% of the economic active people in the research area are farmers. Some households have more sources of income, for instance because of additional economic activities or because of different household members doing different kind of things to earn money. Because it is difficult to get a reliable estimation of the total income per household, a categorization for sources of income is made. A household can have different sources of income and the assumption is, that when households have more sources of income, it is more sustainable. This will be tested in the next chapter by means of different livelihood assets.

In this section household characteristics of different livelihood strategies are summarized in a schematic overview (table 5.9). This table shows the different aspects and characteristics of households with different livelihood strategies.

Table 5.9: Main household characteristics per household strategy in South West Region, 2014.

Household characteristics	Diversification	Specialization
Size	3-6 members. Migration households are larger	2-8 members
Level of education	Older people have primary school. Younger people are more educated. Households with migrants have high level of education	Primary level and in some cases a higher level completed
Sources of income	Agricultural production and self-employed work or salaried employment and migration households receiving remittances	Mostly agricultural production
Level of income	Mainly households with an income of less than € 1.525 a year and migration households with more than € 1.525 a year	80% of the households have an income of more than € 763 a year
Area	Most diversified households in delta area, then forest area and then mountainous and coastal area	Most specialized households in mountainous and coastal area, then forest and delta area

6   Changes in comparison with ten years ago

To give an answer on the sub-question *"to which extent livelihood assets and livelihood strategies are changed in the last ten years?"* about agricultural changes and changes in livelihood strategies in the last ten years, different characteristics are examined. A period of ten years can give a good overview of several changes in the area. Despite the fact that respondents do not always know exactly how and what is changed, they can give an indication in a broad sense whether some aspects of their livelihood or agricultural situation is changed. First, the influence of agricultural transformation on livelihood strategies is analyzed. This is done by examining the changes farmer's labour input, and their non-labour input (use of fertilizers and sprays), and their output of different crops for consumption and sale. Besides the changes in size of (farm) plots is analyzed to identify in which extent this has an impact on livelihood strategies. Secondly an analysis is done for changes in income and main activities, whereby respondents can say in which way their income is changed and if their household's main activities are changed. This chapter ends with an conclusion in order to answer the sub-question.

Labour and non-labour input

In this section the changes in the last ten years of labour input and non-labour inputs of farmers in the research area are described. Labour and non-labour inputs are important aspects to do an analysis about changes in the agricultural sector. Because of the presence of many small-holder farms it is interesting to find out in which extent changes have taken place. In recent years non-labour inputs have gained importance in sub-Saharan Africa. In Cameroon more and more non-labour inputs are used. To find out whether and in which extent farmers in the South West Region of Cameroon have changed their non-labour input, respondents were asked if they, compared to ten years ago, use less non-labour input, the same amount of non-labour input or more non-labour input.

Besides the change in labour-input is an indicator for changes. It is possible that because of certain innovations, for example agricultural tools and other production assets, can make the work easier. In this case, both labour input from the household (family) as well as hired labour, are counted as input.

In comparison with ten years ago, most households are using more labour input (142 households) as well as more non-labour inputs (86 households) (table 6.1). The main reason for the increase of labour input is that according to table 6.4 most households have increased their size of farm plots. When there are no production assets, more land will lead to more labour input and in

certain cases to more non-labour input. Non-labour input is moreover more dependent on other factors as described before. Many households do not have enough money to buy non-labour inputs as fertilizers and sprays. In addition, some farmers do not see fertilizers and spray as priority. Because of a lack of knowledge about those non-labour inputs, many farmers do not trust it.

Table 6.1: Changes in labour input and non-labour input in South West Region, 2004-2014.

	Labour input		Non-labour input	
	Frequency	%	Frequency	%
Less	10	5,9	4	3,6
Same	18	10,6	22	19,6
More	142	83,5	86	76,8
Total	170	100,0	112	100,0

Between the four research areas there are some differences between changes in labour input in the last ten years (graphic 6.1). In the mountainous area farmers have increased their labour input more than in other areas, especially the delta area. Due to climatic changes and problems with crops, farmers in the mountainous area have now to put more effort in it. Some farmers are aware that their crops are affected more and more by insects and fungus. To counter this, the crops must be monitored continuously. Insects and fungus can destroy a whole harvest.

Moreover there are major differences in changes of non-labour inputs. In every area, except the mountainous area, most farmers have increased their use of non-labour inputs (graphic 6.2).

Graphic 6.1: Changes in labour input in four areas in South West Region, 2004-2014.
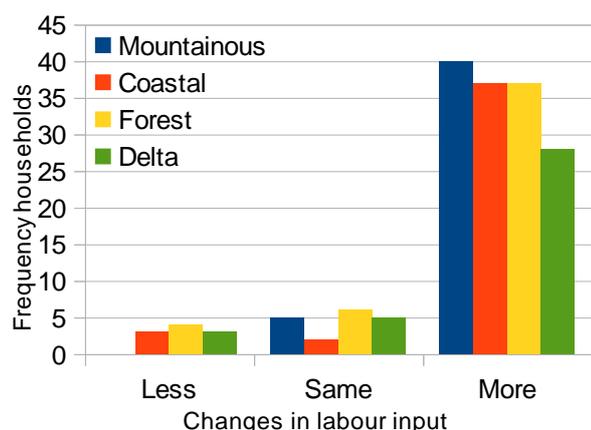
Graphic 6.2: Changes in non-labour input in four areas in South West Region, 2004-2014.
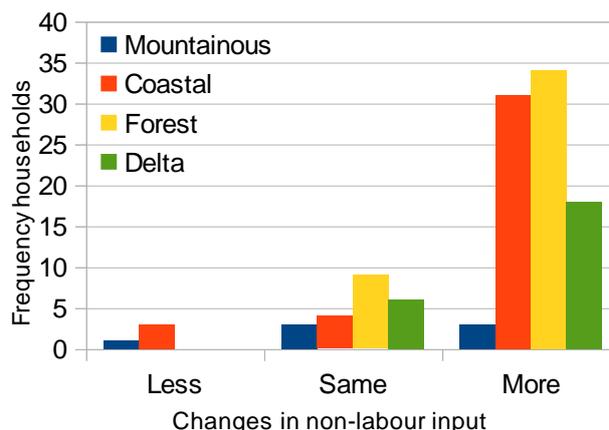
The use of non-labour input is increased in the coastal and forest area because the income of most farmers is increased. Because of this increase, more farmers are able to buy fertilizers and spray, but they also work together by lending their non-labour inputs to other farmers.

Changes in crops

Most farmers are continually changing their crops. There are different reasons for those changes. First of all it is important to keep seasonality in mind. Some crops thrive better in one season than another. A second reason is the global climatic change. This has also impact on crops cultivation in Cameroon's South West Region. The final reason for changing crops is the market. By cultivating certain crops farmers can make more money than by cultivating other crops.

The different seasons ensure that different crops are grown in the dry season than in the rainy season. But these changes are on yearly basis and are not impacted by a longer time period. On the other hand, the global climate change is in the last years responsible for the fact that some crops, like plantain in the coastal area, and cassava in the mountainous and forest area, only can be cultivated to a limited extent or even not be cultivated anymore. This is why farmers are growing other crops. The changing prices for crops in the last years is the last reason farmers are continually changing their crops. Most farmers only are cultivating crops that they consume themselves or crops that they can sell at good prices.

Crop output for consumption and sale

In line with the previous, changes in output of crops for own consumption and for sale are analyzed. Respondents were able to say if their crop output is changed or stayed the same in the last ten years. In 142 cases, the crop output for own consumption is increased in the last ten years and only at 6 households the output for consumption was decreased (table 6.2). The reason is that some farmers now have less farm plots than ten years ago. This is resulting in less output, both for consumption and sale.

Table 6.2: Changes in crop output for consumption and sale in South West Region, 2004-2014.

	Consumption		Sale	
	Frequency	%	Frequency	%
Less output	6	3,6	17	10,7
Same output	18	10,8	15	9,4
More output	142	85,6	127	79,9
Total	166	100,0	159	100,0

There are major differences in changes of output for consumption and sale per area (table 6.3). The majority of farmers in the coastal area have a decreased output for both consumption (92,8%) and sale (89,4%) in the last ten years. A smaller fraction of farmers in the forest area have more output for consumption (79,1%) and sale (77,8%). Farmers in the delta area have the lowest

increase of output for consumption (69,4%) and sale (70,6%) in the research area. The largest differences between crop output for consumption and sale can be found in the mountainous area. 89,9% of the farmers have increased their output for consumption and 81,0% have increased the output for sale.

According to some respondents an important reason of more output for consumption is the fertile soil: in most areas the soil enables farmers to cultivate a lot of crops. The soil in the mountainous area and in the coastal area is of volcanic nature. Those volcanic soils have many natural nutrients for crops. Overall, this is leading to more output. Even the amount of output for sale is increased at 127 households. 17 households have seen a decrease in output for sale. A reason is that when the size of farm land of a household is decreased in the last ten years, this has an impact on the output of crops. And people prefer to use their output for own consumption rather than for sale.

Table 6.3: Percentage of changes in output of crops for consumption
and sale in four areas in South West Region, 2004-2014.

Consumption	Percentage per area			
	Mountainous	Coastal	Forest	Delta
Less	0,0	2,4	9,3	2,8
Same	10,2	4,8	11,6	27,8
More	89,8	92,8	79,1	69,4
Total	100,0 n = 49	100,0 n = 42	100,0 n = 43	100,0 n = 36
Sale				
Less	9,5	5,3	13,3	14,7
Same	9,5	5,3	8,9	14,7
More	81,0	89,4	77,8	70,6
Total	100,0 n = 42	100,0 n = 38	100,0 n = 45	100,0 n = 34

Changes in size of plots

To explore how the size of household's (farm) plots has changed in the last ten years, respondents were asked if their total size of farm plots, either owned or rented, has changed. Over time, households are buying or renting new plots, but it is also possible that they sell their land. Ownership and land size is changing continually. Households who invest to increase their amount and size of (farm) plots, regardless buying or renting, are more likely to increase their output and to sell more crops.

Compared to 10 years ago, 102 households have increased their amount of land in size (table 6.4). Almost 80% of the plots who are increased are owned by households. The increase in rented plots is almost 20%. There are different reasons for those changes. In the case of increasing sizes, heritage is an commonly named reason, but also investment and need for more farm land is an important reason for the increase of land. Households, dependent on their budget and the possibility for getting loans, are buying or renting more (farm) plots.

Table 6.4: Changes is total size and land tenure of land in South West Region, 2004-2014.

	Decreased		Same		Increased		Total
	Frequency	%	Frequency	%	Frequency	%	
Owned by household	11	84,6	50	82,0	80	78,4	141
Rented	2	15,4	11	18,0	20	19,6	33
Other	0	0,0	0	0,0	2	2,0	2
Total	13	100,0	61	100,0	102	100,0	176

There are 13 households whose total land size is decreased. The decrease of land can occur on the one hand when households do not need their land anymore, for instance in cases of retirement. On the other hand there is the possibility of a change of main activities of one or more household members. In these cases it is often difficult to maintain farm plots.

Main activity

In this section an overview is given to which extent there are changes in household's main economic income activities. During years it is assumable that people change their main economic income activity. This part is about respondents who tell if and how their main activities are changed in the last ten years. Almost 50% of the households have experienced changes in their main activities. More than 51,5% of all households still have the same main activity (table 6.5).

Table 6.5: Changes in main activity in South West Region, 2004-2014.

	Frequency	%
Same main activity	102	51,5
Changed main activity	96	48,5
Total	198	100,0

In search of a better income, many households have changed their main income activity. Some farmers have changed their main economic activity because of disappointing output for several years. Some of them have started a business, others have tried to find other employment like taxi-driver or security guard. There are also changes the other way around. People with difficulties to find work, became farmers. There are also changes because of migration and mobility in the research area. Migrants usually find other jobs in their new places of residence then they used to.

Income

In this section an analysis is made about changes in income from rural households in the South West Region of Cameroon. The total household income is dependent on the sources of income. Income from agricultural production fluctuates dependent on season, output and sales. During the rainy season farmers cultivate other crops than during dry season. Farmers earn less money when their output is low and when they do not sell enough.

In general, respondents are able to say in which way their income is changed during the last ten years: is it deteriorated, is it still the same or is it improved? Almost 75% of the respondents said that their income was improved in the last ten years and that they are able to buy more goods. At 39 households the income is deteriorated, and in 16 households the income stayed at the same level (table 6.6).

Table 6.6: Changes in income in South West Region, 2004-2014.

	Frequency	%
Deteriorated	39	19,7
Same	16	8,1
Improved	143	72,2
Total	198	100,0

Graphic 6.3: Changes in income in four areas in South West Region, 2004-2014.
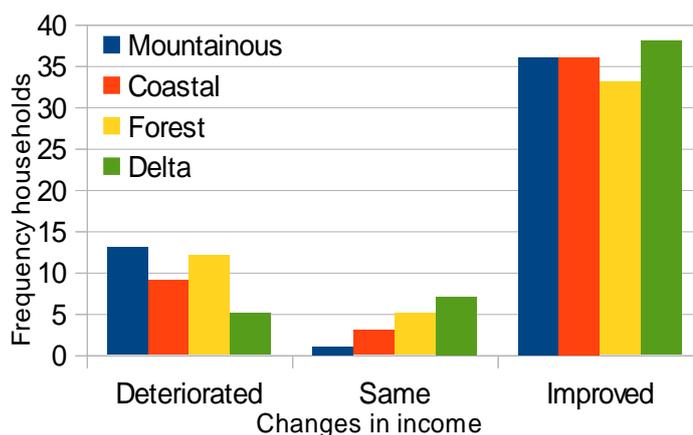
Between the four different areas there are not many differences. Especially in the delta area, when compared with the other regions, most incomes are improved and less incomes are deteriorated (graphic 6.3). Those findings are not directly in line with the previous chapter about incomes, because in general households in the delta area have the lowest incomes of all research areas.

The increase of most incomes can be explained by several factors. First of all, the fact that most households involved with agricultural production have experienced an increase of their crop output. Secondly the increase of household's incomes can be explained by the fact that some households are new: they exists of younger people who were children ten years ago and then went to school. When they have an income now, obviously it is improved. The third reason is income diversification. More and more households are getting more sources of income. This eventually leads to more sustainability and less risks dependent on the climate or the market.

Besides, the decrease of incomes in almost 20% of the households can also be explained by several factors. Retirements of older people is an important factor, but also a decrease of agricultural output. Some farmers have more problems because of climatological changes than others. A third reason is a lack of diversification. Households with only one source of income are more vulnerable for external shocks than households with more sources of income.

Conclusion

In general the income of households in the area of research is improved in the last ten years. These changes can be explained by diversification, but also by specialization of sources of income. Dependent on the location and the situation of the household a household choose a strategy. Diversification strategies are used to differentiate sources of income to reduces risks. By doing this, households are less reliable on one source of income like agricultural production. But according to findings in the previous chapter, specialization leads in most cases to more financial capital.

Agricultural transformations have an impact on having a certain livelihood strategy. Non-farm activities have become more important, because some respondents ten years ago had a lack of money to invest in new plots, fertilizers and spray, and had no other option than diversify their sources of income. In several cases they have improved their financial situation. However, some households have a deteriorated income due to the fact they do not diversify their income, or they do not intensify their agricultural input. But overall, most household with (farm) plots have intensified both their labour input and their non-labour input. Therefore, households in the rural area in the South West region of Cameroon are influenced by several agricultural situations, but not yet in a very sustainable way. Households in these areas will even be more sustainable when they get more and more influenced by agricultural transformations.

7   Conclusion and discussion

7.1   Conclusion

In Cameroon many agricultural transformations take place, and this also occur in the South West Region. Land tenure systems are changing, there are new forms of enterprises, there is intensification in use of labour- and non-labour input and most important the increased resort to non-farm employment. Due to those transformations, it is assumable that many rural households are changing their livelihood strategies in order to maintain or to create a sustainable household.

The purpose of this research was to investigate and explain the differentiated impact of agricultural transformations on livelihood strategies in four subregions in the South West Region of Cameroon. With this one gets a better understanding of the impact of agricultural transformations on poverty reduction and local development in the South West Region.

Four sub-questions were drafted to finally answer the research question*:

1) *"What is the socio-economic situation of the households in the region and how can this situation be explained?"*

2) *"Which different livelihood assets are present in the South West Region and what importance?"*

3) *"To which extent do different characteristics of households, different livelihood assets and agricultural transformations effect household's livelihood strategies in the South West Region?"*

4) *"To which extent livelihood assets and livelihood strategies are changed in the last ten years?"*

Socio-economic characteristics (sub-question 1)

The research results showed a wide variety of households in terms of size, composition, gender, age and place of birth, but no significant differences between areas. In the research area most households are male-headed, and nuclear with four to six household members. 25% of the households are female-headed. This can be explained by a high proportion of women in the research area. Especially the amount of young women is much higher than that of young men. The population pyramid of the research area showed a narrowing top, suggesting that there is a large proportion of young people, which is characteristic for developing countries. The narrow top of the pyramid represents the relative small proportion of elderly people.

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* As described in the introduction: "To what extent there is a differentiated impact of agricultural transformations on livelihood strategies in four subregions in the South West Region of Cameroon and how can this be explained?"

Only in terms of birthplace there are some differences between the four areas. People in the mountainous area only move within the area and moreover there are only a few people from other regions. People from other regions most often move to the coastal, forest and delta area, because the coastal and forest area are suitable for agriculture and the delta area is very close to Douala, the largest city in Cameroon.

Livelihood assets (sub-question 2)

From the theory five different but interrelated livelihood assets (capitals) are derived: human, natural, financial, physical and social. In the research area natural and financial capital appears to be the most important. The level of education completed is the most important aspect for human capital. Households with members that have completed higher levels of education have more possibilities to, for example, diversify their sources of income.

The natural capital is of most importance for analyzing the influence of agricultural transformations. Most households in the area of research have several (farm) plots. In general, these plots are owned, and only occasionally rented. The size of those plots differ by area. Households in the forest area have on average more land (in ha.) than households in the other areas, especially in the delta area, where the total size of plots in general is very small. Notwithstanding some weak relations between the amount of sources of income and the assets of natural capital, there is no single relation between the amount of sources of incomes in households and the natural characteristics of the households. This means that characteristics of natural capital do not determine the amount of sources of income.

The financial capital consists of income by wages, savings, remittances, pensions and others and determines the level of sustainability. There are significant differences between the level of income in the four subregions. It is assumed that income is highly dependent on the amount of sources of income in a household, but this is not the case in the research area. Households in the forest area with one source of income have higher income levels than households with more sources of income in other areas.

Physical capital is in the South West area of least importance. The construction materials of houses, the availability of electricity or potable water is important and almost the same in each subregion, but does not have an important influence on household's sustainability. Although some differences between subregions are found. Households in the forest area have larger houses and have in general more means of transport available. Finally, social capital is an important asset to measure the level of sustainability of households in the research area. By having family, friends and other relations, households are more sustainable. Connections and relations in the subregions are present at the same rate.

Livelihood strategies (sub-question 3)

The answer on the third sub-question is that diversification and specialization strategies are highly influenced by household's characteristics and assets. The majority of households with members with lower levels of education completed are focused on specialization of one sources of income, mostly agricultural production. Those households, mainly present in the mountainous, coastal and forest area, are therefore mainly affected by agricultural transformations, like changes in land tenure, the surface of their farm land, and the increase of labour- and non labour input.

Households with diversification strategies have more household members with higher levels of education completed. This can eventually lead to migration as an aspect of diversification, but also to diversification of sources of income. Those diversified households are more involved with self-employed work, like businesses and restaurants, and salaried employment in the service sector.

But in contrary to what is written in the theory about livelihood strategies, there are no differences in the levels of income of households that diversify or specialize. So livelihood capitals are of major importance for choosing a livelihood strategy, but the strategy is at the end of limited importance for the financial situation of a household. It should be said that households with a diversification strategy are less vulnerable for external shocks than specialized households.

Changes in the last ten years (sub-question 4)

In the last ten years most household's livelihood strategies are changed. More households are involved with more non-farm activities due to agricultural transformations, but also because changing circumstances. Most households still involved with agricultural production have experienced positive agricultural transformation, because they have more land, they use more labour and non-labour input, and consequently have more output of crops for consumption and sale. Although some households have experienced deterioration of their natural and financial capital, most households have experienced changes in a positive way.

Research question: a differentiated impact

The assumption that agricultural transformations have a differentiated impact on livelihood strategies in the South West Region has to be confirmed. Agriculture is of major importance in Cameroon, and therefore in the South West Region too. Originally most households are involved with agricultural production as their only source of income. But recent transformation processes in agriculture and land distribution have greatly contributed to changes in the livelihood strategies of rural households. However, these changes does not automatically lead to poverty reduction and regional development.

There are still many households with a specialization strategy who are dependent on agricultural production as their only source of income. These households were able to adapt more

easily to agricultural transformations. But, dependent on the form of agricultural transformations livelihood strategies are effected in each subregion differently. There is substantial evidence produced in the literature that points to the increasing importance of multi-activities and diversification of employment (Epo & Baye, 2013). This is because rural households tend to participate in both farm- and non-farm activities in order to buffer shortages in income. In the research area, more than 75% of the households have at least two sources of income.

As is argued in the literature diversification strategies should lead to more sustainability, but in the research area this is not always the case. Access to non-farm employment and alternative income generating activities is increased, but still many households with a specialization strategy are more sustainable than those with a diversification strategy. Nevertheless, as described in the literature, that households involved with migration as an important aspect of diversification strategies are more sustainable is often the case. But it must be said that the proportion of households with migrated members is small.

Despite the fact that specialization in the South West Region often leads to high levels of income, most households in the research area nowadays have a diversification strategy. This strategy of diversification is often caused by a deteriorating situation. Many households in the subregions, except in the forest area, have experienced that their income by agricultural production only, is not enough anymore. This is among others caused by climatic changes and soil degradation, by commercialization - with difficulties marketing and selling products in the local, national and international markets. The size of (farm) plots, and the availability of labour and non-labour input are also of major importance for determining the crop output for own consumption and for sale. Incomes from agriculture by small scale farmers may diminish as a consequence of population growth and competition from large-scale commercial agriculture. To be more sustainable and less vulnerable to those changes, households have tried to diversify their sources of income. To diversify sources of income education is, according to scientific literature, a key factor. The population in the research area recognizes that completing higher levels of education is of major importance to get possibilities getting involved with non-farm employment.

Livelihood strategies are also greatly influenced by livelihood assets, because the five different assets – human, natural, financial, physical and social capital - together determine the possibilities to maintain or change a livelihood strategy. And because agricultural transformations have a differentiated impact on those capitals, livelihood strategies are influenced both by livelihood assets as by agricultural transformations. Therefore, agricultural transformations alone do not determine different livelihood strategies completely, but have a huge impact, because the research area is still mainly based on agricultural production.

7.2   *Discussion*

The theme of this research, agricultural transformations and livelihood strategies is suited for a holistic approach. Nevertheless, because of a limited timeframe of three months, there is chosen for area specific local agricultural transformations and livelihood strategies. For conducting a reliable and representative research it was necessary to select carefully some research areas. A lack of available data of the rural population, made it initially difficult to select research areas. With some help from lecturers of the University of Buea, eventually eight villages distributed over four research areas were selected.

This research is realized by doing both qualitative research, and quantitative research especially. This study attempted to fully meet the criteria of validity, reliability and repeatability. Because of a language barrier with the research respondents it was necessary to get assistance for translation. Because of translations the reliability of the research decreases, but most often only in cases of qualitative research, and in less extent with quantitative research. Questionnaires leave less room for interpretation than interviews. Because this research benefits more from statistical data, this research is mainly based on data acquired by questionnaires, and only in a few cases when needed, supplemented by data acquired by interviews.

Another aspect that decreases the reliability is the answer of the respondents. In some cases respondents were not able to answer questions about general data for the household. For example they did not know the age or highest level of education of certain household members. Besides questions about changes in comparison with ten years ago were also difficult to answer, because mostly the memory is less reliable for such periods of time. This latter is a common problem in scientific studies.

For further research it is interesting to do an analysis in other areas in the South West Region of Cameroon. There are many areas, influenced by different aspects, such as climatic changes and agricultural transformations, which are important for households to determine livelihood strategies. This research has investigated the impact of agricultural transformations on livelihood strategies, but the institutional context has rather been neglected. It is interesting for further research to take the institutional context into account to determine to which extent livelihood strategies are influenced by institutions and to which extent institutions play a role to reduce poverty and to stimulate development in rural areas of the South West Region of Cameroon.

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Appendices

Appendix A: Questionnaire rural households

RurbanAfrica
Agricultural and rural livelihood survey

University of Dschang (Cameroon), University of Ghana, University of Rwanda, Sokoine University of Agriculture (Tanzania), University of Copenhagen (Denmark), Loughborough University (United Kingdom), International Institute for Environment and Development (United Kingdom), Université Toulouse II Le Mirail (France), Utrecht University (Netherlands)

This household questionnaire collects information on the daily activities, farming practices, non-farm employment and mobility of rural households in this village. With your consent this interview will last about 40-45 minutes. The information provided by you shall be confidentially used for research purposes only. You will not by identifiable in any datasets or publications.

Country	
Region/ Province	
Division/Sector	
Ward/Cell	
Village	

	Longitude:	Latitude:	Altitude:
if possible: GPS latitude, longitude and altitude			

Date (DD/MM/YY)	
Name Interviewer	
Full name Respondent	
Household Code	

Use always codes 00 or 99 for:	Code
Don't know/ no answer	00
Not applicable	99

Since when (year) has the household been resident in this house?	

FORM A: HOUSEHOLD DATA

➔ This study uses the concept of "stretched household": those who live in the house/compound + those members who live elsewhere but contribute to the household's livelihood.

A-1: General data for the household

HH Member ID	Name (in full)	Resident?	Relation to HH head	Gender	Age	Birthplace	Previous place of residence (before current one)	Ethnicity	Highest level of education completed	Main activity
		1. Resident 2. Usually absent	1. head 2. spouse 3. child 4. father/mother 5. brother/sister 6. grandparent 7. grandchild 8. other family: specify___ 9. other non-family: specify___	1. Male 2. Female		Specify location (district and village)	Specify location (district and village)	If applicable		1. Income generating 2. school 3. unemployed 4. retired 5. disabled 6. Subsistence production 7. domestic work 8. other (specify__)
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Does Head of household have other wives who are living elsewhere?		If yes: How many?		How many children do they have?	

A-2: For those HH members who are mostly or permanently away ("usually absent"code 2 from previous question)

HH member ID	Reason for leaving 1. Education 2. Work 3. Other Specify all	Current location 1. Nearby village 2. Village in same district 3. Town/ city 4. Abroad	Duration since leaving Years and months	How many times do they visit this household?	For what reason do they visit this household?

A-3: Information on economic activities of the resident household members

HH member ID	Main income generating activity (occupation) Specify__	Additional economic activities Specify__	Labour position 1. Self-employed 2. Employer 3. Permanent wage labour 4. Long term contract (one year and above) 5. Short term contract (less than one year) 6. casual wage labour 7. Family workers without pay	Place of non-agricultural employment (geographical) Specify the name of the place and distance in time and/or km			Employer If applicable
				Name of place	time	km	
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

A-4: Compared to 10 years ago, are there any changes in activity and/or income in the household?

Main activity		Income (tick appropriate box)			Why? (explain)	Purchasing power - Can your current income buy:		
same	Changed (specify change and reason(s); explain)	Deteriorated	same	Improved		Less goods?	Same goods?	More goods?

FORM B: MIGRATION AND MOBILITY OF ECONOMICALLY ACTIVE RESIDENT HOUSEHOLD MEMBERS

ID	Describe the main destination of <u>work-related</u> shorter periods of migration (less than 3 months) District name, settlement name, rural (r) or urban (u)	Frequency of trips away from your home location 1. daily commuting 2. every week 3. every month 4. a few times a year 5. seasonal 6. occasionally	Most used means of transport 1. bus 2. car 3. truck 4. motorbike 5. bicycle 6. other (specify___)	Main purpose of these trips (specify)	% of the time spent in rural and urban locations (over past 12 months)	
					Rural	Urban
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Explain how this mobility has changed compared to 10 years ago
1. Higher frequency 2. Same frequency 3. Decreasing frequency **Specify why:**

FORM C: AGRICULTURE AND LIVESTOCK

C-1: General information on plots of the household (on plot level: specify per plot)

Plots	Estimated area	Land use	Perceived location of plots		Ownership/ tenure	Inputs	Labour	Livestock	Use of animal products (Such as milk, meat, manure...) specify		
	(Specify units)	1. Cultivated (specify crops) 2. Fallow 3. Pasture 4. Forrest 5. Other (specify___)	Specify distance in time & km		1. Owned by household 2. Rented 3. Borrowed 4. Community land 5. Owned by clan 6. State land 7. Other (specify___)	1. bought seeds 2. Inorganic fertilizer 3. Organic fertilizer 3. Pest -/ herbicides 4. irrigation water 5. other (specify___) (for each plot list all inputs)	1. Hired 2. Family 3. Combination of 1 and 2	1. Oxen 2. Cattle 3. Pigs 4. Sheep 5. Goats 6. Chickens 7. Other (specify___)			
			Time	**Km**					**Subsistence**	**Sale**	**Both**
1								Oxen			
2								Cattle			
3								Pigs			
4								Sheep			
5								Goats			
6								Chickens			
7								Other			
8											

C-2 Changes in total size and tenure of land (in acres/ hectares) over the last 10 years

Land tenure	Decreased in acres or hectares:	Same	Increased in acres or hectares:	Why?
Owned by the household				
Rented				
Borrowed				
Community land				
State Land				
Other (specify)				

C-3: Crop output during the last 12 months per household (on crop level)

Crop Name (list 5 main crops)	Area planted (specify unit)		Total production per year (specify unit)		Share of total production sold (in %)	Price (Specify unit)			Use of hired labour 1. Land preparation 2. Sowing/weeding 3. Harvesting 4. Post-harvesting 5. Other (specify___) (Enter appropriate code in the appropriate column)		Buyer 1. Other farmer/villager 2. Farmers organisation 3. cooperative 4. Local trader 5. Company (agent) 6. Other (specify__) (Enter appropriate code in the appropriate column)			
	Amount	unit	Amount	unit		Lowest price	Highest price	unit	Local	Migrant	Farm gate	Market	Company gate	Farmers organisation/ cooperative

C-4: Changes in crops, inputs and outputs compared to 10 years ago (tick appropriate box)

Crop name (5 main crops)	Land allocated			Use of input						Buyer		Crop output					
				Labour			Non-labour (agro-inputs)					consumption			sale		
	less	same	more	less	same	more	less	same	more	same	changed	less	same	more	less	same	more

What are the main changes in crops, inputs and outputs over the past 10 years?
Are there any crops that have been abandoned over the past 10 years, and if so, why?
Have there been any changes in the composition and size of your livestock over the past 10 years, and if so why?

C-5: Production assets

Item	No. owned	Access to (specify) If not owned; does the household have access to these items? in what way/ from whom?
(Ox-) Plough		
Tractor		
Cart		
Milling machine		
Other (specify)		

C-6: Common pool resources

Does your household have access to communal land (common pool resources); such as communal grazing land, forest land, bush land, marshland 1.Yes 2. no	If yes, what do you use this land for? 1.agriculture 2. livestock 3. collecting firewood 4. making charcoal 5. collecting food/ natural resources 6. other (specify___)	How important is access to this land for your household? 1.very important 2. Important 3.not important 4. Insignificant 5. other

FORM D: FINANCIAL AND PHYSICAL ASSETS

D-1: Use of credit and loans during the past 5 years

From whom/ which institution specify	Purpose of credit/loan	Which household member(s) received this credit or loan? HH member ID(s)	HH member ID	Make use of mobile phone for banking/savings:	
				Yes (explain purpose)	No
			1		
			2		
			3		
			4		
			5		
			6		
			7		
			8		
			9		
			10		

D-2: Composition of household incomes (over the last year)

Amount total household earnings from	Total amount (per year)	Which household members contribute to this item? Indicate HH members IDs (several members may contribute to an item)
Agricultural production		
livestock		
Self-employed work		
Salaried employment		
Casual wage work		
Pension		
Remittances		
Other (specify)		
total		

D-3 Remittances (from family members)

Received national remittances (cash and/or kind) at the HH level (over the last year)					
Amount/type	From whom? (indicate HH member ID)	How often 1. sometimes 2. Once a year 3. Regularly	How received		
			Informal channel (by hand)	Formal channel (formal financial institutions)	Mobile money

Received international remittances (cash and/or kind) at the HH level (over the last year)					
Amount/type	From whom? (indicate HH member ID)	How often 1. Sometimes 2. Once a year 3. Regularly	How received		
			Informal channel (by hand)	Formal channel (formal financial institutions)	Mobile money

Use of received remittances during the past 5 years (cash and/or kind) – e.g. housing, agriculture, business, etc. -

D-4: Information on money and goods sent by the household during the past 5 years

To whom?	Money (amount)	Goods (specify)	How often 1. Sometimes 2. Once a year 3. Regularly	How sent		
				Informal channel (by hand)	Formal channel (formal financial institutions)	Mobile money

D-5: Physical assets at the household level

Housing:

Size of the main house (floor surface in m²)	Tenure status 1. Owned (with registered title) 2. Owned (without registered title) 3. Rented 4. Rent-free use 5. Other (specify___)	Construction materials			Number of rooms (without kitchen)	Kitchen 1. Separate kitchen in house 2. Kitchen is part of other room 3. Outside the house 4. Other (specify___)
		Floor	External Walls	Roofing		
		1. Concrete 2. Cement 3. Tile 4. Wood 5. Mud 6. Bare earth 7. Other (specify__)	1. Concrete blocks 2. Burnt bricks 2. Mud bricks 3. Wood 4. Pole/bamboo 6. Mud 7. Other (specify__)	1. Tiles 2. Corrugated iron sheets 3. Tins or metals other than corrugated iron sheets 4. Asbestos 5. Thatch 6. Other (specify___)		

Services:

Does the HH have access to (specify__):			
Electricity	Drinking water		Sanitation
	connection	source	1. No toilet or latrine 2. Flush toilet to a septic tank or sewer 3. Private latrine with a slab or platform made from cement or wood, with a squatting hole or seat 4. Private latrine without a slab or platform, just a mud floor with a hole in the ground 4. Public/shared latrine 5. Other (specify___)
1. No electricity 2. Generator 3. Solar 4. Electricity (grid connection) 5. Other (specify___)	1. Tap inside / outside home 2. Collect from public tap or standpipe or pump 3. Rainwater 4. Other (specify___)	1. Public Network 2. Borehole or protected well 3. Unprotected well 4. Other (specify___)	

Other items:

communication			Transportation		
item	No. owned	Access to (specify) (If not owned; does the household have access to these items? In what way/ from whom?)	item	No. owned	Access to (specify) (If not owned; does the household have access to these items? In what way/ from whom?)
Mobile phone			Motorcycle		
Radio			Car		
Television			Bicycle		

FORM E: expenditures and saving

E-1: Information on expenditures at the household level

Consumer expenditure	Amount per year	Productive expenditures	Amount per year
Food		Hired labour	
Drinks		Hired equipment	
Clothes		Transport	
Utilities (water, energy,..)		Membership fee cooperative	
Rent		Seeds	
Transport		Fertilizer	
Medical		Water (irrigation)	
Schooling		Other (specify)	
Social: celebrations, weddings, funerals,etc.			
Other (specify):			
Total		**Total**	

Total annual expenditure of the Household:	

HH head: Who in your household decides on expenditures?		
Does the household manage to save money each year?	**Yes**	**No**
If so, how much (on average):		

Would you be willing to receive us again for a follow-up interview?	Yes	No

Length of interview	Start:	End:	Total time (in minutes):

Appendix B: Diversification of sources of income per household

Sources of income	Frequency	Percent
Pension & remittances	3	1,5
Livestock, self-employed & remittances	2	1,0
Agriculture, self-employed & remittances	11	5,5
Self-employed & salaried employment	7	3,5
Agriculture, livestock, self-employed & remittances	2	1,0
Agriculture, livestock & salaried employment	3	1,5
Agriculture & livestock	15	7,5
Livestock, salaried employment & remittances	1	,5
Agriculture, livestock, self-employed, pension & remittances	1	,5
Agriculture & self-employed	21	10,5
Agriculture	28	14,0
Agriculture, livestock, self-employed & salaried employment	7	3,5
Agriculture, livestock & pension	3	1,5
Agriculture, livestock, salaried employment, pension & remittances	1	,5
Agriculture, self-employed, salaried employment & remittances	3	1,5
Agriculture & pension	5	2,5
Agriculture, self-employed & salaried employment	4	2,0
Agriculture, livestock, self-employed, salaried employment & remittances	1	,5
Self-employed & remittances	3	1,5
Remittances & other	1	,5
Livestock, self-employed, salaried employment & remittances	1	,5
Agriculture, self-employed & pension	2	1,0
Agriculture & salaried employment	28	14,0
Agriculture, livestock, salaried employment & remittances	2	1,0
Salaried employment	4	2,0
Agriculture & remittances	2	1,0
Agriculture, pension & remittances	1	,5
Self-employed, pension & remittances	1	,5
Livestock	1	,5
Salaried employment & remittances	1	,5
Agriculture, salaried employment & remittances	9	4,5
Agriculture, livestock & remittances	3	1,5
Remittances	2	1,0
Self -employed	6	3,0
Agriculture, livestock & self-employed	9	4,5
Agriculture, livestock, pension & remittances	3	1,5
Total	197	100,0

Appendix C: Tests of hypotheses derived from SPSS

Natural capital

Correlation between sources of income and amount of plots

Correlations

		SourcesOfIncome	AmountPlots
SourcesOfIncome	Pearson Correlation	1	,138
	Sig. (2-tailed)		,053
	N	197	197
AmountPlots	Pearson Correlation	,138	1
	Sig. (2-tailed)	,053	
	N	197	200

Correlation between sources of income and size of land in hectares

Correlations

		SourcesOfIncome	Landsize
SourcesOfIncome	Pearson Correlation	1	,016
	Sig. (2-tailed)		,829
	N	197	197
Landsize	Pearson Correlation	,016	1
	Sig. (2-tailed)	,829	
	N	197	200

Chi-square for Ownership and sources of income

Crosstab

		SourcesOfIncome					Total
		1	2	3	4	5	
HH1PlotOwnership		11	12	2	0	0	25
	Owned by household	23	57	41	16	3	140
	Rented	6	16	6	2	0	30
	State Land	0	1	0	0	0	1
	Other	1	0	0	0	0	1
Total		41	86	49	18	3	197

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22,610a	16	,125
Likelihood Ratio	24,832	16	,073
N of Valid Cases	197		

a. 15 cells (60,0%) have expected count less than 5.

Financial capital

Chi square; sources of income and level of income

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27,350[a]	12	,007
Likelihood Ratio	32,066	12	,001
Linear-by-Linear Association	,004	1	,949
N of Valid Cases	197		

a. 6 cells (30,0%) have expected count less than 5. The minimum expected count is ,44.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,373	,007
	Cramer's V	,215	,007
N of Valid Cases		197	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Physical capital

Housing Floor

Chi square; sources of income and floor

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22,156[a]	20	,332
Likelihood Ratio	19,258	20	,505
N of Valid Cases	197		

a. 24 cells (80,0%) have expected count less than 5. The minimum expected count is ,02.

Symmetric Measures[c]

		Value	Approx. Sig.
Nominal by Nominal	Phi	,335	,332
	Cramer's V	,168	,332
N of Valid Cases		197	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Housing Wall

Chi square; sources of income and wall

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10,429a	16	,843
Likelihood Ratio	12,363	16	,719
N of Valid Cases	197		

a. 16 cells (64,0%) have expected count less than 5. The minimum expected count is ,02.

Symmetric Measuresc

		Value	Approx. Sig.
Nominal by Nominal	Phi	,230	,843
	Cramer's V	,115	,843
N of Valid Cases		197	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Housing Roof

Chi square; sources of income and roof

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10,255a	12	,594
Likelihood Ratio	9,658	12	,646
N of Valid Cases	197		

a. 16 cells (80,0%) have expected count less than 5. The minimum expected count is ,02.

Symmetric Measuresc

		Value	Approx. Sig.
Nominal by Nominal	Phi	,228	,594
	Cramer's V	,132	,594
N of Valid Cases		197	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Electricity

Chi square; sources of income and electricity

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9,143[a]	4	,058
Likelihood Ratio	10,309	4	,036
N of Valid Cases	197		

a. 5 cells (50,0%) have expected count less than 5. The minimum expected count is ,23.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,215	,058
	Cramer's V	,215	,058
N of Valid Cases		197	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Drinking water source

Chi square; sources of income and drinking water source

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8,119[a]	8	,422
Likelihood Ratio	8,940	8	,347
N of Valid Cases	197		

a. 5 cells (33,3%) have expected count less than 5. The minimum expected count is ,38.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,203	,422
	Cramer's V	,144	,422
N of Valid Cases		197	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.