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# **AGRICULTURAL CHANGE AND RURAL LIVELIHOODS IN BAMBOUTOS, CAMEROON**

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## EXECUTIVE SUMMARY

The study area covers the Western Cameroon highland rising from 1000 to 1600m. The Bamboutos is a huge mountain the highest that rises from 1600 to 2740m. The western highland is an old household settlement whose high population density (350 inhabitants / km<sup>2</sup> in some villages) posed problems to the first European settlers in the 1920s. The principal source of revenue has always been food crop agriculture, which have been very dynamic and make west the bread basket of Cameroon. However, it was mostly Arabica coffee which was the most income generating activity. Since the end of 1980, this crop had practically disappeared, leaving the producers and households in a desperate situation. They are in constant search for substitution strategies. In the absence of other resources, agriculture remains the only alternative. It has evolved from subsistence agriculture to marketing agriculture (that is it is oriented essentially for the market). It has taken advantage of the changing status of existing crops than the promotion of new crops. However, in the domain of market gardening they have been the promotion of some crops of temperate climate such as pepper, la beetroot, Irish potato etc. These, without doubt are those which have mark the landscape and need to be mention. It has become the most consume tubers in the region and in Cameroon. Her territory extend progressively from the Mountain to the plateau, the sale points along principal road axes is on the increase and Irish potato has become a veritable symbol of union between the countryside and the town. In fact, it is one of the first products that the countryside has to offer to a visitor coming from the town or to a family member resident in town. In reality, Bamboutos have never been a closed environment despite its isolation (difficulties in access due to the physical milieu). On the contrary, these mountaineer, well before colonization, found in mobility for long way trade (from in land to the coastal zone) a solution to their cramped space. Then work migration towards new agricultural sites like Mounjo or Noun, towards large cities like Yaoundé and Douala, middle cities such as regional capitals permit to the highlands to be depopulated.

However, for their new masters: the European settlers, the problem they faced was that of the development of a country "overpopulated" cramped and difficult because of its relief with steep slopes. They were faced with the problem of regional planning which was address by the creation of new development poles and these oriented the migratory flux (Development of the left flank or slope of the Noun and of mount Nkogam)

Despite the solutions implemented, long after independence, the problem of overpopulation remains. In Cameroon, the Bamboutos territories are still the first reservoirs from which national and international migration trends take root. Its net-migratory rates have therefore always been negative. The chart shows the difference per regions (West, North-West and Far North) on the migration balance in Cameroon.

The mountain has become a veritable Eldorado where permanent habitat goes at the conquest of the high slopes, transforming her into market gardening territory particularly dynamic. They has been permanent occupation entirely of the high flank or slope likewise the marginal zones ( great slope of plateau borders, flooded valleys) favoring at the local scale , the mobility from the bottom to the top ( towards the summit) and from the top to the bottom (from the plateau towards the plains and valleys).

## METHODOLOGY

### Criteria used for the selection of the Study area

- The difficult conditions existing in the mountain's households since the disappearance of Arabica coffee.
- The uneven development of adaptation capabilities and mobility of this population,
- The conditions of the milieu, very favorable to the development of Irish potato.
- The Increasing importance of Irish potato: spatially, socially and in the economic development.
- A national planning policy very favorable to the plant and mobility
- A traditional area of local (between the top and bottom with a radius of 100 to 200 km), regional (rural to rural, rural to urban), national (urban to urban, urban to rural) and international mobility (a supply home for distant migrations).
- The importance of endogenous and exogenous individual survival strategies, but also survival strategies for family and social groups.

### The construction of the sampling frame for survey

- The population at the base of the research is the household.
- The data collection tool that is a survey by questionnaire was constructed based on 5 themes for identifying the main problems and opportunities available to the household.
  - ✓ General Information or data for the household,
  - ✓ Migration and mobility of economically active household members,
  - ✓ Agriculture and livestock,
  - ✓ Financial transactions and movements of goods,
  - ✓ Expenditure and saving.
- The territory was divided into three sites (Bamboutos, Mounjo and Noun), each including sub-sites (Table ..... ) or spatial operation units. Depending on the population, the sample size was 100 to 200 households.

Table... Territorial division of the study zone: sites and sub-sites

Sites		Number of households			
	Sub-sites (Villages)	Producers	Non producers	Total	%
Bamboutos					
	Bafou	34	34	68	34
	Bangang	33	33	66	33

Fongo-tongo	33	33	66	33
Total	100	100	200	100

- In each site, a special crop was chosen based on certain criteria.
  - ✓ Maize (Corn) in the Mounjo
  - ✓ Rice in the Noun,
  - ✓ Irish potato in the Bamboutos
- The study is carried on Irish potato of the Bamboutos mountains
- 3 villages were selected: Bangang, Bafou et Babadjou because of their role in the production and commercialization of the Irish potato.
- The database of the site was composed through a random selection of 100 producer's households and 100 non producers. That is 200 households equally selected from 3 villages.
- The following amendments were made on the questionnaire to adapt it to local reality or context.
  - ✓ A Specific questionnaire was elaborated for the mobile phones
  - ✓ Questionnaires of discretionary character was reformulated to avoid suspicion and refusal to answer.

## Number of respondents and number of non respondents

It is difficult to generally know the number of respondents and for those who did not respond by refusing or simply because they had no answer to the question. The number of respondents varies; depending on the nature of the question and to whom it was addressed. The number of respondents can be known for a given question.

## Implementation of the survey, dates, when

The composition of teams per site (see tables in annex)

- The number of people per site (8 to 12),
- The academic level of the investigators: Master's level students (I and II)
- The number of months and days that lasted the main phase of data collection: 2 months.
  - ✓ A specific questionnaire relative to mobile phones was designed and implemented.
  - ✓ The comparative study of the three sites is without doubt, an important aspect added to the study.

## Data analysis methods

It was done in several phases:

- training of student surveyors in SPSS,
- construction of a tally database for the questionnaire sheets;
- tallying and disposal of non-compliant or biased responses;

- descriptive analysis:
  - Study of frequencies, tables and their corresponding graphs
  - Construction of cross tables,
- Correlations

## **The limitations of the study**

- They are mostly those related to the observation tools used i.e. survey by questionnaire, particularly the tendency to superficiality. To solve this gap, we often completed the questionnaire by a structured interview.
- Another specific limit was to make the Head of the household or his replacement, the only interlocutor to provide information for all other household members. He rarely has all of the required information.
- The difficulty to have data on area owned and area cultivated
- Data not available on proportion sold and proportion eaten and how sold

## **DESCRIPTION ACCOUNT OF RELEVANT CONTEXTUAL CHARACTERISTICS OF THE RESEARCH AREA**

### **Introduction to the study area**

The Bamboutos Mountain consists of a volcanic complex whose activity lasted throughout the Tertiary. The volcanic activities run from fissural emissions of which lava plateau was constructed (Bamiléké plateau) to explosive vulcanian and pelean activities that constructed impressive landscapes and huge cones. The substrate is therefore a set of trachyte, phonolites, rhyolites and pyroclastic rocks (ignimbrites, cinerites and tuffs (Nkouathio 2006; Zangmo, 2007). The landscape is an unevenly dissected plateaus separated by great cliffs 50 to 100 m high.

The Bamileke Plateau peaks found between 1200-1600 m underline by ancient basalts, is highly altered or weathered into red deep lateritic soils. It is on this platform that agglutinates most of the population.

The second plateau has a complex topography that rises up to 2000 m, built by trachytes which outcrop in the form of lava flows, domes or cast-domes dominating small colluvial plains. This trachytic landscape is made up of thin soils, blocks or decaying rock slabs: andosols.

Above 2040m, the trachyte outcrops are bigger with polyconvex slopes. The most high (2400-2500m) forms a semi-crown around an immense caldera. The Maleta has its peak at 2740m. Everywhere, lithic soils and underdeveloped soils have not stopped a quasi-systematic exploitation of its slopes.

## **Hydrographic network and Climate**

### **Hydrography**

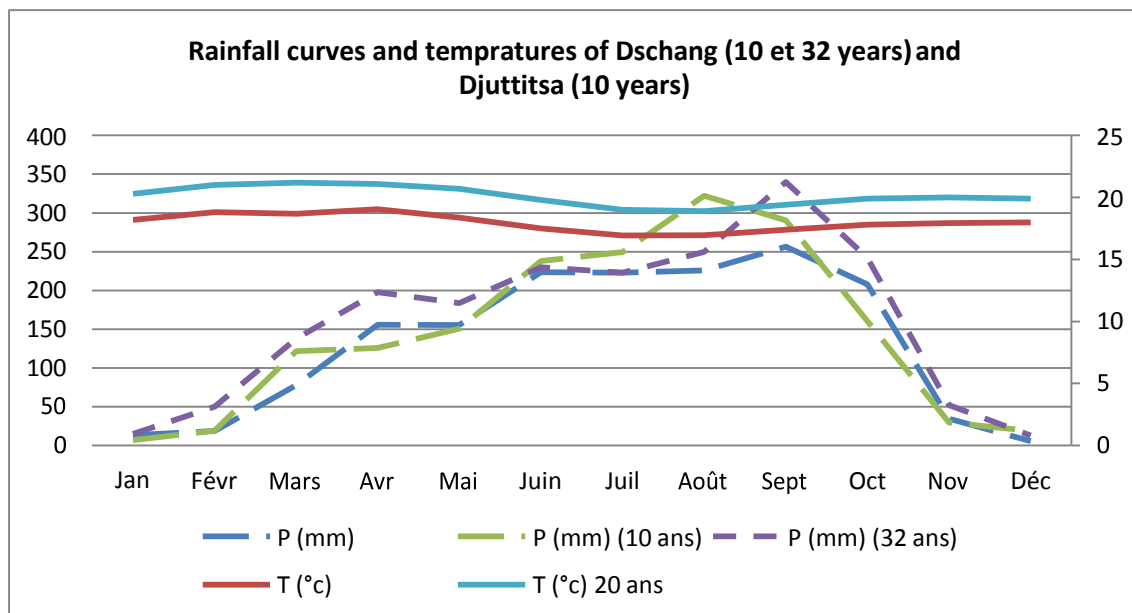
The drainage system is of a rare density. It radiates from heights in the form of torrents, descending on the plains through huge waterfalls. A stair-wise topography on certain slopes constitutes today the key factor of water for agricultural production in the mountains. The Bamboutos Mountains are

effectively a watershed that supplies the largest rivers of the Cameroonian Atlantic Basin: the Wouri, Sanaga and Benue.

## Climate

Generally, the climate is Cameroonian mountain climate type influenced by the altitude. It is marked by the southwest monsoon wind on the west and southwest slopes that are more watered or wetter (about 2000 mm in Dschang) than the sheltered eastern and northern slopes (1600 mm Djuttitsa). The temperature is moderated by altitude 20° in Dschang (1300m high) and about 17° in Baranka (2400 m)). In detail, certain contrast exists. The southern slopes altitudinally, we observe from 1800m, dry tonalities (Morin, 1988) and an increase in the north-eastern wind (harmattan) and a drop in relative humidity below 30% in the dry season (November to February). Above 2200 m altitude, night frost is common.

The graph .....clearly shows the contrasts from the stations of Dschang (alt. 1300 m) and of Djuttitsa (1800m alt.) only 20 km apart. The climate is divided into two unequal seasons: a short dry season (November to March) and a long rainy season (mid-March to mid-November) Dschang; a foothill station is warmer (20 ° average) and more rainy than Djuttitsa which is mild and less rainy.



## Végétation

In terms of vegetation, not much remains of the original forest vegetation. Everything has been transformed by man. In the lower zone (1400-1600 m), sub-montane forest has been replaced by the Bamiléké grove. Contrary to this, the base is covered by a meadow with *Hyperrehnia* (Morin, 1985). The grove consists of *Draceana arborea*, *Costus afer*, the peace plant, mango, kola, etc. swampy valleys remain the domain of raffia (*Raphia humilis*, *Raphia vinifera*).

In the middle zone (1700-2000 m), an unfinished grove is observed; the slopes are mostly covered with savanna and grassland *Hyperrehnia* of sclerophyllous to *Sporobolus*.

The gallery forest *Hypericum lanceolatum*, *Maesa lanceolatum*, *Pittosporus Maniti*, *Polypoduim* and *usnea* hitherto in a refuge position in difficult access areas were strongly attacked and destroyed.

Lawns with *Sporobolus camerooniana* pecked heath are dominant. The ground is covered by moss and sphaines.

## **Agriculture**

The study zone is agricultural area par excellence and ranked among the largest granaries of Cameroon. Here we could make the difference between mountain agriculture that is dominated by crops of temperate climate and agriculture of tropical plants on the foot of the mountain plateau such as maize, beans, banana and most often Irish potato.

Agriculture is mostly pluvial, seasonal and is practiced in small peasant farms rarely exceeding two hectares.

There is the cultivation of a range of more than 40 subsistence food crops which by the decade 1980, became cash crops.

The labor has been, up to the last decade, based on the number of the family members and the sociability.

Linked to this, on the Bamiléké plateau the main cash crop i.e. coffee has disappeared without an ample replacement. At altitude, market gardening has emerged and opened the mountain to globalization. It is practiced by **bachelors** and young ambitious households with acceptable income. High altitudes disrupts the formerly populated plateaus where exist constant land crisis with the consequent inability to innovate and a nagging poverty.

The biggest problem is that of access to land. There are no longer large landowners (not even the village leaders and notables). Land segmentation has been pushed to the extreme and continues to be practiced. Access to land is complex and is becoming more and more expensive. Access by inheritance and loans exist only in its pure forms. This is actually a form of purchase. Rental of plots is the rule. The proportion of social juniors or the young excluded from the land i.e. without land increases in a region where the economy is based on agriculture.

## **Land use**

Urban-rural dichotomy still marks the landscape despite the ongoing harmonization. There is a network of remote cities, one from each other with a 30 km average distance between them. They are district towns, divisional and cities regional towns. The villages found between the towns are dispersed settlements with local urban densities (500-1000 inhabitants). After the independence disorders, interconnected human concentrations were formed in each village around the chief palaces or market places with emerging city attributes and each polarizing, inside the village more or less great territories.

## **Relevant historical back ground of the Irish potato**

Irish potato was introduced in mount Bamboutos by the West African Pastoral Company (la Compagnie Pastorale Ouest Africaine) installed in the mount Bamboutos in the early years of 1920. She has as advantage according to oral sources, provision of nutrition to the animals. She was interested in the indigenous nutrition in accidentally. Plantation labourers, mobilised from their village and concentrate in the common camp in the farm were confronted with famine. They have as the only alternative to share, discreetly that which have been prepare to feed the animals, essentially pigs.

## **Cameroon, a recent focal point of Irish potato in central Africa**

At the end of the decade 1940, this product occupied a great consideration in the feeding habits of the producers in the western highlands of Cameroon. As prove, the great famine observed at the end of this year, is due to the destruction of Irish potato by the Mildiou epidemic. During a longtime, the ecological exigencies and weak understanding of the plant was the challenge of the population living in mount Bamboutos (Menoua and Bamboutos Divisions), the high plateau of north west ( Boyo, Bui, Donga Mantung and Mezam divisions), in the whole, the Cameroonian faultline backbone. Commercialisation thus very insignificant, destine to a weak fraction, selective, of the urban population.

### **Irish potato in the western Highlands**

In the mountains, she was cultivated essentially by women following a rhythm imposed by the village Head who have the control on land. the crops found concentrated on the average slopes between 1600 and 1800 motivated double movement : the conquest of high slopes up to 2400m and the occupation of immediate plateau (1400-1600m) before extending in a centrifuge manner on almost the entire western highlands (below 1100m). The interest accorded to Irish potato in fact through the feeding habits, is an element of national integration even if her consumption remain modest. The democratization of the product is of course remarkable. Food which was almost of prestige in urban milieu at the beginning of the years 1960, Irish potato is today accessible to all. In fact, in 2008, according to PRFPT the consumption is 4kg/hbt in the urban zone and 10kg/an in the production zones. These figures are underestimated and ought to have multiply by at least four. It has observed a high demand both in the urban and rural from low income as well as high income milieus.

- Since the crises at the end of the year 1980, the conduisive Irish potato market have push small scale farmers towards the mountains of the west and North West. It presents a veritable speculation product at the sub-regional scale and exposes the mountain to international trade and globalization. Today, there exists an Irish potato sub-sector animated by many actors of substance and varied fortune. The youths of both sexes and women plays the major role.

### **The resolution of the issues of access to land**

In the past, it was a question of creating pioneer zones around overcrowded fringes like the Bamiléké region. Some were created in the Bamoun lands in the Noun (left bank of the Noun River, Nkogam) between the bamiléké and the Noun (Galim), the Bamiléké and the Mounjo (Nkondjock). These areas in full developmental effervescence had densities that barely reached 20bts / km . The highland populations were highly solicited.

Today, the resolution of the issue of access to land is not subject to state planning, but to individual strategies secreted by the household or by the social group. This means going to farm where land is available, with the available means (physical strength, financial means, forms of interpersonal relations etc.).

## **Humain Development Index**

- Level of Human Development relative to national average (e.g. HDI; poverty; deprivation; gini index; educational levels; life expectancy, etcetera)
- In the year 2013, the HDI in Cameroon was situated at 0.495 from 0.523 in 2009.
- Cameroon is characterized by a low gross domestic product (GDP) per capita, with 40 percent of the population living below the poverty line. This is especially more concentrated in rural areas where 56% of the population are situated below the poverty line (FAO, 2012).
- According to Jean Aristide 2011, the poverty rate calculated from ECAM 3 statistics situated the western regions at 0.4295 while the national rate stands at 0.4631. It is evident that the presence of fertile soils alone, cannot guarantee poverty reduction levels unless markets are restructured and output better managed through the creation of auxiliary facilities for its transformation.
- Education levels are relatively high in Cameroon, situated at 82.7%. Men are more educated than women with net education rates of 95.8% and 93.6% respectively coupled to the fact that the urban population is more educated than the rural population with 94.6% as opposed to 75.0%. This difference may be explained by the increased number of educational facilities and institutions found in the urban areas. Also, with the increased poverty levels to be found in the rural milieu, financial means to effectively sponsor children in schools are limited than in the urban areas.
- Life expectancy at birth is situated around 59.0 years and the male population has shorter life spans than the female gender i.e. 56.7 and 61.3 years for the male and female gender respectively. This difference may be explained by the nature of work undertaken by the male gender and the huge amounts of alcohol intake. The infant mortality rate is 62 per thousand live births.

## **General mobility patterns in the research area**

- Current migration flows take the form of a general movement from the countryside to the cities with the youths having a greater propensity to migrate. The male gender is also more mobile than the female gender and the search for better job and educational opportunities are the principal reasons for mobility.
- Settlements are dispersed in the western highlands as opposed to nucleated settlements in the littoral zone. Rural areas with an influence on the urban milieu were sampled and this influence principally includes the supply of agricultural products, labor and land for agricultural production especially market gardening.
- Migration is essentially labor migration. They are old and were either planned, forced whether spontaneous or voluntary. It was done at the local, national and international scale.

Today they are inside the village, district, division and the region. They are controlled by the unequal distribution and availability of quality soils. The patterns of mobility are:

- ✓ Towards the edges of the plateau or to the plains



- ✓ Towards the mountain area
- ✓ From the countryside to the nearest towns.
- ✓ Inter-divisional and inter-regional mobility
- They are directed towards the urban coastal towns, the Centre that is to say towards Douala and Yaoundé and secondarily to regional capitals. They are either labor or school or business mobility.
- Intra-village mobility and intra-district mobility are essentially feminine. Beyond these limits, it deals primarily with men and young people of school age.

## **Settlement pattern**

West –Cameroon is organised according to the tradition into groupings from 1st, 2<sup>nd</sup> and 3rd degree chiefs. The groupings have as supervisory authority, a chief of the grouping. It is subdivided into villages each control by a sub-chief. The sub-chiefdom is composed of a certain numbers of quarters of which it is control by a quarter head. The groupings are thus politico-religious entities with some haven a surface area of more than 100km<sup>2</sup> for the populations which could be above 100000 inhabitants. The traditional hierarchy made up of the chief, sub-chief and notables belong in principle, to the royal family and succession is from father to son (male heritage).

The habitat structure is disperse type« concessions » of very varied dimension depending on the level of polygamy of the household Head. It is long a time that, the number of women per household would varies from one to about ten. It has reduced in a drastic manner because of the social mutations and change of mentality. The households with 10 women are today an exception.

Since the disorder at independence, the structure of habitat has witnessed important modifications. In fact, the regrouping of local population around the chiefdoms or market places have given rise to small centers of population concentration which polarized the economic life of the groupings, village or quarter. The dispersion of habitat has therefore from time to time interrupted by grouped habitat of small villages.

## **The road network**

They are of a rare density. Communication channels are hierarchized, and classified by Presidential Decree of 21 March 1979 as:

National roads, mainly connecting the regional capitals of Bafoussam to the national capital Yaoundé which constitute the backbone of the network.

- Regional road link Bafoussam the regional headquarter to divisional capitals; (Dschang, Mbouda, Bangangté, Bafang and Foumban. They measure about 300 km, paved and very viable.
- The divisional roads connect, within a division, the districts with the divisional headquarters.

- Rural roads serve rural areas, plantations, linking production areas to local markets or marketing centers. They are particularly dense. They were built at the time of the coffee boom by UCCAO and departmental cooperatives to open up plantations. (map .....)

Mountain areas are particularly disadvantaged even those with heavy market garden investments. The tracks become almost impassable ravines during the rainy seasons. The Mounjo is traversed from end to end by the Douala-Bafoussam National Road. Cross tracks that serve the mountains are very narrow and barely passable. Only 4 \* 4 vehicles i.e. 4 wheel drive cars venture there.

## Infrastructures

The most remarkable changes are that of the introduction in the countryside of some infrastructures that were formally seen only in towns. They include:

- Sanitary infrastructures. Each grouping has her dispensary, health care centers or its hospital. The missionaries most especially the Catholics have done much in this domain through Ad Lucem hospital.
- Educational infrastructures. All the other educational establishment with the exception of the university, are found in the villages, starting from lay private schools, mission or religious and public; general and technical education colleges, secondary schools etc.
- Access to water and electricity. Thanks to villages electrification program.
- Economic infrastructures: the markets.

The markets in the region are periodic and markets in our local context represents more of a (geographical location) place of exchange rather a situation where buyers are put in contact with sellers. Every village has at least one large market held twice a week for an 8 day market week (small and main market day) at intervals of 2 and 4 days. This is a place of exchange par excellence. Its attendance and its reputation depend on the importance of agricultural production and animal husbandry in the village. Around some markets have been formed small villages that reduce dependence of the village vis-à-vis the town. Here, almost all food and basic services could be acquired. Electrification has made it possible to access the Internet, fueling stations, money transfer agencies, bank teller, a bus station, restaurants etc.

## Access to basic facilities and services

**Access to education.** The great revolution of the 80s was the starting point in the countryside, of public education orders, private denominational and secular private schools. It is the result of the policies establishment by the State which implied that the state alone could no longer provide certain of charges thus inviting private sector and the elite participation in each locality.

Today, each village at least has one grammar or technical school, general or technical education colleges etc. This policy has significantly reduced school mobility to urban centers

**Access to health care** has benefited from the same political arrangements that have increased the number of public and private health centers, bringing patients nearer to health centers.

**Access to public services.** The creation of districts, divisions transformed the administrative landscape of the region. The density of decision centers such as sub-divisions is about a sub-division every 20 to 25 km, a division every 30 to 50 km. The goal is to better serve, to bring government closer to the administered, with an aim of reducing certain types of mobility.

## **The place of traditional hierarchy**

The weight of the traditional hierarchy has remained very strong in the Noun and Bamiléké land. Become the auxiliaries of the State, rewarded with a salary at the expenditure of the division, the village head, be it 1st, 2nd or 3rd degree chief, has lost none of his authority. He remains a symbol for the village, the guarantor of ancestral practices, cults and of the land, the judge as tradition demands. Indeed, despite all the changes that affected and still affect the region, the society is still very attached to certain societal values and symbols like the family whose strength depends on relations and number i.e. to the number of its members and its ramifications. In such a context, polygamy (even in trouble because of the new ways that stand against it: its condemnation by religion), the number of children per household continue these social practices which are difficult to abandon.

## **Ethnic groups: majority and minority**

The strength of the feeling of belonging to an ethnic group is one of persistence that marks the current political and social life. The notion of minority and majority group are bound. It dictates the socio-economic and political relation in the sites studied. All claims repose against it, all identity policies are justified by the fact that the dominant majority group chokes, oppresses and even exploits the minority group. The Bamiléké highlands are, across the country, part of the so-called majority groups, the Bamoun in Noun and much more the Mbo's of the Mounjo are ranked among the minorities. Here, all decision making at all levels must incorporate this concept.

## **Land conflicts**

A proverb, circulated by European settlers goes "in Western Cameroon, without women and their land disputes, the courts would close their doors." Thus the place of land disputes in the Bamiléké land. They include:

- Border disputes between neighboring villages,
- Water usage, in the mountains between breeders for the appropriation of space for agriculture for some, and for cattle breeding for the others. Access to water by livestock remains a problem between farmers' and cattle breeders.
- The water management in the mountains by farmers, non-respect of the distribution schedule or diversion of rivers, overexploitation and the eventual drying by upstream users or operators. The conflict opposes upstream and downstream users.
- Family dissatisfaction in sharing land inheritance or the refusal to share, excludes certain individual right to land ownership.
- They lead to skirmishes between villages, destruction of property, assault and grievous bodily harm. (photo ..... ..)

## **Associations and farmers' organizations**

National development policy is that of community development (Paul Biya). Association and community life is therefore well developed in our study area, in the form of rural development support. These support strategies reinforce state actions. They have been reinforced by a favorable legal and institutional framework.

Law n° 90/053 of 19 December 1990 on the liberty of association completes presidential decree n°77/89 of 1977 relative to development committees.

Law n° 92/006 of 14 August 1992 on the modalities of creating cooperatives and common initiative groups (CIG).

Law n° 93/105 of 22 December 1993 concern economic interest groups. It establishes the differences between non-lucrative community organizations and those with activities capable of generating financial gain.

Associative life is centered on the following structures:

- 1- Development committees which are local organizations created through presidential decree no 77/89 of 24 March 1977, they are permanent dialogue and concertation organs with the principal task of examining developmental problems at the local level, definition of measures to solve these problems, identify specific areas support areas and the type of support to put in place(DSDSR).
- 2- Peasant organizations and rural financial structures
  - Common initiative groups, this category saw the light with the creation of law n° 92/006 of 14 August 1992 followed by a presidential decree applied on the 23 of the same year concerning the creation of COOPIC
  - The union of common initiative groups
  - Associations, meeting groups
  - The establishment of micro financial institutions made up of community insurance (MC2) and agricultural cooperatives, credit and saving cooperatives.They have as aim to collect and secure funds.

## **Transformations in the local and national economy**

Can we really talk about transformation of the local or national economy? There is in our study zones an impression of refusal to innovate. Production technics have hardly evolved, cropping systems have hardly changed, and crop types too. One may witness more of abandonment, due to crises such as the coffee crisis, compositions-decompositions such as farmers' organizations that are formed and disappear immediately or are farmers' organizations in name only.

At the level of production, the change is a consistent intensification of crops on the same ridge and on leased land, over-concentration of cultures than those found on the ridges. Also, there is the development of marginal areas which is often inappropriate.

In the mountains the use of water by traditional methods permit two to three cropping seasons per year.

The support programs to farmers do not produce the expected results despite the heavy sums invested. Production support structures are steadily increasing in number, with an increase in financial and personal resources, this to mitigate results.

Slogans and concepts of development are developed and die, without leaving tangible results. Cameroon, for example, entered after an agro-pastoral show in Ebolowa, the era of the "second generation agriculture" without having clearly seen what the first generation was. The dimensions of the concept remain unclear.

In terms of marketing, the market is gradually losing its role as a bridge between the farm and the consumer. The collection and export of products are structured differently, especially at the level of large and medium size producers who directly supply a loyal clientele. Average size producers collect the production of smallholder farmers to supplement with theirs for exports.

## **Importance of non-agricultural activities**

In a context where land issues are predominant and that the population of earth seekers increase, turning away from farm work to derive supplementary income from non-farm activities become a sought after solution by the rural people.

## **The building sector**

It is a rapidly changing sector in the Bamoutos and the Noun area, the building industry is the main source of non-farm employment. Its actors combine this activity with relative ease to agriculture. It includes:

- The extraction and sale of stone for foundations, i.e. quarrying
- The manufacture of bricks for the elevation of the walls,
- Lumbering, the felling of large trees for wood work and carpentry
- Masonry (walls, plastering, floor covering,
- Electricity, plumbing
- Sheet metal works etc.
- Hired laborers etc.

## **Trade**

Trade has always been an essential complement to agricultural activities. This concerns itinerant traders (on foot, bicycle, motorcycle or car) who peddle their market goods in the divisional, and sometimes to neighboring divisions. They can be fixed on the market square, roadsides or at the entrance of his concession.

## **Transportation**

The car has remained for a long time the preferred means of transport for commuting between the towns - countryside-town. For a decade now, the motorcycle has virtually taken over. It has added to urban-rural-urban, the urban-rural-rural transportation, disenclaving every corner of the country. The bike riders popularly known as mototaximen now represents a "trade" that seeks to impose itself by all means, its members are relatively young and educated with a large lobbying power of the rural population.

Construction, trade and transportation, if they do not really enrich, they generate excess revenues which permits the population involved to easily afford for their social expenses (education, health, access to decent housing) etc.

## **Livestock and inland fishing**

In the Noun, there are two other important activities to those described above: cattle, sheep, goat rearing and fishing thanks to the existence of a retainment dam; the Bamendjing dam in the territory of Noun and that of Mapé in Adamawa. Fishing maintains trade mobility's dominated by women. If they do not like to talk about their income or even declare how much they earn, they admit, however, that it allows them to fulfill their duty as honorably women and sometimes, that of family heads.

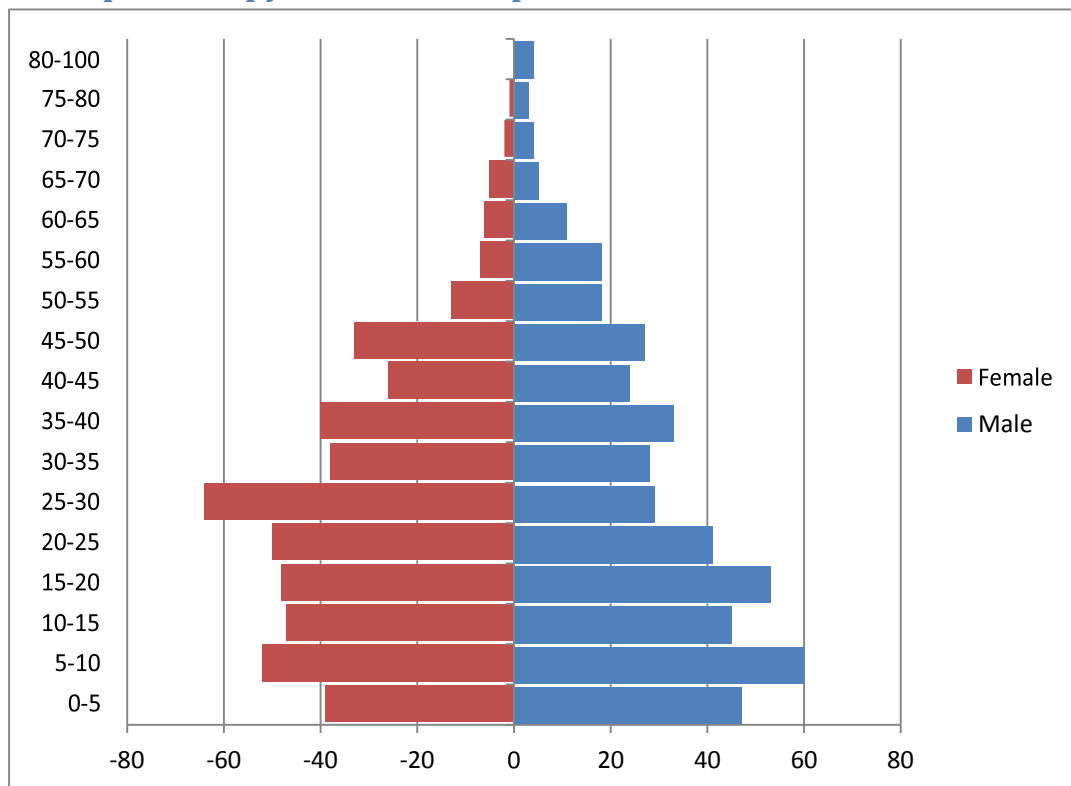
Cattle breeding are the affair of a few socially or politically powerful men; the Alhaji's who derive large incomes from this activity.

The urbanization of the countryside generates small trades such as mechanical repairs, telephone booths, gas station attendants in hydrocarbon stations, night watchmen, security guards to the country villas of the urban elite, maids or cleaning women in secondary schools, in clinics and hospitals etc.

These activities still bordering on "subsistence" are of a psychological size support for individuals and families because often, the key is to know that we are occupied and do something that is useful to society; whatever the income one derives.

# POPULATION CHARACTERISTICS (FORM A-1 –HOUSEHOLD ROSTER)

## 5.1 Population pyramid of Irish potato zone



## 5.2 Average size of the household 5,43 that means 5 persons per household

5.3 Educational attainment levels					
		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	No formal education	145	13,4	13,4	13,4
	Primary	438	40,6	40,6	54,0
	secondary first cycle	191	17,7	17,7	71,7
	secondary secondary	173	16,0	16,0	87,8
	Higher education	33	3,1	3,1	90,8
	Master-doctorate	12	1,1	1,1	91,9
	No answer	87	8,1	8,1	100,0
	Total	1079	100,0	100,0	

5.4 Educational attainment levels by gender and %			
	Male	Female	Total %

	Effective	%	Effective	%	Effective	%
No formal education	64	6,0	80	7,5	144	13,4
Primary	210	19,6	224	20,9	434	40,4
secondary first cycle	86	8,0	105	9,8	191	17,8
secondary secondary	88	8,2	85	7,9	173	16,1
Higher education	16	1,5	17	1,6	33	3,1
Master-doctorate	9	0,8	3	0,3	12	1,1
No answer	41	3,8	45	4,2	86	8,0
Total	514	47,9	559	52,1	1073	100,0

### 5.5 Relation to the household head

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Head	199	18,4	18,7	18,7
	Spouse	216	20,0	20,3	39,0
	Child	614	56,9	57,7	96,6
	Father/mother	2	,2	,2	96,8
	Brother/sister	14	1,3	1,3	98,1
	Grandchild	8	,7	,8	98,9
	Other family member	12	1,1	1,1	100,0
	Total	1065	98,7	100,0	
Manquante	Not applicable	14	1,3		
Total		1079	100,0		

### 5.6 Percentage of single-parent household

	Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Head	199	18,4	18,7	18,7
Spouse	216	20	20,3	39
Child	614	56,9	57,7	96,6
Father/mother	2	0,2	0,2	96,8
Brother/sister	14	1,3	1,3	98,1
Grandchild	8	0,7	0,8	98,9
Other family member	12	1,1	1,1	100
Total	1065	98,7	100	
Not applicable	14	1,3		
	1079	100		



## 5.7 Tableau croisé Age groups \* Level of education new

Age groups		No formal education	Primary	secondary first cycle	secondary secondary	Higher education	Master-doctorate	No answer	
1-5 yr	Effectif	6	23	1	0	0	0	34	64
	% dans Age groups	9,4	35,9	1,6	0,0	0,0	0,0	53,1	100
5-10	Effectif	6,0	114,0	6,0	1,0	0,0	0,0	5,0	132
	% dans Age groups	4,5	86,4	4,5	0,8	0,0	0,0	3,8	100
10-15	Effectif	4,0	30,0	44,0	13,0	0,0	0,0	1,0	92
	% dans Age groups	4,3	32,6	47,8	14,1	0,0	0,0	1,1	100
15-20	Effectif	4,0	22,0	34,0	39,0	1,0	1,0	0,0	101
	% dans Age groups	4,0	21,8	33,7	38,6	1,0	1,0	0,0	100
20-25	Effectif	7,0	19,0	16,0	35,0	11,0	3,0	0,0	91
	% dans Age groups	7,7	20,9	17,6	38,5	12,1	3,3	0,0	100
25-30	Effectif	7,0	29,0	22,0	22,0	9,0	4,0	0,0	93
	% dans Age groups	7,5	31,2	23,7	23,7	9,7	4,3	0,0	100
30-35	Effectif	1,0	30,0	18,0	11,0	3,0	0,0	3,0	66
	% dans Age groups	1,5	45,5	27,3	16,7	4,5	0,0	4,5	100
35-40	Effectif	4,0	29,0	19,0	15,0	3,0	0,0	3,0	73
	% dans Age groups	5,5	39,7	26,0	20,5	4,1	0,0	4,1	100
40-45	Effectif	8,0	23,0	3,0	12,0	1,0	1,0	2,0	50
	% dans Age groups	16,0	46,0	6,0	24,0	2,0	2,0	4,0	100
45-50	Effectif	2,0	34,0	10,0	8,0	3,0	0,0	3,0	60
	% dans Age groups	3,3	56,7	16,7	13,3	5,0	0,0	5,0	100
50-55	Effectif	4,0	16,0	5,0	4,0	0,0	2,0	0,0	31
	% dans Age groups	12,9	51,6	16,1	12,9	0,0	6,5	0,0	100
55-60	Effectif	1,0	19,0	0,0	3,0	1,0	0,0	1,0	25
	% dans Age groups	4,0	76,0	0,0	12,0	4,0	0,0	4,0	100
60-65	Effectif	1,0	10,0	2,0	1,0	0,0	0,0	3,0	17
	% dans Age groups	5,9	58,8	11,8	5,9	0,0	0,0	17,6	100
65-70	Effectif	3,0	3,0	0,0	1,0	0,0	0,0	3,0	10
	% dans Age groups	30,0	30,0	0,0	10,0	0,0	0,0	30,0	100
70-75	Effectif	0,0	5,0	0,0	1,0	0,0	0,0	0,0	6
	% dans Age groups	0,0	83,3	0,0	16,7	0,0	0,0	0,0	100
75-80	Effectif	1,0	3,0	0,0	0,0	0,0	0,0	0,0	4
	% dans Age groups	25,0	75,0	0,0	0,0	0,0	0,0	0,0	100
80-100	Effectif	0,0	3,0	0,0	0,0	0,0	0,0	1,0	4
	% dans Age groups	0,0	75,0	0,0	0,0	0,0	0,0	25,0	100
	Effectif	59,0	412,0	180,0	166,0	32,0	11,0	59,0	919
	% dans Age groups	6,4	44,8	19,6	18,1	3,5	1,2	6,4	100

## 5.8 Tableau croisé Level of education new \* Active agegroups

Level of education new		No answer	Less than 18yr	18-35	35-65	65-100	Total
	No formal education	86	18	17	20	4	145
	% dans Level of education new	59,3	12,4	11,7	13,8	2,8	100
Primary	Effectif	26,0	181,0	86,0	131,0	14,0	438
	% dans Level of education new	5,9	41,3	19,6	29,9	3,2	100
secondary first cycle	Effectif	11,0	80,0	61,0	39,0	0,0	191
	% dans Level of education new	5,8	41,9	31,9	20,4	0,0	100
secondary second cycle	Effectif	7,0	36,0	85,0	43,0	2,0	173
	% dans Level of education new	4,0	20,8	49,1	24,9	1,2	100
Higher education	Effectif	1,0	0,0	24,0	8,0	0,0	33
	% dans Level of education new	3,0	0,0	72,7	24,2	0,0	100
Master-doctorate	Effectif	1,0	0,0	8,0	3,0	0,0	12
	% dans Level of education new	8,3	0,0	66,7	25,0	0,0	100
No answer	Effectif	26,0	40,0	3,0	12,0	4,0	85
	% dans Level of education new	30,6	47,1	3,5	14,1	4,7	100
	Effectif	158,0	355,0	284,0	256,0	24,0	1077
	% dans Level of education new	14,7	33,0	26,4	23,8	2,2	100

## 5.9 Percentage of household with one or more members categorized as "usually absent"

		Resident	Usually absent
Head		176	23
	% dans Relation to HH haed	88,4	11,6

## 5.10 Percentage of populations who live elsewhere and contribute to household livelihood

	Effectifs	Pourcentage	Pourcentage valide
Resident	804	74,5	74,5
Usually absent	275	25,5	25,5

Total	1079	100	100
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### 5.11 Active age groups

	Effectifs	Pourcentage	Pourcentage valide
Less than 18yrs	355	32,9	38,6
18-35	284	26,3	30,9
35-65	256	23,7	27,9
65-100	24	2,2	2,6
Total	919	85,2	100,0
No answer	158	14,6	
Système manquant	2	0,2	
Total	160	14,8	
Total	1079	100	

### 5.11 Tableau croisé Relation to HH head \* HH head aged below or above 35yrs

		No answer	HH Head below 35yrs	HH head aged 35-65	HH head aged 65-100 years
	Effectif	13	27	139	20
	% dans Relation to HH haed	7	14	70	10

### 5.12 Dependent population and dependency rate

		Effectifs	Pourcentage	Pourcentage valide	
Valide	Active population	421	39,0	44,0	
	Dependent population	535	49,6	56,0	
	Total	956	88,6	100,0	
Manquante	No answer	36	3,3		
	Système manquant	87	8,1		
	Total	123	11,4		
Total		1079	100		
<b>Dependency rate</b>	<b>= 421/535</b>				<b>0,78</b>

5.13 Tableau croisé Main activity * Gender				
Effectif				
		Gender		Total
		Male	Female	
Main activity	Income generating	72	69	141
	School	162	170	332
	Unemployed	6	2	8
	Retired	5	0	5
	Disabled	1	0	1
	Subsistence production	105	167	272
	Domestic work	8	31	39
	Other(specify)	34	21	55
	Formal employment	5	1	6
	Casual work	53	40	93
Total		451	501	952

#### 5.14 Tableau croisé Main activity \* Gender

	Gender					
	Male %		Female %		Total	%
Income generating	72	7,6	69,0	7,2	141,0	14,8
School	162	17,0	170,0	17,9	332,0	34,9
Unemployed	6	0,6	2,0	0,2	8,0	0,8
Retired	5	0,5	0,0	0,0	5,0	0,5
Disabled	1	0,1	0,0	0,0	1,0	0,1
Subsistence production	105	11,0	167,0	17,5	272,0	28,6
Domestic work	8	0,8	31,0	3,3	39,0	4,1
Other(specify)	34	3,6	21,0	2,2	55,0	5,8
Formal employment	5	0,5	1,0	0,1	6,0	0,6
Casual work	53	5,6	40,0	4,2	93,0	9,8
Total	451	47,4	501,0	52,6	952,0	100,0

### 5.15 Main activity per groups of age of household head

		No answer	HH Head below 35yrs	HH head aged 35-65	HH head ages 65-100 years
Income generating	Effectif	27	56	55	3
	% dans Main activity	19,1	39,7	39,0	2,1
School	Effectif	33,0	296,0	3,0	0,0
	% dans Main activity	9,9	89,2	0,9	0,0
Unemployed	Effectif	1,0	5,0	2,0	0,0
	% dans Main activity	12,5	62,5	25,0	0,0
Retired	Effectif	0,0	0,0	2,0	3,0
	% dans Main activity	0,0	0,0	40,0	60,0
Disabled	Effectif	0,0	0,0	1,0	0,0
	% dans Main activity	0,0	0,0	100,0	0,0
Subsistence production	Effectif	26,0	74,0	159,0	15,0
	% dans Main activity	9,5	27,0	58,0	5,5
Domestic work	Effectif	2,0	19,0	16,0	3,0
	% dans Main activity	5,0	47,5	40,0	7,5
Other(specify)	Effectif	4,0	22,0	29,0	0,0
	% dans Main activity	7,3	40,0	52,7	0,0
Formal employment	Effectif	0,0	2,0	4,0	0,0
	% dans Main activity	0,0	33,3	66,7	0,0
Casual work	Effectif	16,0	73,0	5,0	0,0
	% dans Main activity	17,0	77,7	5,3	0,0
	Effectif	109,0	547,0	276,0	24,0
	% dans Main activity	11,4	57,2	28,9	2,5

## 5.16 Age groups and main activities

Tableau croisé Age groups * Main activity											
Age groups		Income generating	School	Unemployed	Retired	Disabled	Subsistence production	Domestic work	Other(specify)	Formal employment	Casual work
1-5 yr	Effectif	0,0	15,0	0,0	0,0	0,0	1,0	0,0	1,0	0,0	11,0
	% dans Age groups	0,0	53,6	0,0	0,0	0,0	3,6	0,0	3,6	0,0	39,3
5-10	Effectif	2,0	99,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	24,0
	% dans Age groups	1,6	79,2	0,0	0,0	0,0	0,0	0,0	0,0	0,0	19,2
10-15	Effectif	3,0	66,0	0,0	0,0	0,0	4,0	0,0	3,0	0,0	12,0
	% dans Age groups	3,4	75,0	0,0	0,0	0,0	4,5	0,0	3,4	0,0	13,6
15-20	Effectif	5,0	73,0	1,0	0,0	0,0	3,0	3,0	3,0	0,0	11,0
	% dans Age groups	5,1	73,7	1,0	0,0	0,0	3,0	3,0	3,0	0,0	11,1
20-25	Effectif	11,0	35,0	1,0	0,0	0,0	15,0	6,0	7,0	1,0	10,0
	% dans Age groups	12,8	40,7	1,2	0,0	0,0	17,4	7,0	8,1	1,2	11,6
25-30	Effectif	22,0	8,0	3,0	0,0	0,0	36,0	7,0	7,0	1,0	5,0
	% dans Age groups	24,7	9,0	3,4	0,0	0,0	40,4	7,9	7,9	1,1	5,6
30-35	Effectif	17,0	1,0	0,0	0,0	0,0	32,0	4,0	4,0	1,0	2,0
	% dans Age groups	27,9	1,6	0,0	0,0	0,0	52,5	6,6	6,6	1,6	3,3
35-40	Effectif	19,0	2,0	0,0	0,0	1,0	31,0	8,0	8,0	0,0	1,0
	% dans Age groups	27,1	2,9	0,0	0,0	1,4	44,3	11,4	11,4	0,0	1,4
40-45	Effectif	9,0	0,0	1,0	0,0	0,0	30,0	2,0	4,0	0,0	1,0
	% dans Age groups	19,1	0,0	2,1	0,0	0,0	63,8	4,3	8,5	0,0	2,1
45-50	Effectif	10,0	0,0	0,0	0,0	0,0	37,0	2,0	7,0	2,0	0,0
	% dans Age groups	17,2	0,0	0,0	0,0	0,0	63,8	3,4	12,1	3,4	0,0

50-55	Effectif	5,0	0,0	0,0	0,0	0,0	18,0	1
	% dans Age groups	16,1	0,0	0,0	0,0	0,0	58,1	3
55-60	Effectif	6,0	0,0	0,0	0,0	0,0	15,0	2
	% dans Age groups	24,0	0,0	0,0	0,0	0,0	60,0	8
60-65	Effectif	2,0	0,0	1,0	2,0	0,0	11,0	0
	% dans Age groups	12,5	0,0	6,3	12,5	0,0	68,8	0
65-70	Effectif	2,0	0,0	0,0	1,0	0,0	5,0	2
	% dans Age groups	20,0	0,0	0,0	10,0	0,0	50,0	20
70-75	Effectif	1,0	0,0	0,0	2,0	0,0	2,0	1
	% dans Age groups	16,7	0,0	0,0	33,3	0,0	33,3	16
75-80	Effectif	0,0	0,0	0,0	0,0	0,0	4,0	0
	% dans Age groups	0,0	0,0	0,0	0,0	0,0	100,0	0
80-100	Effectif	0,0	0,0	0,0	0,0	0,0	4,0	0
	% dans Age groups	0,0	0,0	0,0	0,0	0,0	100,0	0
	Effectif	114,0	299,0	7,0	5,0	1,0	248,0	38
	% dans Age groups	13,5	35,3	0,8	0,6	0,1	29,3	4

### 5.17 Percentage of population born in same place/are

	Effectifs	Pourcentage	Pourcentage valide
Mezam	19	1,76	1,80
Bamboutos	383	35,50	36,30
Menoua	532	49,30	50,43
<b>Total</b>		<b>86,56</b>	<b>88,53</b>

### 5.18 Percentage of migrants population (born elsewhere)

	Effectifs	Pourcentage	Pourcentage valide
Vina	1	0,09	0,09
Mfoundi	9	0,83	0,85
Moungo	2	0,19	0,19
Wouri	22	2,04	2,09
Menchum	10	0,93	0,95
Haut-nkam	2	0,19	0,19
Mifi	12	1,11	1,14
Nde	3	0,28	0,28
Noun	11	1,02	1,04
Mvila	1	0,09	0,09

Ocean	3	0,28	0,28
Fako	1	0,09	0,09
Manyu	1	0,09	0,09
Lebialem	43	3,99	4,08
	<b>121</b>	<b>11,21</b>	<b>11,47</b>

### 5.19 Percentage of migrants TOP3 main place/area of born population (born elsewhere)

	Effectifs	Pourcentage	Pourcentage valide
Wouri	22	2,04	2,09
Mifi	12	1,11	1,14
Noun	11	1,02	1,04
	<b>45</b>	<b>4,17</b>	<b>4,27</b>

### 5.20 Percentage of migrants TOP3 main place/area of previous residence

	Effectifs	Pourcentage	Pourcentage valide
Wouri	83	7,7	10,1
Mezam	41	3,8	5,0
Mifi	42	3,9	5,1
Total	166	15,4	20,2

### 5.21 Importance of subsistence production

	Effectifs	Pourcentage	Pourcentage valide
Income generating	141	13,07	14,75
School	332	30,77	34,73
Unemployed	8	0,74	0,84
Retired	5	0,46	0,52
Disabled	1	0,09	0,10
<b>Subsistence production</b>	<b>274</b>	<b>25,39</b>	<b>28,66</b>
Domestic work	40	3,71	4,18
Other(specify)	55	5,10	5,75
Formal employment	6	0,56	0,63
Casual work	94	8,71	9,83
Total	956	88,60	100,00
No answer	123	11,40	
Total	1079	100	



## LIVELIHOOD CHARACTERISTICS (FORMA-3)

6.1 Economically active population as % of total population (gender)				
		Gender		
Main activity		Male	Female	Total
Income generating	Effectif	72	69	141
	% dans Main activity	51,10%	48,90%	100,00%
School	Effectif	162	170	332
	% dans Main activity	48,80%	51,20%	100,00%
Unemployed	Effectif	6	2	8
	% dans Main activity	75,00%	25,00%	100,00%
Retired	Effectif	5	0	5
	% dans Main activity	100,00%	0,00%	100,00%

Disabled	Effectif	1	0	1
	% dans Main activity	100,00%	0,00%	100,00%
Subsistence production	Effectif	105	167	272
	% dans Main activity	38,60%	61,40%	100,00%
Domestic work	Effectif	8	31	39
	% dans Main activity	20,50%	79,50%	100,00%
Other(specify)	Effectif	34	21	55
	% dans Main activity	61,80%	38,20%	100,00%
Formal employment	Effectif	5	1	6
	% dans Main activity	83,30%	16,70%	100,00%
Casual work	Effectif	53	40	93
	% dans Main activity	57,00%	43,00%	100,00%
Total	Effectif	451	501	952
	% dans Main activity	47,40%	52,60%	100,00%

## 6.2 Economically active population

	Effectifs	Pourcentage	Pourcentage valide
Secteur primaire	949	88,0	88,2
Secteur secondaire	32	3,0	3,0
Secteur tertiaire	95	8,8	8,8
Total	1076	99,7	100
No answer	3	0,3	
	1079	100	

## 6.3 Economically active population % distribution over occupation groups

		Gender	
		Male	Female
Secteur primaire	Effectif	439	504
	% dans Main Income agr sectoriell	47	53
Secteur secondaire	Effectif	21	11
	% dans Main Income agr sectoriell	66	34
Secteur tertiaire	Effectif	52	43
	% dans Main Income agr sectoriell	55	45

Total	Effectif	512	558
	% dans Main Income agr sectoriell	48	52

#### 6.4 Tableau croisé Labour position \* Gender

	Gender		Total
Labour position	Male	Female	
Self-employed	145	127	272
Employer	10	9	19
Permanent wage labour	5	7	12
Long term contract(one year and above)	2	2	4
Short term contract(less than one year)	1	0	1
Casual wage labour	1	0	1
Family workers without pay	1	1	2
Total	165	146	311

#### 6.5 Labour position in main occupation \* Gender

	Gender					
Labour position	Male		Female		Total	
	Effective	%	Effective	%	Effective	%
Self-employed	145	46,6	127	40,8	272	87,5
Employer	10	3,2	9	2,9	19	6,1
Permanent wage labour	5	1,6	7	2,3	12	3,9
Long term contract(one year and above)	2	0,6	2	0,6	4	1,3
Short term contract(less than one year)	1	0,3	0	0,0	1	0,3
Casual wage labour	1	0,3	0	0,0	1	0,3
Family workers without pay	1	0,3	1	0,3	2	0,6
Total	165	53,1	146	46,9	311	100,0

#### 6.6 tableau croisé Labour position \* Level of education

	Level of education new						Total
Labour position	Primary	secondary first cycle	secondary secondary	Higher education	Master-doctorate	No answer	
Self-employed	130	50	39	4	2	15	240
Employer	3	6	5	4	0	0	18
Permanent wage labour	6	2	3	0	0	0	11
Long term contract(one year and	1	0	2	0	0	0	3

above)							
Short term contract(less than one year)	1	0	0	0	0	0	1
Family workers without pay	1	0	0	0	0	0	1
Total	142	58	49	8	2	15	274

### 6.7 Tableau croisé Additional economic activities \* Labour position

Additional economic activities	Self-employed	Employer	Permanent wage labour	Long term contract(one year and above)	Short term contract(less than one year)
agriculture	4	1	0	0	0
Fishing	0	0	1	0	0
Transport	6	0	0	0	0
Food industry	2	1	0	0	0
Building industryAgricultural Engineering	3	0	0	0	1
Wood craft	47	0	0	0	0
Service domestique	41	4	4	2	0
traditional health	18	1	0	0	0
animal Health	4	0	0	0	0
Aesthetic	3	0	0	0	0
Education	1	0	0	0	0
Armed forces and Police	3	0	1	0	0
Total	132	7	6	2	1

### 6.8 Tableau croisé Additional economic activities \* Labour position \* Gender

Gender			Labour position					Total
			Self-employed	Employer	Permanent wage labour	Long term contract(one year and above)	Short term contract(less than one year)	
Male	Additional economic activities	agriculture	0	1	0	0	0	1
		Transport	6	0	0	0	0	6
		Food industry	0	1	0	0	0	1
		Building industryAgricultural Engineering	3	0	0	0	1	4
		Wood craft	24	0	0	0	0	24
		Service domestique	25	1	2	2	0	30

		traditional health	13	1	0	0	0	14
		animal Health	4	0	0	0	0	4
		Education	1	0	0	0	0	1
		Armed forces and Police	3	0	1	0	0	4
	Total		79	4	3	2	1	89
Female	Additional economic activities	agriculture	4	0	0			4
		Fishing	0	0	1			1
		Food industry	2	0	0			2
		Wood craft	23	0	0			23
		Service domestique	15	3	2			20
		traditional health	5	0	0			5
		Aesthetic	3	0	0			3
	Total		52	3	3			58

#### 6.9 Time spent \* Place of non-agricultural activity

	Place of non-agricultural activity (name of place)		
Time spent (hours)	Town	Village	Abroad
Less than 6 mn	0	5	0
0,1-0,25	3	5	0
0,25-0,5	6	8	0
0,5-0,75r	1	0	0
0,75-1 hr	5	4	0
1-2	2	8	0
2-4	2	1	1
4-6	2	3	0
6-20 hr	2	7	0
Total	23	41	1

#### 6.10 Tableau croisé Distance covered \* Place of non-agricultural activity

	Place of non-agricultural activity (name of place)			
Distance covered (km)	Town	Village	Abroad	Total
Less than 0,1 km	1	1	0	2
0,1-0,25	0	1	0	1
0,25-0,5	3	3	0	6

0,5-0,75	1	0	0	1
0,75-1	4	22	0	26
1-2	2	14	0	16
2-4	4	7	1	12
4-6	1	0	0	1
6-20	7	7	0	14
Total	23	55	1	79

### 6.11 Non agricultural employed distance to work

Statistiques			
		Time	Km
N	Valide	85	92
	Manquante	994	987
Moyenne		1,0345	15,0315
Médiane		,5000	2,0000
Mode		,50	1,00
Ecart-type		1,17141	59,37432
Minimum		,01	,10
Maximum		5,00	350,00
Somme		87,93	1382,90

### 6.12 Number of different income generating activities

	Effectifs	Pourcentage	Pourcentage valide
Domestic activities	16	1,48	4,83
Animal breeding	3	0,28	0,91
Fishing	2	0,19	0,60
Transport	8	0,74	2,42
Food industry	4	0,37	1,21
Building industryAgricultural Engineering	14	1,30	4,23
Wood craft	34	3,15	10,27
clothing business	24	2,22	7,25
Agriculture	201	18,63	60,73
traditional health	3	0,28	0,91
Retired/pension	1	0,09	0,30
Aesthetic	2	0,19	0,60

Justice	3	0,28	0,91
Education	2	0,19	0,60
Bank/trade/computer	2	0,19	0,60
Armed forces and Police	12	1,11	3,63
Total	331	30,68	100,00
No answer	3	0,28	
Système manquant	745	69,05	
Total	748	69,32	
Total	1079	100,00	

### 6.13 Active age groups

		Effectifs	Pourcentage	Pourcentage valide
Valide	Less than 18yrs	355	32,9	38,6
	18-35	284	26,3	30,9
	<b>35-65</b>	<b>256</b>	<b>23,7</b>	<b>27,9</b>
	65-100	24	2,2	2,6
	Total	919	85,2	100
Manquante	No answer	158	14,6	
	Système manquant	2	0,2	
	Total	160	14,8	
Total		1079	100	

Average number of economically active household member is  
 $256/199=1,2$

### 6.14 Importance of non farming income relative to total household income (?)

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	No answer	5	,5	1,0	1,0
	<b>Non farming activity</b>	<b>167</b>	<b>15,5</b>	<b>33,0</b>	<b>34,0</b>
	Farming activities	334	31,0	66,0	100,0
	Total	506	46,9	100,0	
Manquante	Système manquant	573	53,1		
Total		1079	100,0		

# LIVELIHOOD DIVERSIFICATION AND TRANSFORMATION (FORM A-4)

<b>7.1 Tableau croisé Change in main income activity * Income change</b>			
	Income change		
Change in main income activity	Deteriorated	Same	Improved
Yes	33	79	44
No	25	7	12
Total	58	86	56

<b>7.2 Reasons for change in main income activity</b>			
	Effectifs	Pourcentage	Pourcentage valide
Increase in the price of agricultural inputs	16	1,5	25,8
Family charges/death ceremonies/marriages	4	0,4	6,5
Multi-activity/association of producers-rearers	3	0,3	4,8
Poor soils/soil degradation /fall in production	8	0,7	12,9
Periodic activity	4	0,4	6,5
Increase in production/amelioration in production technics	7	0,6	11,3
Old age/retirement	4	0,4	6,5
Multiforme help	2	0,2	3,2
Change in employment	3	0,3	4,8
Reduction in the cultivated surface area	3	0,3	4,8
Others(pests/plant diseases)	8	0,7	12,9
Total	62	5,7	100
No answer	1	0,1	
Système manquant	1016	94,2	
Total	1017	94,3	
	1079	100	



<b>7.3 Income change</b>			
	Effectifs	Pourcentage	Pourcentage valide
Deteriorated	76	7,04	33,19
Same	89	8,25	38,86
Improved	64	5,93	27,95
Total	229	21,22	100
Système manquant	850	78,78	
	1079	100	

<b>7.4 Purchasing power</b>			
	Effectifs	Pourcentage	Pourcentage valide
Less goods	69	6,39	30,26
Same goods	92	8,53	40,35
More goods	67	6,21	29,39
Total	228	21,13	100
No answer	3	0,28	
Système manquant	848	78,59	
Total	851	78,87	
	1079	100	

<b>7.5 Tableau croisé Main income generating activity * Income change</b>						
			Income change			Total
			Deteriorated	Same	Improved	
Main income generating activity	Domestic activities			7	2	9
		% dans Main income generating activity	0	77,78	22,22	100
	Elevage	Effectif	0	0	1	1
		% dans Main income generating activity	0	0	100	100
	Fishing	Effectif	0	0	2	2
		% dans Main income generating activity	0	0	100	100

	Transport	Effectif	0	4	2	6
		% dans Main income generating activity	0	66,7	33,3	100
	Food industry	Effectif	0	0	3	3
		% dans Main income generating activity	0	0	100	100
	Building industryAgricultural Engineering	Effectif	2	9	1	12
		% dans Main income generating activity	16,7	75	8,33	100
	Wood craft	Effectif	4	6	6	16
		% dans Main income generating activity	25	37,5	37,5	100
	clothing business	Effectif	0	4	7	11
		% dans Main income generating activity	0	36,36	63,6	100
	Agriculture	Effectif	47	45	28,0	120
		% dans Main income generating activity	39,17	37,5	23,3	100
	traditional health	Effectif	3	0	0	3
		% dans Main income generating activity	100	0	0	100
	Retired/pension	Effectif	0	0	1	1
		% dans Main income generating activity	0	0	100	100
	Aesthetic	Effectif	1	0	0	1
		% dans Main income generating activity	100	0	0	100
	Justice	Effectif	0	1	1	2
		% dans Main income generating activity	0	50	50	100
	Education	Effectif	0	0	1	1
		% dans Main income generating activity	0	0	100	100
	Bank/trade/computer	Effectif	1	0	1	2
		% dans Main income generating activity	50	0	50	100
	Armed forces and Police	Effectif	0	2	0	2
		% dans Main income generating activity	0	100	0	100
Total		Effectif	58	78	56	192
		% dans Main income generating activity	30,21	40,6	29,17	100

## 7.6 Tableau croisé Main income generating activity \* Purchasingpower

			Purchasing power			Total
			Less goods	Same goods	More goods	
Main income generating activity	Domestic activities		0	7	3	10
		% dans Main income generating activity	0	70	30	100
	Elevage	Effectif	0	0	1	1
		% dans Main income generating activity	0	0	100	100
	Fishing	Effectif	0	0	2	2
		% dans Main income generating activity	0	0	100	100
	Transport	Effectif	0	2	4	6
		% dans Main income generating activity	0	33,33	66,67	100
	Food industry	Effectif	0	2,00	1,00	3
		% dans Main income generating activity	0	66,67	33,33	100
	Building industryAgricultural Engineering	Effectif	2	10	0	12
		% dans Main income generating activity	16,67	83,33	0	100
	Wood craft	Effectif	5	8	3	16
		% dans Main income generating activity	31,25	50	18,75	100
	clothing business	Effectif	0	3	7	10
		% dans Main income generating activity	0	30	70	100
	Agriculture	Effectif	40	44	33	117
		% dans Main income generating activity	34,19	37,61	28,21	100
	traditional health	Effectif	3	0	0	3
		% dans Main income generating activity	100	0	0	100
	Retired/pension	Effectif	0	0	1	1
		% dans Main income generating activity	0	0	100	100
	Aesthetic	Effectif	1	0	0	1
		% dans Main income generating activity	100	0	0	100
	Justice	Effectif	0	1	1	2
		% dans Main income generating activity	0	50	50	100
	Education	Effectif	0	1	0	1
		% dans Main income generating activity	0	100	0	100
	Bank/trade/computer	Effectif	1	0	1	2
		% dans Main income generating activity	50	0	50	100

	Armed forces and Police	Effectif	0	2	0	2
		% dans Main income generating activity	0	100	0	100
Total		Effectif	52	80	57	189
		% dans Main income generating activity	27,51	42,33	30,16	100

## 7.7 Relationship between land ownership and changes in income

Tableau croisé Land tenure change * Income change						
			Income change			Total
			Deteriorated	Same	Improved	
Land tenure change	Decreased	Effectif	14	1	7	22
		% dans Land tenure change	63,6	4,5	31,8	100
	Same	Effectif	24,0	45,0	20,0	89
		% dans Land tenure change	27,0	50,6	22,5	100
	Increased	Effectif	6,0	13,0	14,0	33
		% dans Land tenure change	18,2	39,4	42,4	100
Total		Effectif	44,0	59,0	41,0	144
		% dans Land tenure change	30,6	41,0	28,5	100

## 7.8 Relationship between land ownership and changes in occupation

Tableau croisé Ownership/tenure * Land tenure change						
			Land tenure change			Total
			Decreased	Same	Increased	
Ownership/tenure	Owned by HH	Effectif	22	83	28	133
		% dans Ownership/tenure	16,5413534	62,406015	21,0526316	100
	Rented	Effectif	3	21	4	28
		% dans Ownership/tenure	10,7142857	75	14,2857143	100
	Borrowed	Effectif	1	5	2	8
		% dans Ownership/tenure	12,5	62,5	25	100
	State land	Effectif	1	2	1	4
		% dans Ownership/tenure	25	50	25	100
Total		Effectif	27	111	35	173
		% dans Ownership/tenure	15,6069364	64,1618497	20,2312139	100

**7.9 Entrepreneurship with land ownership/tenure** **Tableau croisé Main income generating activity \***  
**Ownership/tenure**

			Ownership/tenure					Total
			Owned by HH	Rented	Borrowed	State land	others	
Main income generating activity	Domestic activities	Effectif	6	1	1	0	0	8
		% dans Main income generating activity	75	12,5	12,5	0	0	100
	Elevage	Effectif	0	0	1	0	0	1
		% dans Main income generating activity	0	0	100	0	0	100
	Fishing	Effectif	1	1	0	0	0	2
		% dans Main income generating activity	50	50	0	0	0	100
	Transport	Effectif	3	1	0	0	0	4
		% dans Main income generating activity	75	25	0	0	0	100
	Food industry	Effectif	0	1	0	0	0	1
		% dans Main income generating activity	0	100	0	0	0	100
	Building industryAgricultural Engineering	Effectif	5	2	1	0	0	8
		% dans Main income generating activity	62,5	25	12,5	0	0	100
	Wood craft	Effectif	11	7	0	0	0	18
		% dans Main income generating activity	61,1	38,9	0,0	0,0	0,0	100
	clothing business	Effectif	7,0	0,0	1,0	1,0	2,0	11
		% dans Main income generating activity	63,6	0,0	9,1	9,1	18,2	100
	Agriculture	Effectif	127,0	19,0	3,0	2,0	0,0	151
		% dans Main income generating activity	84,1	12,6	2,0	1,3	0,0	100
	traditional health	Effectif	3,0	0,0	0,0	0,0	0,0	3
		% dans Main income generating activity	100,0	0,0	0,0	0,0	0,0	100
	Retired/pension	Effectif	1,0	0,0	0,0	0,0	0,0	1
		% dans Main income generating activity	100,0	0,0	0,0	0,0	0,0	100

	Aesthetic	Effectif	1,0	0,0	0,0	0,0	0,0	1
		% dans Main income generating activity	100,0	0,0	0,0	0,0	0,0	100
	Justice	Effectif	1,0	0,0	1,0	0,0	0,0	2
		% dans Main income generating activity	50,0	0,0	50,0	0,0	0,0	100
	Education	Effectif	1,0	0,0	0,0	0,0	0,0	1
		% dans Main income generating activity	100,0	0,0	0,0	0,0	0,0	100
	Bank/trade/computer	Effectif	1,0	1,0	0,0	0,0	0,0	2
		% dans Main income generating activity	50,0	50,0	0,0	0,0	0,0	100
	Armed forces and Police	Effectif	5,0	1,0	0,0	0,0	0,0	6
		% dans Main income generating activity	83,3	16,7	0,0	0,0	0,0	100
Total		Effectif	173,0	34,0	8,0	3,0	2,0	220
		% dans Main income generating activity	78,6	15,5	3,6	1,4	0,9	100

#### 7.10 Entrepreneurship with land ownership/size of land Tableau croisé Main income generating activity \* Estimated area bon

			Estimated area bon							Total
			0,007-0,01	0,05-0,1	0,1-0,5	0,5-1	1-2	2-5	5-10	
Main income generating activity	Domestic activities	Effectif	0	0	2	1	0	0	0	3
		% dans Main income generating activity	0	0	67	33	0	0	0	100
	Elevage	Effectif	0	0	0	0	1	0	0	1
		% dans Main income generating activity	0	0	0	0	100	0	0	100
	Fishing	Effectif	0	0	0	0	1	1	0	2
		% dans Main income generating activity	0	0	0	0	50	50	0	100
	Transport	Effectif	0	0	0	1	1	0	0	2
		% dans Main income generating activity	0	0	0	50	50	0	0	100

	Food industry	Effectif	0	1	0	0	0	0	0	1
		% dans Main income generating activity	0	100	0	0	0	0	0	100
	Building industryAgricultural Engineering	Effectif	0	0	1	4	0	0	2	7
		% dans Main income generating activity	0	0	14	57	0	0	29	100
	Wood craft	Effectif	0	0	6	6	1	0	0	13
		% dans Main income generating activity	0	0	46	46	8	0	0	100
	clothing business	Effectif	0	0	1	6	4	0	0	11
		% dans Main income generating activity	0	0	9	55	36	0	0	100
	Agriculture	Effectif	3	1	22	54	23	10	8	121
		% dans Main income generating activity	2	1	18	45	19	8	7	100
	traditional health	Effectif	0	0	1	0	0	1	0	2
		% dans Main income generating activity	0	0	50	0	0	50	0	100
	Retired/pension	Effectif	0	0	0	0	1	0	0	1
		% dans Main income generating activity	0	0	0	0	100	0	0	100
	Aesthetic	Effectif	0	0	0	1	0	0	0	1
		% dans Main income generating activity	0	0	0	100	0	0	0	100
	Justice	Effectif	0	0	1	0	0	1	0	2
		% dans Main income generating activity	0	0	50	0	0	50	0	100
	Education	Effectif	0	0	1	0	0	0	0	1
		% dans Main income generating activity	0	0	100	0	0	0	0	100
	Bank/trade/computer	Effectif	0	0	1	0	0	1	0	2
		% dans Main income generating activity	0	0	50	0	0	50	0	100
	Armed forces and Police	Effectif	0	0	1	3	2	0	0	6

		% dans Main income generating activity	0	0	17	50	33	0	0	100
Total		Effectif	3	2	37	76	34	14	10	176
		% dans Main income generating activity	2	1	21	43	19	8	6	100



## MULTY-LOCALITY AND MOBILITY

### 8.1 Difference between occupation the type of occupation resident and usually absent

8;1.1 Tableau croisé Main income generating activity * Resident				
			Resident	
			Resident	Usually absent
Main income generating activity	Domestic activities	Effectif	11,0	5,0
		% dans Main income generating activity	68,8	31,3
	Elevage	Effectif	3,0	0,0
		% dans Main income generating activity	100,0	0,0
	Fishing	Effectif	2,0	0,0
		% dans Main income generating activity	100,0	0,0
	Transport	Effectif	5,0	3,0
		% dans Main income generating activity	62,5	37,5
	Food industry	Effectif	1,0	3,0
		% dans Main income generating activity	25,0	75,0
	Building industryAgricultural Engineering	Effectif	6,0	8,0
		% dans Main income generating activity	42,9	57,1
	Wood craft	Effectif	16,0	18,0
		% dans Main income generating activity	47,1	52,9
	clothing business	Effectif	19,0	5,0
		% dans Main income generating activity	79,2	20,8
	Agriculture	Effectif	185,0	16,0
		% dans Main income generating activity	92,0	8,0
	traditional health	Effectif	3	0
		% dans Main income generating activity	100	0
	Retired/pension	Effectif	1	0
		% dans Main income generating activity	100	0
	Aesthetic	Effectif	1	1
		% dans Main income generating activity	50	50
	Justice	Effectif	3	0
		% dans Main income generating activity	100	0
	Education	Effectif	2	0
		% dans Main income generating activity	100	0
	Bank/trade/computer	Effectif	1	1

		% dans Main income generating activity	50	50
	Armed forces and Police	Effectif	7	5
		% dans Main income generating activity	58,3	41,7
Total		Effectif	266,0	65,0
		% dans Main income generating activity	80,4	19,6

## 8.2 Importance of household members who are usually absent

### 8;2.1 Who are usually absent household members ?

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Resident	804	74,5	74,6	74,6
	<b>Usually absent</b>	<b>274</b>	<b>25,4</b>	<b>25,4</b>	<b>100,0</b>
	Total	1078	99,9	100,0	
Manquante	Système manquant	1	,1		
Total		1079	100,0		

### 8.2.2 Tableau croisé usually absent members \* Gender

			Gender		Total
			Male	Female	
Resident	Resident	Effectif	385	414	799
		% dans Resident	48,2%	51,8%	100,0%
	Usually absent	Effectif	129	144	273
		% dans Resident	47,3%	52,7%	100,0%
Total		Effectif	514	558	1072
		% dans Resident	47,9%	52,1%	100,0%

### 8.2.3 Birthplace of usually absent members

Birthplace		Resident	Usually absent
Vina	Effectif	1	0
	% dans Birthplace	100	0
Mfoundi	Effectif	3	6
	% dans Birthplace	33	67

Moungo	Effectif	1	1
	% dans Birthplace	50	50
Wouri	Effectif	8	14
	% dans Birthplace	36	64
Menchum	Effectif	7	3
	% dans Birthplace	70	30
Mezam	Effectif	8	11
	% dans Birthplace	42	58
Bamboutos	Effectif	252	131
	% dans Birthplace	66	34
Haut-nkam	Effectif	2	0
	% dans Birthplace	100	0
Menoua	Effectif	441	91
	% dans Birthplace	83	17
Mifi	Effectif	8	4
	% dans Birthplace	67	33
Nde	Effectif	3	0
	% dans Birthplace	100	0
Noun	Effectif	10	1
	% dans Birthplace	91	9
Mvila	Effectif	0	1
	% dans Birthplace	0	100
Ocean	Effectif	3	0
	% dans Birthplace	100	0
Fako	Effectif	1	0
	% dans Birthplace	100	0
Manyu	Effectif	1	0
	% dans Birthplace	100	0
Lebialem	Effectif	32	11
	% dans Birthplace	74	26
Total	Effectif	781	274
	% dans Birthplace	74	26

8.2.4 Usually absent members Ethny			
Ethnicity		Resident	Usually absent
Tikar	Effectif	4	1
	% dans Ethnicity	80	20
Bamiléké	Effectif	775	270
	% dans Ethnicity	74	26
Bamoun	Effectif	5	3
	% dans Ethnicity	63	38
Total	Effectif	802	274

% dans Ethnicity	75	25
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8.2.5 Usually absent members Level of education			
Level of education new		Resident	Usually absent
Primary	Effectif	351	87
	% dans Level of education new	80,1369863	19,86
secondary first cycle	Effectif	144	47
	% dans Level of education new	75,39267016	24,60
secondary secondary	Effectif	107	66
	% dans Level of education new	61,84971098	38,15
Higher education	Effectif	13	20
	% dans Level of education new	39,39393939	60,60
Master-doctorate	Effectif	1	11
	% dans Level of education new	8,333333333	91,66
No answer	Effectif	68	18
	% dans Level of education new	79,06976744	20,93
Total	Effectif	684	249
	% dans Level of education new	73,31189711	26,68

8.2.6 Usually absent active members age groups				
Active age groups		Resident	Usually absent	Total
Less than 18yrs	Effectif	297	58	355
	% dans Active age groups	83,7	16,3	100,0
18-35	Effectif	175	109	284
	% dans Active age groups	61,62	38,38	100,00
35-65	Effectif	210	46	256
	% dans Active age groups	82,03	17,97	100,00
65-100	Effectif	23	1	24
	% dans Active age groups	95,83	4,17	100,00
Total	Effectif	705	214	919

	% dans Active age groups	76,71	23,29	100,00
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### 8.3 Why have usually absent household members left

Reasons for leaving					
		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Education	97	9,0	36,7	36,7
	Travail	139	12,9	52,7	89,4
	Assistance familiale	23	2,1	8,7	98,1
	Marriage	5	,5	1,9	100,0
	Total	264	24,5	100,0	
Manquante	No answer	7	,6		
	Système manquant	808	74,9		
	Total	815	75,5		
Total		1079	100,0		

8.4 Duration since leaving					
		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	No answer	47	4,4	18,3	18,3
	Less than 1 year	8	,7	3,1	21,4
	1-5	109	10,1	42,4	63,8
	5-10	48	4,4	18,7	82,5
	10-15	26	2,4	10,1	92,6
	15-20	14	1,3	5,4	98,1
	20-25	3	,3	1,2	99,2
	25-30	1	,1	,4	99,6
	35-40	1	,1	,4	100,0
	Total	257	23,8	100,0	
Manquante	Système manquant	822	76,2		
Total		1079	100,0		

## 8.5 Current location

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Nearby village	15	1,4	5,8	5,8
	Village in same district	31	2,9	12,0	17,8
	Town/city	211	19,6	81,8	99,6
	Abroad	1	,1	,4	100,0
	Total	258	23,9	100,0	
Manquante	No answer	8	,7		
	Système manquant	813	75,3		
	Total	821	76,1		
Total		1079	100,0		

## 8.6 Number of visits / year

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	No answer	30	2,8	11,7	11,7
	1-5	150	13,9	58,6	70,3
	5-10	12	1,1	4,7	75,0
	10-15	30	2,8	11,7	86,7
	15-20	2	,2	,8	87,5
	20-25	8	,7	3,1	90,6
	25-30	2	,2	,8	91,4
	35-40	12	1,1	4,7	96,1
	45-50	6	,6	2,3	98,4
	50-98	4	,4	1,6	100,0
	Total	256	23,7	100,0	
Manquante	Système manquant	823	76,3		
Total		1079	100,0		

**Frequency of the visits varies from once a year to once a week.**

## 8.7 For what reasons do they visit this HH

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
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Valide	Feasts	33	3,1	13,4	13,4
	Holidays	24	2,2	9,7	23,1
	Burial ceremonies	26	2,4	10,5	33,6
	Funerals	17	1,6	6,9	40,5
	Providind the household/agricultural activities/other form of work	5	,5	2,0	42,5
	Household meetings/familial visits	126	11,7	51,0	93,5
	Other (to solve conflicts, birth in the family)	16	1,5	6,5	100,0
	Total	247	22,9	100,0	
Manquant	No answer	7	,6		
	Système manquant	825	76,5		
	Total	832	77,1		
Total		1079	100,0		

## 8.8 Who are the temporary migrants ?

8.8.1 Destination of work related migration					
		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Mbere	1	,1	,5	,5
	Lekie	1	,1	,5	,9
	Mfoundi	10	,9	4,7	5,6
	Wouri	22	2,0	10,3	16,0
	Mezam	6	,6	2,8	18,8
	Bamboutos	25	2,3	11,7	30,5
	Menoua	122	11,3	57,3	87,8
	Mifi	11	1,0	5,2	93,0
	Noun	1	,1	,5	93,4
	Lebialem	9	,8	4,2	97,7
	Abroad	5	,5	2,4	100
	Total	213	19,7	100,0	
	1079	100,0			

Manquante					

8.8.2 Specify if urban or rural destination					
		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Rural	143	13,3	68,8	68,8
	Urban	65	6,0	31,2	100,0
	Total	208	19,3	100,0	
Manquante	Système manquant	871	80,7		
Total		1079	100,0		

8.8.3 Frequency of these trips					
		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Daily commuting	80	7,4	37,2	37,2
	Every week	42	3,9	19,5	56,7
	Every month	23	2,1	10,7	67,4
	A few times a year	17	1,6	7,9	75,3
	Seasonally	28	2,6	13,0	88,4
	Occasionally	25	2,3	11,6	100,0
	Total	215	19,9	100,0	
Manquante	No answer	7	,6		
	Système manquant	857	79,4		
	Total	864	80,1		
Total		1079	100,0		

8.9 Most used means of transport					
		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Bus	35	3,2	16,1	16,1
	Car	47	4,4	21,7	37,8
	Truck	2	,2	,9	38,7



	Motobike	47	4,4	21,7	60,4
	Other	24	2,2	11,1	71,4
	On foot	58	5,4	26,7	98,2
	Airplane	4	,4	1,8	100,0
	Total	217	20,1	100,0	
Manquante	No answer	5	,5		
	Système manquant	857	79,4		
	Total	862	79,9		
Total		1079	100,0		

8.10 Main purpose of these trips					
		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Commerce / business	49	4,5	23,7	23,7
	Work / agriculture	137	12,7	66,2	89,9
	Buy agricultural inputs	6	,6	2,9	92,8
	Education	15	1,4	7,2	100,0
	Total	207	19,2	100,0	
Manquante	No answer	13	1,2		
	Système manquant	859	79,6		
	Total	872	80,8		
Total		1079	100,0		

## 8.11 How much time does mobile/migrant household members spent in rural area and on/or other urban areas?

8.11.1 Rural %					
		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	1-20	24	2,2	10,3	10,3
	20-40	10	,9	4,3	14,5
	40-60	19	1,8	8,1	22,6
	60-80	55	5,1	23,5	46,2
	80-100	126	11,7	53,8	100,0

	Total	234	21,7	100,0	
Manquante	No answer	16	1,5		
	Système manquant	829	76,8		
	Total	845	78,3		
Total		1079	100,0		

8.11.2 Urban %					
		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	1-20	103	9,5	56,9	56,9
	20-40	18	1,7	9,9	66,9
	40-60	18	1,7	9,9	76,8
	60-80	19	1,8	10,5	87,3
	80-100	23	2,1	12,7	100,0
	Total	181	16,8	100,0	
Manquante	No answer	23	2,1		
	Système manquant	875	81,1		
	Total	898	83,2		
Total		1079	100,0		

## 8.12 What is the difference (if any) in household member mobility between female headed households and male heads ?

8.12.1 Tableau croisé Specify if urban or rural destination * Household heads				
		Household heads		Total
		Male HH heads	Female HH heads	
Specify if urban or rural destination	Rural	20	19	39
	Urban	7	7	14
Total		27	26	53

8.12.2 Tableau croisé Frequency of these trips * Household heads				
		Household heads		Total
		Male HH heads	Female HH heads	
Frequency of these trips	Daily commuting	9	10	19
	Every week	9	5	14
	Every month	4	1	5
	A few times a year	3	3	6
	Seasonally	1	1	2
	Occasionally	5	6	11
Total		31	26	57

8.12.3 Tableau croisé Main purpose of these trips * Household heads				
Effectif				
		Household heads		Total
		Male HH heads	Female HH heads	
Main purpose of these trips	Commerce / business	6	12	18
	Work / agriculture	22	13	35
	Buy agricultural inputs	1	0	1
Total		29	25	54

**8.13 What is the difference (if any) in household member mobility between households with a head of household aged under 35 years and those with a head household aged above 35 ?**

8.13.1 Tableau croisé Destination of work related migration * Vaaa14a					
		Vaaa14a			Total
		No answer	Houseold head less than 35 years	Houseold head above 35 years	
Destination of work related migration	Mbere	0	0	1	1
	Mfoundi	0	1	1	2
	Wouri	1	2	3	6
	Bamboutos	0	0	4	4

	Menoua	3	8	30	41
	Lebialem	0	0	1	1
	Abroad	0	0	1	1
Total		4	11	41	56

8.13.2 Tableau croisé Specify if urban or rural destination *Vaaa14a					
		Vaaa14a			Total
		No answer	Houseold head less than 35 years	Houseold head above 35 years	
Specify if urban or rural destination	Rural	3	6	30	39
	Urban	1	5	8	14
Total		4	11	38	53

8.13.2 Tableau croisé Frequency of these trips * Vaaa14a					
		Vaaa14a			Total
		No answer	Houseold head less than 35 years	Houseold head above 35 years	
Frequency of these trips	Daily commuting	3	7	9	19
	Every week	0	0	14	14
	Every month	0	0	5	5
	A few times a year	0	0	6	6
	Seasonally	0	0	2	2
	Occasionally	1	4	6	11
Total		4	11	42	57

8.14 Tableau croisé Main purpose of these trips *Vaaa14a					
Effectif					
		Vaaa14a			Total

		No answer	Houseold head less than 35 years	Houseold head above 35 years	
Main purpose of these trips	Commerce / business	1	0	17	18
	Work / agriculture	3	11	21	35
	Buy agricultural inputs	0	0	1	1
Total		4	11	39	54

## 68) MAPS (TWO) WITH MAIN DESTINATION AREAS

8.15 Tableau croisé Explanation of mobility change * Change in mobility					
		Change in mobility			Total
		Increase in mobility	Stable mobility	Reduction in mobility	
Explanatio n of mobility change	Use of mobile phones and ICT	1	2	0	3
	Insufficient means	14	7	1	22
	Regular work/increase in work load/insufficient time/in need of money	39	23	7	69
	Old age/ill-health/tireness	4	3	12	19
	Increase in charges/increase in responsability/marriage	11	3	6	20
	Reduction in activity/competition	2	1	1	4
	Insufficient farmland	0	0	2	2
	Development of road infrastructure	0	0	1	1
	No opportunities	6	12	3	21
Total		77	51	33	161

# TYPOLOGY OF MOBILITY

NB. We used the two following tables to build the table named **“Spatial pattern and time dimension”**

Tableau croisé Main purpose of these trips \* Specify if urban or rural destination \*

Frequency of these trips

Frequency of these trips				Specify if urban or rural destination		Total
				Rural	Urban	
Daily commuting	Main purpose of these trips	Commerce / business	Effectif	6	3	9
			% du total	8,5%	4,2%	12,7%
		Work / agriculture	Effectif	51	4	55
			% du total	71,8%	5,6%	77,5%
		Education	Effectif	5	2	7
			% du total	7,0%	2,8%	9,9%
	Total	Effectif	62	9	71	
	% du total	87,3%	12,7%	100,0%		
Every week	Main purpose of these trips	Commerce / business	Effectif	12	0	12
			% du total	33,3%	,0%	33,3%
		Work / agriculture	Effectif	19	4	23
			% du total	52,8%	11,1%	63,9%
		Buy agricultural inputs	Effectif	0	1	1
			% du total	,0%	2,8%	2,8%
	Total	Effectif	31	5	36	
	% du total	86,1%	13,9%	100,0%		
Every month	Main purpose of these trips	Commerce / business	Effectif	0	2	2
			% du total	,0%	10,0%	10,0%
		Work / agriculture	Effectif	11	5	16
			% du total	55,0%	25,0%	80,0%
		Buy agricultural inputs	Effectif	1	0	1
			% du total	5,0%	,0%	5,0%
		Education	Effectif	0	1	1
			% du total	,0%	5,0%	5,0%
Total	Effectif	12	8	20		
	% du total	60,0%	40,0%	100,0%		

A few times a year	Main purpose of these trips	Commerce / business	Effectif % du total	1 6,2%	4 25,0%	5 31,2%
		Work / agriculture	Effectif % du total	4 25,0%	6 37,5%	10 62,5%
		Buy agricultural inputs	Effectif % du total	1 6,2%	0 ,0%	1 6,2%
		Total	Effectif % du total	6 37,5%	10 62,5%	16 100,0%
Seasonally	Main purpose of these trips	Commerce / business	Effectif % du total	3 11,5%	3 11,5%	6 23,1%
		Work / agriculture	Effectif % du total	9 34,6%	4 15,4%	13 50,0%
		Buy agricultural inputs	Effectif % du total	1 3,8%	0 ,0%	1 3,8%
		Education	Effectif % du total	0 ,0%	6 23,1%	6 23,1%
	Total		Effectif % du total	13 50,0%	13 50,0%	26 100,0%
Occasionally	Main purpose of these trips	Commerce / business	Effectif % du total	9 37,5%	5 20,8%	14 58,3%
		Work / agriculture	Effectif % du total	1 4,2%	8 33,3%	9 37,5%
		Education	Effectif % du total	1 4,2%	0 ,0%	1 4,2%
		Total	Effectif % du total	11 45,8%	13 54,2%	24 100,0%

**Tableau croisé Frequency of these trips \* Specify if urban or rural destination \* Main purpose of these trips**

Main purpose of these trips				Specify if urban or rural destination		Total
				Rural	Urban	
Commerce / business	Frequency of these trips	Daily commuting	Effectif % du total	6 12,5%	3 6,2%	9 18,8%

		Every week	Effectif	12	0	12
			% du total	25,0%	,0%	25,0%
		Every month	Effectif	0	2	2
			% du total	,0%	4,2%	4,2%
		A few times a year	Effectif	1	4	5
			% du total	2,1%	8,3%	10,4%
		Seasonally	Effectif	3	3	6
			% du total	6,2%	6,2%	12,5%
		Occasionally	Effectif	9	5	14
			% du total	18,8%	10,4%	29,2%
		Total	Effectif	31	17	48
			% du total	64,6%	35,4%	100,0%
Work / agriculture	Frequency of these trips	Daily commuting	Effectif	51	4	55
			% du total	40,5%	3,2%	43,7%
		Every week	Effectif	19	4	23
			% du total	15,1%	3,2%	18,3%
		Every month	Effectif	11	5	16
			% du total	8,7%	4,0%	12,7%
		A few times a year	Effectif	4	6	10
			% du total	3,2%	4,8%	7,9%
		Seasonally	Effectif	9	4	13
			% du total	7,1%	3,2%	10,3%
		Occasionally	Effectif	1	8	9
			% du total	,8%	6,3%	7,1%
		Total	Effectif	95	31	126
			% du total	75,4%	24,6%	100,0%
Buy agricultural inputs	Frequency of these trips	Every week	Effectif	0	1	1
			% du total	,0%	25,0%	25,0%
		Every month	Effectif	1	0	1
			% du total	25,0%	,0%	25,0%
		A few times a year	Effectif	1	0	1
			% du total	25,0%	,0%	25,0%
		Seasonally	Effectif	1	0	1
			% du total	25,0%	,0%	25,0%



	Total		Effectif	3	1	4	
			% du total	75,0%	25,0%	100,0%	
Education	Frequency of these trips	Daily commuting	Effectif	5	2	7	
			% du total	33,3%	13,3%	46,7%	
		Every month	Effectif	0	1	1	
			% du total	,0%	6,7%	6,7%	
		Seasonally	Effectif	0	6	6	
			% du total	,0%	40,0%	40,0%	
		Occasionally	Effectif	1	0	1	
			% du total	6,7%	,0%	6,7%	
		Total		Effectif	6	9	15
				% du total	40,0%	60,0%	100,0%

Time dimension	Spatial pattern					
	Rural-rural	%	Rural-urban	%	Urban-rural	Urban-urban
Commuting	Commerce/business	12,5	Commerce/business	6,2	Work	
	Work/agriculture	40,5	Work	3,2		
	To buy inputs	0	To buy inputs	25		
	Education	48,9	Education	22,9		
Periodic /short term	Commerce/business	52,1	Commerce/business	29,2	Agriculture	
	Work/agriculture	34,9	Work/agriculture	21,4		
	To buy inputs	75	To buy inputs	0		
Long term	Education	89,3	Education	36,1	Agriculture Education	
	Work	89,3	Work	53,6		

	Marriages	7,1	Marriages	2,1	Domestic Services	
	Social assistance	14,3	Social assistance	8,2	Bank/Trade/computer	

## PLOTS (FORM C-1)

### 10.1 What is the average size of landholdings per household (indicate max and min size)?

Statistics <sup>a</sup>		
Area planted(h)		
N	Valid	296
	Missing	249
Mean		.4373
Minimum		.00
Maximum		6.00
Sum		129.43
a. Respondent group = Irish potato producers		

Statistics <sup>a</sup>		
Area planted(h)		
N	Valid	218
	Missing	314
Mean		.6098
Minimum		.00
Maximum		6.00
Sum		132.94

a. Respondent group = Non-producers

**10.2 Make a frequency diagram or a table of total estimated land (acres) per household;**

Area planted(h) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	165	30.3	55.7	55.7
	0.05	2	.4	.7	56.4
	0.08	1	.2	.3	56.8
	0.1	1	.2	.3	57.1
	0.2	1	.2	.3	57.4
	0.25	13	2.4	4.4	61.8
	0.5	48	8.8	16.2	78.0
	1	45	8.3	15.2	93.2
	1.1	2	.4	.7	93.9
	2	9	1.7	3.0	97.0
	2.5	1	.2	.3	97.3
	3	2	.4	.7	98.0
	4	3	.6	1.0	99.0
	5	2	.4	.7	99.7
	6	1	.2	.3	100.0
	Total	296	54.3	100.0	
Missing	System	249	45.7		
Total		545	100.0		

Area planted(h) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	165	30.3	55.7	55.7
	0.05	2	.4	.7	56.4
	0.08	1	.2	.3	56.8
	0.1	1	.2	.3	57.1
	0.2	1	.2	.3	57.4
	0.25	13	2.4	4.4	61.8
	0.5	48	8.8	16.2	78.0
	1	45	8.3	15.2	93.2
	1.1	2	.4	.7	93.9
	2	9	1.7	3.0	97.0
	2.5	1	.2	.3	97.3
	3	2	.4	.7	98.0
	4	3	.6	1.0	99.0
	5	2	.4	.7	99.7
	6	1	.2	.3	100.0
	Total	296	54.3	100.0	
Missing	System	249	45.7		
a. Respondent group = Irish potato producers					

Area planted(h) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	105	19.7	48.2	48.2
	0.06	4	.8	1.8	50.0
	0.1	1	.2	.5	50.5
	0.25	6	1.1	2.8	53.2
	0.5	42	7.9	19.3	72.5
	1	35	6.6	16.1	88.5
	1.1	1	.2	.5	89.0
	1.5	4	.8	1.8	90.8
	2	8	1.5	3.7	94.5
	3	5	.9	2.3	96.8

	4	2	.4	.9	97.7
	5	1	.2	.5	98.2
	6	4	.8	1.8	100.0
	Total	218	41.0	100.0	
Missing	System	314	59.0		
Total		532	100.0		
a. Respondent group = Non-producers					

### 10.3 What is the average number of plots (indicate max and min number)

Statistics <sup>a</sup>		
Number of plots per household		
N	Valid	99
	Missing	446
Mean		3.3131
Minimum		1.00
Maximum		5.00
Sum		328.00
a. Respondent group = Irish potato producers		

Statistics <sup>a</sup>		
Number of plots per household		
N	Valid	109
	Missing	423
Mean		2.3211
Minimum		.00
Maximum		7.00
Sum		253.00
a. Respondent group = Non-producers		

## 10.4 What is the average size and share of cultivated land in total land use?

Land use <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cultivated	207	38.0	95.0	95.0
	Fallow	7	1.3	3.2	98.2
	Pasture	3	.6	1.4	99.5
	Forest	1	.2	.5	100.0
	Total	218	40.0	100.0	
Missing	No answer	5	.9		
	System	322	59.1		
	Total	327	60.0		
Total		545	100.0		
a. Respondent group = Irish potato producers					

Land use <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cultivated	156	29.3	97.5	97.5
	Fallow	3	.6	1.9	99.4
	Other(specify)	1	.2	.6	100.0
	Total	160	30.1	100.0	
Missing	System	372	69.9		
Total		532	100.0		
a. Respondent group = Non-producers					

## 10.5 Describe in your own words the data on the perceived distance to plots

*The average distance and maximum distances are high, reflecting the importance of mobility between residential areas and production areas. Pedestrians must go from the foothills (less than 1600 m) to the heights (2400 m altitude).*

*Beyond 10 km, the daily movement on foot is rare. It is replaced by short-term stays (weekly). Today, the advent of motorcycle taxi has changed this perception. The distances to the fields are becoming longer for shorter journey times. The area of Bamboutos Mountains influence in what concerns the daily movements exceeds 30 km to cover in one hour.*

*By car the same distance is covered in the same time because of bad roads. The bike is faster than the car on this kind of roads.*

Statistics <sup>a</sup>			
		Percieved location of plots in time/hr	Percieved location of plots in Km
N	Valid	162	134
	Missing	383	411
Mean		2.9543	4.0190
Minimum		.01	.05
Maximum		90.00	15.00
Sum		478.60	538.55
a. Respondent group = Irish potato producers			

Statistics <sup>a</sup>			
		Percieved location of plots in time/hr	Percieved location of plots in Km
N	Valid	115	88
	Missing	417	444
Mean		1.9077	4.3566
Minimum		.01	.04
Maximum		25.00	50.00
Sum		219.38	383.38
a. Respondent group = Non-producers			

## 10.6 What is the dominant form of land tenure (calculate the shares on aggregate level and list notable 'outliers' at household level)?

Land tenure <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Owned by HH	96	17.6	21.1	21.1
	Rented	94	17.2	20.7	41.9
	Borrowed	86	15.8	18.9	60.8
	Community land	77	14.1	17.0	77.8
	State land	66	12.1	14.5	92.3
	Other	35	6.4	7.7	100.0

	Total	454	83.3	100.0	
Missing	System	91	16.7		
<b>Land tenure<sup>a</sup></b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Owned by HH	96	17.6	21.1	21.1
	Rented	94	17.2	20.7	41.9
	Borrowed	86	15.8	18.9	60.8
	Community land	77	14.1	17.0	77.8
	State land	66	12.1	14.5	92.3
	Other	35	6.4	7.7	100.0
	Total	454	83.3	100.0	
Missing	System	91	16.7		
Total		545	100.0		
a. Respondent group = Irish potato producers					

<b>Land tenure<sup>a</sup></b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Owned by HH	77	14.5	19.6	19.6
	Rented	80	15.0	20.4	40.1
	Borrowed	82	15.4	20.9	61.0
	Community land	68	12.8	17.3	78.3
	State land	52	9.8	13.3	91.6
	Other	33	6.2	8.4	100.0
	Total	392	73.7	100.0	
Missing	System	140	26.3		
Total		532	100.0		
a. Respondent group = Non-producers					



**10.7 Which inputs are used on plots with the specific (emerging/booming) crop and other major crops (select what is most relevant).**

**Recapitulative table**

Statistics <sup>a</sup>							
		Inputs Bought seeds	Inputs Inorganic fertilizer	Inputs Organic fertilizer	Inputs Pest/herbicide s	Inputs Irrigation	Inputs Other(specify)
N	Valid	146	187	190	130	28	8

	Missing	399	358	355	415	517	537
Mean		1.0000	2.0000	3.0000	4.0000	4.2857	3.0000
Minimum		1.00	2.00	3.00	4.00	.00	.00
Maximum		1.00	2.00	3.00	4.00	5.00	6.00
Sum		146.00	374.00	570.00	520.00	120.00	24.00
a. Respondent group = Irish potato producers							

Inputs Bought seeds <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	146	26.8	100.0	100.0
Missing	System	399	73.2		
Total		545	100.0		
a. Respondent group = Irish potato producers					

Inputs Inorganic fertilizer <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Inorganic fertilizer	187	34.3	100.0	100.0
Missing	System	358	65.7		
Total		545	100.0		
a. Respondent group = Irish potato producers					

Inputs Organic fertilizer <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Organic fertilizer	190	34.9	100.0	100.0
Missing	System	355	65.1		
Total		545	100.0		
a. Respondent group = Irish potato producers					

Inputs Pest/herbicides <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pesticide/herbicide	130	23.9	100.0	100.0
Missing	System	415	76.1		

Inputs Pest/herbicides <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pesticide/herbicide	130	23.9	100.0	100.0
Missing	System	415	76.1		
Total		545	100.0		
a. Respondent group = Irish potato producers					

Inputs Irrigation <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4	.7	14.3	14.3
	Irrigation	24	4.4	85.7	100.0
	Total	28	5.1	100.0	
Missing	System	517	94.9		
Total		545	100.0		
a. Respondent group = Irish potato producers					

#### Non-producers recapitulative table

Statistics <sup>a</sup>							
		Inputs Bought seeds	Inputs Inorganic fertilizer	Inputs Organic fertilizer	Inputs Pest/herbicides	Inputs Irrigation	Inputs Other(specify )
N	Valid	101	126	129	72	12	2
	Missing	431	406	403	460	520	530
Mean		1.0000	2.0000	3.0000	4.0000	5.3333	6.0000
Minimum		1.00	2.00	3.00	4.00	5.00	6.00
Maximum		1.00	2.00	3.00	4.00	9.00	6.00
Sum		101.00	252.00	387.00	288.00	64.00	12.00
a. Respondent group = Non-producers							

Inputs Bought seeds <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	101	19.0	100.0	100.0
Missing	System	431	81.0		

Inputs Bought seeds <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	101	19.0	100.0	100.0
Missing	System	431	81.0		
Total		532	100.0		
a. Respondent group = Non-producers					

Inputs Inorganic fertilizer <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Inorganic fertilizer	126	23.7	100.0	100.0
Missing	System	406	76.3		
Total		532	100.0		
a. Respondent group = Non-producers					

Inputs Organic fertilizer <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Organic fertilizer	129	24.2	100.0	100.0
Missing	System	403	75.8		
Total		532	100.0		
a. Respondent group = Non-producers					

Inputs Pest/herbicides <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pesticide/herbicide	72	13.5	100.0	100.0
Missing	System	460	86.5		
Total		532	100.0		
a. Respondent group = Non-producers					

Inputs Irrigation <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Irrigation	12	2.3	100.0	100.0
Missing	System	520	97.7		

Inputs Irrigation <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Irrigation	12	2.3	100.0	100.0
Missing	System	520	97.7		
Total		532	100.0		
a. Respondent group = Non-producers					

## LIVESTOCK (FORM C-1)

### 11.1 What is the average number of different types of livestock per household (indicate max and min number)

Statistics						
		Number of cattle	Number of pigs	Number of sheep	Number of goats	Number of chicken
N	Valid	3	62	44	40	76
	Missing	197	138	156	160	124
Minimum		2.00	1.00	1.00	1.00	1.00
Maximum		20.00	15.00	30.00	33.00	200.00
Sum		25.00	241.00	196.00	241.00	737.00

#### Statistics

Number of cattle

N	Valid	3
	Missing	197
Mean		8.3333
Minimum		2.00
Maximum		20.00
Sum		25.00

### Statistics

Number of pigs

N	Valid	62
	Missing	138
Mean		3.8871
Minimum		1.00
Maximum		15.00
Sum		241.00

### Statistics

Number of sheep

N	Valid	44
	Missing	156
Mean		4.4545
Minimum		1.00
Maximum		30.00
Sum		196.00

### Statistics

Number of goats

N	Valid	40
	Missing	160
Mean		6.0250
Minimum		1.00
Maximum		33.00
Sum		241.00

### Statistics

Number of chicken

N	Valid	76
	Missing	124
Mean		9.6974
Minimum		1.00
Maximum		200.00
Sum		737.00

## Statistics

Number of other(Ducks,  
Goose etc)

N	Valid	48
	Missing	152
Mean		12.2500
Minimum		1.00
Maximum		130.00
Sum		588.00

## 11.2 How is the use of animal products distributed per type of livestock (give narrative interpretation of the importance of subsistence relative to market production)?

### Use of cattle products

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Subsistence	1	.5	33.3	33.3
	Sale	2	1.0	66.7	100.0
	Total	3	1.5	100.0	
Missing	No answer	2	1.0		
	Not applicable	195	97.5		
	Total	197	98.5		
Total		200	100.0		

### Use of pig products

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Subsistence	9	4.5	14.5	14.5
	Sale	33	16.5	53.2	67.7
	Both	20	10.0	32.3	100.0
	Total	62	31.0	100.0	
Missing	No answer	2	1.0		

	Not applicable	136	68.0		
	Total	138	69.0		
Total		200	100.0		

#### Use of sheep products

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Subsistence	1	.5	2.3	2.3
	Sale	24	12.0	55.8	58.1
	Both	18	9.0	41.9	100.0
	Total	43	21.5	100.0	
Missing	No answer	2	1.0		
	Not applicable	155	77.5		
	Total	157	78.5		
Total		200	100.0		

#### Use of goat products

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Subsistence	4	2.0	9.8	9.8
	Sale	22	11.0	53.7	63.4
	Both	15	7.5	36.6	100.0
	Total	41	20.5	100.0	
Missing	No answer	2	1.0		
	Not applicable	157	78.5		
	Total	159	79.5		
Total		200	100.0		

#### Use of chicken products

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Subsistence	14	7.0	20.3	20.3
	Sale	19	9.5	27.5	47.8



Missing	Both	36	18.0	52.2	100.0
	Total	69	34.5	100.0	
	No answer	2	1.0		
	Not applicable	129	64.5		
Total		131	65.5		
Total		200	100.0		

#### Use of other products(Ducks, Goose etc)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Subsistence	8	4.0	17.8	17.8
	Sale	6	3.0	13.3	31.1
	Both	31	15.5	68.9	100.0
	Total	45	22.5	100.0	
Missing	No answer	2	1.0		
	Not applicable	153	76.5		
	Total	155	77.5		
Total		200	100.0		

## CHANGES IN SIZE AND TENURE OF LAND (FORM C-2)

**12.1 What is the proportion of plots with only family labour? Is there any connection between use of cultivated plot and use of only family labour?**

Labour <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hired labour	2	.4	1.0	1.0
	Family	31	5.7	16.2	17.3
	Combination of both	158	29.0	82.7	100.0
	Total	191	35.0	100.0	
Missing	System	354	65.0		
Total		545	100.0		
a. Respondent group = Irish potato producers					

Labour <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hired labour	12	2.3	8.6	8.6
	Family	32	6.0	23.0	31.7
	Combination of both	95	17.9	68.3	100.0
	Total	139	26.1	100.0	
Missing	System	393	73.9		
Total		532	100.0		
a. Respondent group = Non-producers					

## 12.2 What is the proportion of HH that have experienced overall increases/decreases in their land holdings

Land tenure change <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	6	1.1	4.8	4.8
	Decreased	17	3.1	13.6	18.4
	Same	78	14.3	62.4	80.8
	Increased	24	4.4	19.2	100.0
	Total	125	22.9	100.0	
Missing	System	420	77.1		
Total		545	100.0		
a. Respondent group = Irish potato producers					

## 12.3 What is the average size of the increase (list notable 'outliers')?

## 12.4 What is the average size of the decrease (list notable 'outliers')?

## 12.5 Describe in your own words the distribution of the increase and decrease per type of tenure. Are there any general reasons for either increase or decrease of landholdings under different types of tenure – please gather responses in categories (e.g. old age, illness in family, expansion of production, etc.)? Or is it highly individualized? Give examples.

*Overall, the decrease in size of the plots is related to the mode of succession which focuses on distribution of land to the children when they become adults.*

*For plots to operate, changes in size comes from the interplay of supply and demand and the financial means of the tenant.*

## 12.6 Reasons for either increase or decrease of landholdings under different types of tenure

### 12.6.1 Owned by household

<i>12.6.1.1 Reasons for change in cultivated land owned by the household</i>				
	Frequency	Percent	Valid Percent	Cumulative Percent
Limited means/insufficient means/no possibilities/insufficient support	58	33.3	43.6	43.6
Regular work	4	2.3	3.0	46.6
Increase in production/Increase in revenues	11	6.3	8.3	54.9
Bought a farm	6	3.4	4.5	59.4
Old age/illnesses/insufficient work force	6	3.4	4.5	63.9
Insufficient space/limited space	18	10.3	13.5	77.4
Family heritage/heritage/partition	2	1.1	1.5	78.9
Necessity of a fallow period	1	.6	.8	79.7
Family charges	10	5.7	7.5	87.2
Insufficient labour/departure of children	3	1.7	2.3	89.5
No need to add/sufficient to satisfy HH	3	1.7	2.3	91.7
Ill health	2	1.1	1.5	93.2
Other	9	5.2	6.8	100.0
Total	133	76.4	100.0	

<i>12.6.1.2 Reasons for change in rented land</i>				
	Frequency	Percent	Valid Percent	Cumulative Percent
Limited means/insufficient means/no possibilities/insufficient support	13	7.5	44.8	44.8
Increase in production/Increase in revenues	4	2.3	13.8	58.6
Old age/illnesses/insufficient work force	1	.6	3.4	62.1
Insufficient space/limited space	7	4.0	24.1	86.2
Family heritage/heritage/partition	1	.6	3.4	89.7
Family charges	1	.6	3.4	93.1
Insufficient labour/departure of children	1	.6	3.4	96.6

Other	1	.6	3.4	100.0
Total	29	16.7	100.0	
Total	174	100.0		
a. Land tenure = Rented				

## CROP OUTPUT (FORM C-3)

**13.1 What is the average size of planted area (household level) of the specific (booming) crop and other crops (select what is most relevant). List also min and max size.**

Statistics <sup>a</sup>		
<b>13.1.1 Area planted(h) by producers</b>		
N	Valid	131
	Missing	414
Mean		.9880
Minimum		.05
Maximum		6.00
Sum		129.43
a. Respondent group = Irish potato producers		

Statistics <sup>a</sup>		
<b>13.1.2 Area planted(h)</b>		
N	Valid	113
	Missing	419
Mean		1.1765
Minimum		.06
Maximum		6.00
Sum		132.94
a. Respondent group = Non-producers		

## 13.2 Area planted for Irish potato

13.2.1 Area planted (h) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	48	48.5	53.3	53.3
	0.08	1	1.0	1.1	54.4
	0.25	3	3.0	3.3	57.8
	0.5	9	9.1	10.0	67.8
	1	21	21.2	23.3	91.1
	1.1	1	1.0	1.1	92.2
	2	3	3.0	3.3	95.6
	2.5	1	1.0	1.1	96.7
	3	1	1.0	1.1	97.8
	4	1	1.0	1.1	98.9
	5	1	1.0	1.1	100.0
	Total	90	90.9	100.0	
Missing	System	9	9.1		
Total		99	100.0		
a. Crop name = Irish potato					

## 13.3 Area planted for maize

13.3.1 Area planted(h) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	42	36.5	40.4	40.4
	0.06	1	.9	1.0	41.3
	0.25	4	3.5	3.8	45.2
	0.5	21	18.3	20.2	65.4
	1	16	13.9	15.4	80.8
	1.1	1	.9	1.0	81.7
	1.5	1	.9	1.0	82.7
	2	11	9.6	10.6	93.3
	3	4	3.5	3.8	97.1
	4	1	.9	1.0	98.1

	5	2	1.7	1.9	100.0
	Total	104	90.4	100.0	
Missing	System	11	9.6		
Total		115	100.0		
a. Crop name = Maize					

### 13.4 Area planted for beans

13.4.1 Area planted(h) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	49	42.6	49.0	49.0
	0.06	1	.9	1.0	50.0
	0.1	1	.9	1.0	51.0
	0.25	4	3.5	4.0	55.0
	0.5	26	22.6	26.0	81.0
	1	14	12.2	14.0	95.0
	1.5	2	1.7	2.0	97.0
	3	1	.9	1.0	98.0
	4	1	.9	1.0	99.0
	6	1	.9	1.0	100.0
	Total	100	87.0	100.0	
Missing	System	15	13.0		
Total		115	100.0		
a. Crop name = Beans					

**13.5 How much varies the productivity between households and what is the average productivity for the specific (booming crop) and those selected as most relevant (see above) (combine data for area planted and production per year)?**

Statistics <sup>a</sup>		
13.5.1 Totale production per year		
N	Valid	325
	Missing	220
Mean		2.8351
Minimum		.01

Maximum	65.00
Sum	921.39
a. Respondent group = Irish potato producers	

Statistics <sup>a</sup>		
<b>13.5.2 Totale production per year</b>		
N	Valid	230
	Missing	302
Mean		3.1750
Minimum		.00
Maximum		110.00
Sum		730.25
a. Respondent group = Non-producers		

***(combine data for area planted and production per year***

Chi-Square Tests				
Respondent group		Value	df	Asymp. Sig. (2-sided)
Irish potato producers	Pearson Chi-Square	1051.902 <sup>a</sup>	936	.005
	Likelihood Ratio	313.904	936	1.000
	Linear-by-Linear Association	.080	1	.778
	N of Valid Cases	130		
Non-producers	Pearson Chi-Square	711.827 <sup>b</sup>	693	.302
	Likelihood Ratio	283.709	693	1.000
	Linear-by-Linear Association	11.603	1	.001
	N of Valid Cases	111		
a. 1022 cells (100.0%) have expected count less than 5. The minimum expected count is .01.				
b. 768 cells (100.0%) have expected count less than 5. The minimum expected count is .01.				

Symmetric Measures					
Respondent group			Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup> Sig.
Irish potato producers	Nominal by Nominal	Phi	2.845		.005
		Cramer's V	.789		.005

	Interval by Interval	Pearson's R	-.025	.059	-.281	.779 <sup>c</sup>
	Ordinal by Ordinal	Spearman Correlation	.212	.088	2.456	.015 <sup>c</sup>
	N of Valid Cases		130			
Non-producers	Nominal by Nominal	Phi	2.532			.302
		Cramer's V	.764			.302
	Interval by Interval	Pearson's R	.325	.115	3.585	.001 <sup>c</sup>
	Ordinal by Ordinal	Spearman Correlation	.159	.102	1.684	.095 <sup>c</sup>
	N of Valid Cases		111			
a. Not assuming the null hypothesis.						
b. Using the asymptotic standard error assuming the null hypothesis.						
c. Based on normal approximation.						

### 13.6 Describe in your own words the differences (per crop) in the importance of subsistence production and production for the market. Does the data allow for a sensible quantitative statement of the importance

*Since the financial crisis of the late 1980s, there has been a transition from subsistence farming to commercial food. Farmers produced essentially for sale. Whatever the product the part sold is between 50 to 65%.*

13.5.1 Share of total production sold regrouped <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 25%	23	4.2	10.1	10.1
	25 to 50%	58	10.6	25.4	35.5
	50 to 75%	46	8.4	20.2	55.7
	75 to 100%	101	18.5	44.3	100.0
	Total	228	41.8	100.0	
Missing	System	317	58.2		
Total		545	100.0		
a. Respondent group = Irish potato producers					



13.5.2 Share of total production sold regrouped <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 25%	24	4.5	17.8	17.8
	25 to 50%	50	9.4	37.0	54.8
	50 to 75%	27	5.1	20.0	74.8
	75 to 100%	34	6.4	25.2	100.0
	Total	135	25.4	100.0	
Missing	System	397	74.6		
Total		532	100.0		
a. Respondent group = Non-producers					

**13.6 What is the span between max and min price (listed per crop)? Does the span between highest and lowest price differ substantially among the respondents?**

13.6.1 Lowest and highest prices			
		Lowest price(fcfa)	Highest price(fcfa)
N	Valid	289	288
	Missing	256	257
Mean		159781.1592	365060.8333
Minimum		1300.00	25000.00
Maximum		1200000.00	20000000.00
Sum		46176755.00	105137520.00
a. Respondent group = Irish potato producers			

13.6.2 Lowest and highest prices non producers			
		Lowest price(fcfa)	Highest price(fcfa)
N	Valid	168	169
	Missing	364	363
Mean		195762.2360	434994.8460
Minimum		14500.00	40000.00
Maximum		2900909.00	1500000.00
Sum		32888055.64	73514128.98

13.6.2 Lowest and highest prices non producers			
		Lowest price(fcfa)	Highest price(fcfa)
N	Valid	168	169
	Missing	364	363
Mean		195762.2360	434994.8460
Minimum		14500.00	40000.00
Maximum		2900909.00	1500000.00
Sum		32888055.64	73514128.98
a. Respondent group = Non-producers			

### 13.7 Is the use of hired labour prevalent in the production of the specific (booming) crop and the other selected crops? Do not distinguish between different tasks, simply include any use of labour.

#### 13.7.1 For local hired labour

Statistics <sup>a</sup>						
		Use of hired local labour Land preparation	User of hired local labour Sowing/weeding	Use of hired local labour Harvesting	Use of hired local labour Post harvesting	Use of hired local labour Other(specify)
N	Valid	207	195	174	69	34
	Missing	338	350	371	476	511
a. Respondent group = Irish potato producers						

Statistics <sup>a</sup>						
		Use of hired local labour Land preparation	Use of hired local labour Sowing/weeding	Use of hired local labour Harvesting	Use of hired local labour Post harvesting	Use of hired local labour Other(specify)
N	Valid	146	107	74	35	14
	Missing	386	425	458	497	518
a. Respondent group = Non-producers						

### 13.7.2 For migrant hired labour

Statistics <sup>a</sup>						
		Use of hired migrant labour Land preparation	Use of hired migrant labour Sowing/weeding	Use of hired migrant labour Harvesting	Use of hired migrant labour Post harvesting	Use of hired migrant labour Other(specify)
N	Valid	113	102	100	38	34
	Missing	432	443	445	507	511
a. Respondent group = Irish potato producers						

Statistics <sup>a</sup>						
		Use of hired migrant labour Land preparation	Use of hired migrant labour Sowing/weeding	Use of hired migrant labour Harvesting	Use of hired migrant labour Post harvesting	Use of hired migrant labour Other(specify)
N	Valid	21	24	13	2	2
	Missing	511	508	519	530	530
a. Respondent group = Non-producers						

### 13.8 For the specific (booming) crop: is there an identifiable pattern in the 'location' of the crop purchase?

Statistics <sup>a</sup>					
		Farm gate	Market	Company gate	Farmer organisation
N	Valid	113	255	110	138
	Missing	432	290	435	407
a. Respondent group = Irish potato producers					

Farm gate <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2	.4	1.8	1.8
	Other farmer/villager	28	5.1	24.8	26.5
	Cooperative	1	.2	.9	27.4
	Local trader	82	15.0	72.6	100.0
	Total	113	20.7	100.0	
Missing	System	432	79.3		
Total		545	100.0		

a. Respondent group = Irish potato producers					
Market <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	3	.6	1.2	1.2
	Other farmer/villager	90	16.5	35.3	36.5
	Farmer organisation	8	1.5	3.1	39.6
	Cooperative	6	1.1	2.4	42.0
	Local trader	145	26.6	56.9	98.8
	5	2	.4	.8	99.6
	6	1	.2	.4	100.0
	Total	255	46.8	100.0	
Missing	System	290	53.2		
Total		545	100.0		
a. Respondent group = Irish potato producers					

Company gate <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4	.7	3.6	3.6
	Other farmer/villager	28	5.1	25.5	29.1
	Farmer organisation	67	12.3	60.9	90.0
	Cooperative	3	.6	2.7	92.7
	Local trader	8	1.5	7.3	100.0
	Total	110	20.2	100.0	
Missing	System	435	79.8		
Total		545	100.0		
a. Respondent group = Irish potato producers					

Farmer organisation <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	14	2.6	10.1	10.1
	Other farmer/villager	36	6.6	26.1	36.2
	Farmer organisation	65	11.9	47.1	83.3

	Cooperative	5	.9	3.6	87.0
	Local trader	11	2.0	8.0	94.9
	5	1	.2	.7	95.7
	6	6	1.1	4.3	100.0
	Total	138	25.3	100.0	
Missing	System	407	74.7		
Total		545	100.0		
a. Respondent group = Irish potato producers					

Statistics <sup>a</sup>					
		Farm gate	Market	Company gate	Farmer organisation
N	Valid	62	158	53	54
	Missing	470	374	479	478
a. Respondent group = Non-producers					

### 13.8 For the specific (booming) crop: is there an identifiable pattern in the buyer type

Buyer <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	6	1.1	2.3	2.3
	Same	72	13.2	27.6	29.9
	Changed	183	33.6	70.1	100.0
	Total	261	47.9	100.0	
Missing	System	284	52.1		
Total		545	100.0		
a. Respondent group = Irish potato producers					

Buyer <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	11	2.1	5.9	5.9
	Same	98	18.4	52.1	58.0
	Changed	79	14.8	42.0	100.0

	Total	188	35.3	100.0	
Missing	System	344	64.7		
Total		532	100.0		
a. Respondent group = Non-producers					

## CHANGES IN CROPS (FORM C-4)

**14.1. and 14.2. What is the proportion of households that have experienced overall increase in the land allocated for each of the main crops?**

14.1.2 Land allocated by producer					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	1	1.0	1.2	1.2
	Same	6	6.2	7.3	8.5
	Changed	75	78.1	91.5	100.0
	Total	82	85.4	100.0	
Missing	System	14	14.6		
Total		96	100.0		
a. Respondent group = Irish potato producers					

14.1.2 Land allocated by nonproducers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	1	1.0	1.3	1.3
	Same	19	18.6	24.7	26.0
	Changed	57	55.9	74.0	100.0
	Total	77	75.5	100.0	
Missing	System	25	24.5		
Total		102	100.0		
a. Respondent group = Non-producers, Relation to HH haed = Head					

## 14.2 For each crop, what is the share of households who now have higher (or lower) expenditures on labour? Same question for non-labour inputs.

14.2.1 Use of inputs(labour) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	4	4.1	4.6	4.6
	Less	10	10.2	11.5	16.1
	Same	42	42.9	48.3	64.4
	More	31	31.6	35.6	100.0
	Total	87	88.8	100.0	
Missing	System	11	11.2		
Total		98	100.0		
a. Respondent group = Irish potato producers, Households = Producer households					

14.2.2 Use of inputs non-labour(agro-inputs) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	3	3.1	3.9	3.9
	Less	6	6.1	7.9	11.8
	Same	42	42.9	55.3	67.1
	More	25	25.5	32.9	100.0
	Total	76	77.6	100.0	
Missing	System	22	22.4		
Total		98	100.0		
a. Respondent group = Irish potato producers, Households = Producer households					

14.2.3 Use of inputs(labour) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	4	.9	2.7	2.7
	Less	30	7.0	20.1	22.8
	Same	79	18.4	53.0	75.8
	More	36	8.4	24.2	100.0
	Total	149	34.7	100.0	
Missing	System	281	65.3		

14.2.3 Use of inputs(labour) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	4	.9	2.7	2.7
	Less	30	7.0	20.1	22.8
	Same	79	18.4	53.0	75.8
	More	36	8.4	24.2	100.0
	Total	149	34.7	100.0	
Missing	System	281	65.3		
Total		430	100.0		

a. Respondent group = Non-producers, Households = Other

#### 14.2.4 Use of inputs non-labour(agro-inputs) <sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	4	.9	3.2	3.2
	Less	18	4.2	14.3	17.5
	Same	61	14.2	48.4	65.9
	More	43	10.0	34.1	100.0
	Total	126	29.3	100.0	
Missing	System	304	70.7		
Total		430	100.0		

a. Respondent group = Non-producers, Households = Other

### 14.3 Has subsistence production (own consumption) increased or decreased (list share of households)? Same question for production for sale.

14.3.1 Crop output consumption <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	3	3.1	3.4	3.4
	Less	30	30.6	34.1	37.5
	Same	33	33.7	37.5	75.0
	More	22	22.4	25.0	100.0
	Total	88	89.8	100.0	
Missing	System	10	10.2		



### 14.3.1 Crop output consumption<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	3	3.1	3.4	3.4
	Less	30	30.6	34.1	37.5
	Same	33	33.7	37.5	75.0
	More	22	22.4	25.0	100.0
	Total	88	89.8	100.0	
Missing	System	10	10.2		
Total		98	100.0		

a. Respondent group = Irish potato producers, Households = Producer households

### 14.3.2 Crop output consumption<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	15	16.7	19.5	19.5
	Same	40	44.4	51.9	71.4
	More	22	24.4	28.6	100.0
	Total	77	85.6	100.0	
Missing	System	13	14.4		
Total		90	100.0		

a. Respondent group = Non-producers, Households = Non-producer households

### 14.3.3 Crop output sale<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	2	2.0	2.3	2.3
	Less	19	19.4	22.1	24.4
	Same	30	30.6	34.9	59.3
	More	35	35.7	40.7	100.0
	Total	86	87.8	100.0	
Missing	System	12	12.2		
Total		98	100.0		

a. Respondent group = Irish potato producers, Households = Producer households

#### 14.3.4 Crop output sale<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	21	23.3	29.6	29.6
	Same	42	46.7	59.2	88.7
	More	8	8.9	11.3	100.0
	Total	71	78.9	100.0	
Missing	System	19	21.1		
Total		90	100.0		

a. Respondent group = Non-producers, Households= Non-producer households

### 14.4. What is the pattern of buyers – has it changed over the period?

#### 14.4.1 Buyer<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	2	2.0	2.7	2.7
	Same	17	17.3	23.0	25.7
	Changed	55	56.1	74.3	100.0
	Total	74	75.5	100.0	
Missing	System	24	24.5		
Total		98	100.0		

a. Respondent group = Irish potato producers, Households = Producer households

#### 14.4.2 Buyer<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	1	1.1	1.7	1.7
	Same	32	35.6	55.2	56.9
	Changed	25	27.8	43.1	100.0
	Total	58	64.4	100.0	
Missing	System	32	35.6		
Total		90	100.0		

a. Respondent group = Non-producers, Households= Non-producer households

### 14.5. Give a narrative account on the general trends for main changes in crops, inputs and outputs?

- 1) Intensification and densification of cultures on the ridge,
- 2) Comply with the law of the market, the forces of supply and demand
- 3) Use of chemical fertilizers combined with organic fertilizers
- 4) The reason for these changes is the desire to increase production

#### 14.5.1 Changes in crops over the past ten years<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	37	6.8	31.9	31.9
	Decrease	16	2.9	13.8	45.7
	Stagnation	22	4.0	19.0	64.7
	Variation	13	2.4	11.2	75.9
	Increase	28	5.1	24.1	100.0
	Total	116	21.3	100.0	
Missing	System	429	78.7		
Total		545	100.0		
a. Respondent group = Irish potato producers					

#### 14.5.2 Changes in inputs over the past ten years<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	30	5.5	25.6	25.6
	Less investment	13	2.4	11.1	36.8
	Same investment	25	4.6	21.4	58.1
	Variation in investments	19	3.5	16.2	74.4
	Increase in investments	30	5.5	25.6	100.0
	Total	117	21.5	100.0	
Missing	System	428	78.5		
Total		545	100.0		

a. Respondent group = Irish potato producers

#### 14.5.3 Changes in output over the past ten years<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	35	6.4	31.5	31.5
	Less	15	2.8	13.5	45.0

	Same	21	3.9	18.9	64.0
	Variation	11	2.0	9.9	73.9
	Increase	29	5.3	26.1	100.0
	Total	111	20.4	100.0	
Missing	System	434	79.6		
Total		545	100.0		

a. Respondent group = Irish potato producers

#### 14.5.4 Changes in crops over the past ten years<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decrease	27	5.1	45.0	45.0
	Stagnation	19	3.6	31.7	76.7
	Variation	4	.8	6.7	83.3
	Increase	10	1.9	16.7	100.0
	Total	60	11.3	100.0	
Missing	System	472	88.7		
Total		532	100.0		

a. Respondent group = Non-producers

#### 14.5.5 Changes in inputs over the past ten years<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	2	.4	3.1	3.1
	Less investment	30	5.6	46.2	49.2
	Same investment	16	3.0	24.6	73.8
	Variation in investments	2	.4	3.1	76.9
	Increase in investments	15	2.8	23.1	100.0
	Total	65	12.2	100.0	
Missing	System	467	87.8		
Total		532	100.0		

a. Respondent group = Non-producers

#### 14.5.6 Changes in output over the past ten years<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	9	1.7	12.0	12.0
	Less	31	5.8	41.3	53.3
Missing	Same	18	3.4	24.0	77.3
	Variation	3	.6	4.0	81.3
	Increase	14	2.6	18.6	100.0
	Total	75	14.1	100.0	
	System	457	85.9		
	Total	532	100.0		

## 14.6 What are the main reasons for these changes?

### 14.7. Is there a general trend concerning the crops that have been abandoned over the period, i.e. have many households skipped a particular crop?

14.7.1 Abandoned crops <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	10	1.8	16.7	16.7
	Maize	7	1.3	11.7	28.3
	Beans	2	.4	3.3	31.7
	Irish potato	1	.2	1.7	33.3
	Leeks	2	.4	3.3	36.7
	Cabbage	3	.6	5.0	41.7
	Sweet pepper	6	1.1	10.0	51.7
	Cocoyam	2	.4	3.3	55.0
	Cassava	2	.4	3.3	58.3
	Sweet potato	2	.4	3.3	61.7
	Beetroot	3	.6	5.0	66.7
	Chillis	3	.6	5.0	71.7
	Cafe	6	1.1	10.0	81.7
	Other	6	1.1	10.0	91.7
	Tomato	4	.7	6.7	98.3
	Garlic	1	.2	1.7	100.0

	Total	60	11.0	100.0	
Missing	System	485	89.0		
<b>14.7.1 Abandoned crops<sup>a</sup></b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	10	1.8	16.7	16.7
	Maize	7	1.3	11.7	28.3
	Beans	2	.4	3.3	31.7
	Irish potato	1	.2	1.7	33.3
	Leeks	2	.4	3.3	36.7
	Cabbage	3	.6	5.0	41.7
	Sweet pepper	6	1.1	10.0	51.7
	Cocoyam	2	.4	3.3	55.0
	Cassava	2	.4	3.3	58.3
	Sweet potato	2	.4	3.3	61.7
	Beetroot	3	.6	5.0	66.7
	Chillis	3	.6	5.0	71.7
	Cafe	6	1.1	10.0	81.7
	Other	6	1.1	10.0	91.7
	Tomato	4	.7	6.7	98.3
	Garlic	1	.2	1.7	100.0
	Total	60	11.0	100.0	
Missing	System	485	89.0		
Total		545	100.0		
a. Respondent group = Irish potato producers					

<b>14.7.2 Abandoned crops by non producers</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maize	1	.2	4.8	4.8
	Irish potato	5	.9	23.8	28.6
	Leeks	1	.2	4.8	33.3
	Cocoyam	1	.2	4.8	38.1
	Taro	3	.6	14.3	52.4
	Sweet potato	2	.4	9.5	61.9

	Coffee	4	.8	19.0	81.0
	Yam	1	.2	4.8	85.7
	Other	2	.4	9.5	95.2
	Groundnut	1	.2	4.8	100.0
	Total	21	3.9	100.0	
Missing	System	511	96.1		
Total		532	100.0		
a. Respondent group = Non-producers					

## 14. 7a If so, what are the main reasons?

### 14.7a.1 Reasons for abandon

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	9	.8	10.7	10.7
	Plant diseases/rot/parasitic attacks	10	.9	11.9	22.6
	Drop in soil fertility/soil infertility/render the soils infertile/non-adapted crop	33	3.1	39.3	61.9
	Heavy investment/high prices of agricultural inputs/insufficient financial means	16	1.5	19.0	81.0
	Insufficient expertise	2	.2	2.4	83.3
	Price variations at market levels/few markets/insufficient demand	5	.5	6.0	89.3
	Climatic variation	4	.4	4.8	94.0
	Insufficient seeds/short supply of seeds	1	.1	1.2	95.2
	Conservation problems/post-harvest management	2	.2	2.4	97.6
	Road infrastructure problems/Bad state of roads	1	.1	1.2	98.8
	Takes a lot of time and physical effort	1	.1	1.2	100.0
	Total	84	7.8	100.0	
Missing	System	995	92.2		
Total		1079	100.0		

**14.8. Is it possible to identify a pattern in the composition of livestock on the household level over the period? If so, what are the main reasons?**

<b>14.8.1 Have there been changes in the composition and size of livestock</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	17	1.6	23.9	23.9
	Decrease in size	40	3.7	56.3	80.3
	Stagnation	1	.1	1.4	81.7
	Increase in size	13	1.2	18.3	100.0
	Total	71	6.6	100.0	
Missing	System	1008	93.4		
Total		1079	100.0		

<b>14.8.2 Reasons for changes in composition and size of livestock</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	15	1.4	21.1	21.1
	Illnesses	23	2.1	32.4	53.5
	Reproduction/natural growth	15	1.4	21.1	74.6
	Better markets/regular sales	5	.5	7.0	81.7
	Deception	6	.6	8.5	90.1
	Insufficient means	2	.2	2.8	93.0
	Attack by natural predators	3	.3	4.2	97.2
	Sold	2	.2	2.8	100.0
	Total	71	6.6	100.0	
Missing	System	1008	93.4		
Total		1079	100.0		



## PRODUCTION ASSETS (FORM C-5)

**15.1 What is the share of households that own the four different types of agricultural equipment mentioned?**

Statistics		Number of households who own Ox-ploughs	Number of households who own tractors	Number of households who own carts	Number of households who own milling machine
N	Valid	1	3	4	23
	Missing	199	197	196	177

**15.2 Give examples of other production assets owned by the households. Is it only few households who own these assets?**

Statistics

		Number of households who own hoes	Number of households who own cutlasses	Number of households who own sprayers	Number of households who own watering cans	Number of households who own dabats	Number of households who own planters	Number of households who own axes	Number of households who own spades
N	Valid	184	165	45	11	23	53	14	14
	Missing	16	35	155	189	177	147	186	186

**15.3 What is the share of households who have some kind of access to the agricultural equipment mentioned? Any general picture identifiable in the way access is provided? Please gather responses in categories (e.g. nearby village, from neighbors, etc.)?**

**15.3.1 For producers, only one household has an ox-plough thus there is no need for a frequency table to demonstrate access to this product.**

Statistics

		Access to ox-plough	Access to tractors	Access to carts	Access to milling machines
N	Valid	5	3	5	14
	Missing	195	197	195	186

Access to ox-ploughs		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	1	.5	20.0	20.0
	Buy	1	.5	20.0	40.0
	Paid services	3	1.5	60.0	100.0
	Total	5	2.5	100.0	
Missing	Not applicable	195	97.5		
Total		200	100.0		

#### Access to tractors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rent	3	1.5	100.0	100.0
Missing	Not applicable	197	98.5		
Total		200	100.0		

#### Access to carts

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Paid services	3	1.5	60.0	60.0
	Borrow from neighbour	2	1.0	40.0	100.0
	Total	5	2.5	100.0	
Missing	Not applicable	195	97.5		
Total		200	100.0		

#### Access to milling machine

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Paid services	12	6.0	85.7	85.7
	Borrow from neighbor	2	1.0	14.3	100.0
	Total	14	7.0	100.0	
Missing	Not applicable	186	93.0		
Total		200	100.0		

### 15.4 Access to other agricultural equipment

#### Statistics

	Access to	Access to	Access to	Access to	Access to	Access to	Access to	Access to	Access to
N Valid	3	2	1	0	0	1	0	0	0
Missing	197	198	199	200	200	199	200	200	200

#### Access to hoes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	2	1.0	66.7	66.7
	Paid services	1	.5	33.3	100.0
	Total	3	1.5	100.0	
Missing	Not applicable	197	98.5		
Total		200	100.0		

Apart from access to hoes, the other agricultural equipment's are rarely rented or borrowed because every household possesses at least one of these equipment's

## COMMON POOL RESOURCES (FORM C-6)

## 16.1 What is the share of households who have access to some kind of common pool of resources?

16.1.1 Does the HH have access to communal land <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	16	8.0	11.8	11.8
	No	120	60.3	88.2	100.0
	Total	136	68.3	100.0	
Missing	System	63	31.7		
Total		199	100.0		
a. Relation to HH head = Head					

## 16.2 What kind of common pool resources do the households have access to? List numbers of 'yes' for each type of resource?

16.2.1 If yes, what do you use this land for <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	9	4.5	39.1	39.1
	Agriculture	14	7.0	60.9	100.0
	Total	23	11.6	100.0	
Missing	System	176	88.4		
Total		199	100.0		
a. Relation to HH head = Head					

## 16.3 How do the households consider the importance of having access to common pool resources (list share of each category)?

16.3.1 How important is access to this land for your HH <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	9	4.5	32.1	32.1
	Very important	13	6.5	46.4	78.6
	Important	5	2.5	17.9	96.4
	Insignificant	1	.5	3.6	100.0

	Total	28	14.1	100.0	
Missing	System	171	85.9		
Total		199	100.0		
a. Relation to HH head = Head					

## USE OF CREDIT AND LOANS

### 17.1 % of households making use of credits or loans.

17.1.1 Household make use of credits or loans <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2	1.0	1.0	1.0
	Yes	70	35.2	35.2	36.2
	No	127	63.8	63.8	100.0
	Total	199	100.0	100.0	
a. Relation to HH head = Head					

### 17.2 Main types of sources of credit and loans by the household (eg: family, cooperative, microfinance institution, commercial bank)?

17.2.1 From whom/which institution <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	2	1.0	2.8	2.8
	Bank	11	5.5	15.3	18.1
	Micro-finance	11	5.5	15.3	33.3
	Tontine/Meeting groupn/association	45	22.6	62.5	95.8
	CIG	3	1.5	4.2	100.0
	Total	72	36.2	100.0	
Missing	System	127	63.8		
Total		199	100.0		
a. Relation to HH head = Head					

### 17.3 Main uses (purposes) of credits and loans by the household (%)

17.3.1 Purpose of credit or loan <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	4	2.0	5.6	5.6
	Agriculture/fertilizer	49	24.6	69.0	74.6
	Education/school fees	11	5.5	15.5	90.1
	Commerce/business	2	1.0	2.8	93.0
	Health	2	1.0	2.8	95.8
	Livestock	1	.5	1.4	97.2
	Investment	2	1.0	2.8	100.0
	Total	71	35.7	100.0	
Missing	System	128	64.3		
Total		199	100.0		
17.3.1 Purpose of credit or loan <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	4	2.0	5.6	5.6
	Agriculture/fertilizer	49	24.6	69.0	74.6
	Education/school fees	11	5.5	15.5	90.1
	Commerce/business	2	1.0	2.8	93.0
	Health	2	1.0	2.8	95.8
	Livestock	1	.5	1.4	97.2
	Investment	2	1.0	2.8	100.0
	Total	71	35.7	100.0	
Missing	System	128	64.3		
a. Relation to HH head = Head					

### 17.4 % Households making use of “mobile money” facilities

17.4.1 Make use of mobile phone for banking/saving <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	4	2.0	2.0	2.0
	Yes	47	23.6	23.6	25.6

	No	148	74.4	74.4	100.0
	Total	199	100.0	100.0	
a. Relation to HH head = Head					

## 17.5 Purposes for use of “mobile money” facilities (%)

17.5.1 If yes(explain purpose for use of “mobile money” facilities)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	8	4.0	15.4	15.4
	Business	30	15.1	57.7	73.1
	Savings	5	2.5	9.6	82.7
	Pay utility bills	7	3.5	13.5	96.2
	Other	2	1.0	3.8	100.0

	Total	52	26.1	100.0	
Missing	Not applicable	147	73.9		
Total		199	100.0		
a. Relation to HH head = Head					

## COMPOSITION OF HOUSEHOLD INCOME (FORM D-2)

### 18.1 Total amounts of income per year

N	Valid	153
	Missing	47
Mean		938923.5294
Minimum		4000.00
Maximum		17000000.00
Sum		143655300.00

### 18.2 Relative distribution of all income-generating categories for the entire sample of households (frequency distribution in %)

		Amount of total HH earnings from agricultural production	Amount of total HH earnings from livestock	Amount of total HH earnings from self employed work	Amount of total HH earnings from salaried employment
N	Valid	135	74	43	18
	Missing	65	126	157	182
	Percentage of HH	67.5%	37%	21.5%	9%
Mean		688137.037	173202.703	298302.326	536633.333
Minimum		4000	3000	15000	30000
Maximum		16000000	2000000	1000000	2376400
Sum		92898500	12817000	12827000	9659400

Statistics					
		Amount of total HH earnings from Casual wage work	Amount of total HH earnings from pension	Amount of total HH earnings from remittances	Amount of total HH earnings from other
N	Valid	18	4	33	5
	Missing	182	196	167	195

	Percentage of HH	9%	2%	16.5%	2.5%
Mean		536633.3333	86500.0000	133696.9697	207200.0000
Minimum		30000.00	66000.00	10000.00	10000.00
Maximum		2376400.00	100000.00	1000000.00	600000.00
Sum		9659400.00	346000.00	4412000.00	1036000.00

### 18.3 % of households in which Agricultural production is main source of income

		Amount of total HH earnings from agricultural production
N	Valid	135
	Missing	65
	Percentage of HH	67.5%
Mean		688137.037
Minimum		4000
Maximum		16000000
Sum		92898500

### 18.4 % of households in which Livestock is main source of income



		Amount of total HH earnings from livestock
N	Valid	74
	Missing	126
	Percentage of HH	37%
Mean		173202.703
Minimum		3000
Maximum		2000000
Sum		12817000

#### 18.5 % of households in which Self-employed work is main source of income

		Amount of total HH earnings from self employed work
N	Valid	43
	Missing	182
	Percentage of HH	21.5%
Mean		298302.326
Minimum		15000
Maximum		1000000
Sum		12827000

#### 18.6 % of households in which Casual wage work is main source of income

	Amount of total HH earnings from Casual wage work
Valid	18
Missing	182
Percentage of HH	9%
Mean	536633.3333
Minimum	30000.00
Maximum	2376400.00
Sum	9659400.00

#### 18.7 % of households in which Pensions are main source of income

	Amount of total HH earnings from pension
Valid	4
Missing	196
Percentage of HH	2%
Mean	86500.0000
Minimum	66000.00
Maximum	100000.00

Sum	346000.00
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## 18.8 % of households in which Remittances are main source of income

	Amount of total HH earnings from remittances
Valid	33
Missing	167
Percentage of HH	16.5%
Mean	133696.9697
Minimum	10000.00
Maximum	1000000.00
Sum	4412000.00

## 18.9 % of households that receive remittances

### 18.9.1 Amount of total HH earnings from remittances

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10000	2	1.0	6.1	6.1
	12000	1	.5	3.0	9.1
	15000	1	.5	3.0	12.1
	20000	2	1.0	6.1	18.2
	25000	1	.5	3.0	21.2
	30000	5	2.5	15.2	36.4
	40000	1	.5	3.0	39.4
	50000	5	2.5	15.2	54.5
	60000	2	1.0	6.1	60.6
	80000	1	.5	3.0	63.6
	100000	3	1.5	9.1	72.7
	140000	1	.5	3.0	75.8
	150000	1	.5	3.0	78.8
	180000	1	.5	3.0	81.8
	200000	1	.5	3.0	84.8
	240000	1	.5	3.0	87.9
	250000	1	.5	3.0	90.9
	400000	1	.5	3.0	93.9

	800000	1	.5	3.0	97.0
	1000000	1	.5	3.0	100.0
	Total	33	16.5	100.0	
Missing	0	46	23.0		
	99	121	60.5		
	Total	167	83.5		
Total		200	100.0		

## REMITTANCES (FORM D-3)

### 19.1 National remittances as a % of total remittances

			National-international remittances		
			National remittances	International remittances	Total
		% dans Amount received	100,0%	,0%	100,0%
Total	Effectif		49	9	58
	% dans Amount received		84,5%	15,5%	100,0%

### 19.2 Frequency of national remittances reception

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Sometimes	38	3,5	59,4	59,4
	Once a year	6	,6	9,4	68,8
	Regularly	20	1,9	31,2	100,0
	Total	64	5,9	100,0	
Total		1079	100,0		

### 19.3 Frequency of international remittances reception

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Sometimes	8	,7	66,7	66,7
	Once a year	2	,2	16,7	83,3
	Regularly	2	,2	16,7	100,0
	Total	12	1,1	100,0	
Total		1079	100,0		

#### 19.4 Type of national remittances

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	<b>Other</b>	1	,1	<b>7,7</b>	7,7
	<b>Goods/food</b>	6	,6	<b>46,2</b>	53,8
	<b>Cash</b>	5	,5	<b>38,5</b>	92,3
	<b>Goods/animals</b>	1	,1	<b>7,7</b>	100,0
	Total	13	1,2	<b>100,0</b>	
Total		1079	100,0		

#### 19.5 Type of international remittances

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Cash	23	2,1	100,0	100,0
Manquante	Système manquant	1056	97,9		
Total		1079	100,0		

#### 19.6 Main channels of national remittances reception

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Informal channel (by hand)	12	1,1	18,2	18,2
	Formal channel (bank, money sent agency)	48	4,4	72,7	90,9
	1and 2	6	,6	9,1	100,0
	Total	66	6,1	100,0	
Total		1079	100,0		

#### 19.7 Main channels of international remittances

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Informal channel(by hand)	12	1,1	18,2	18,2
	Formal channel (bank, money sent agency)	48	4,4	72,7	90,9
	1and 2	6	,6	9,1	100,0

	Total	66	6,1	100,0	
Total		1079	100,0		

## 19.8 Use of remittances

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	daily household needs	16	1,5	28,6	28,6
	Agriculture	13	1,2	23,2	51,8
	Business	3	,3	5,4	57,1
	Education/health	10	,9	17,9	75,0
	Maintenance/clothing	3	,3	5,4	80,4
	Household problem (water, electricity)	10	,9	17,9	98,2
	Built a house	1	,1	1,8	100,0

	Total	56	5,2	100,0	
Manquante	No answer	9	,8		
	Système manquant	1014	94,0		
	Total	1023	94,8		
Total		1079	100,0		

## REVERSE FLOWS OF MONEY AND GOODS (FORM D-4)

### 20.1 Percentage of household that send money or goods

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Money send	135	12,5	67,8	67,8
	Not send money	64	5,9	32,2	100,0
	Total	199	18,4	100,0	
Total		1079	100,0		

### 20.2 Statistics

N	Valide	205
	Manquante	874

<b>Moyenne</b>	<b>32115</b>
<b>Somme</b>	<b>6583170</b>

### 20.3 Amount of money sent and average amount

N	Valide	205
	Manquante	874
Moyenne		<b>32110</b>
Minimum		,00
Maximum		<b>2000000</b>
Somme		<b>6583170</b>

### 20.4 Frequency of remittances sending by the household

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	sometimes	77	7,1	38,7	38,7
	Once a year	28	2,6	14,1	52,8

	Regularly	94	8,7	47,2	100,0
	Total	199	18,4	100,0	
Manquante	No answer	7	,6		
	Système manquant	873	80,9		
	Total	880	81,6		
Total		1079	100,0		

## HOUSING (FORM D-5)

### 21.1 Average size of houses (floor space)

#### 21.1.1 Size of main house

N	Valid	156
	Missing	43
Mean		117.9615
Minimum		.00
Maximum		1000.00
Sum		18402.00

## 21.2 Housing tenure status types (%)

### 21.2.1 Tenure status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Owned(with registered title)	41	20.6	26.6	26.6
	Owned(without registered title)	90	45.2	58.4	85.1
	Rented	15	7.5	9.7	94.8
	Rent-free use	8	4.0	5.2	100.0
	Total	154	77.4	100.0	
Missing	System	45	22.6		
Total		199	100.0		

## 21.3 Construction materials used for floors (%)

### 21.3.1 Floor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Concrete	5	2.5	3.2	3.2
	Cement	62	31.2	39.7	42.9
	Tile	10	5.0	6.4	49.4
	Wood	5	2.5	3.2	52.6
	Mud	40	20.1	25.6	78.2
	Bare earth	33	16.6	21.2	99.4
	other(specify)	1	.5	.6	100.0
	Total	156	78.4	100.0	
Missing	System	43	21.6		
Total		199	100.0		

## 21.4 Construction materials used for external walls (%)

### 21.4.1 External walls

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Concrete blocks	27	13.6	17.3	17.3
	Burnt bricks	78	39.2	50.0	67.3
	Mud bricks	47	23.6	30.1	97.4
	Pole/bamboo	2	1.0	1.3	98.7
	Mud	2	1.0	1.3	100.0
	Total	156	78.4	100.0	

Missing	System	43	21.6		
Total		199	100.0		

## 21.5 Construction materials used for roofs (%)

### 21.5.1 Roofing materials

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tiles	43	21.6	27.6	27.6
	Corrugated iron sheets	79	39.7	50.6	78.2
	Tins or metals other than corrugated iron sheets	32	16.1	20.5	98.7
	Asbestos	1	.5	.6	99.4
	Thatch	1	.5	.6	100.0
	Total	156	78.4	100.0	
Missing	System	43	21.6		
Total		199	100.0		

## 21.6 Number of rooms (%)

### 21.6.1 Statistics

Number of rooms		
N	Valid	154
	Missing	45
Mean		4.8766
Minimum		1.00
Maximum		20.00
Sum		751.00

### 21.6.2 Number of rooms

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	.5	.6	.6
	1	4	2.0	2.6	3.2
	2	10	5.0	6.5	9.7
	3	25	12.6	16.1	25.8
	4	43	21.6	27.7	53.5
	5	33	16.6	21.3	74.8



	6	19	9.5	12.3	87.1
	7	6	3.0	3.9	91.0
	8	5	2.5	3.2	94.2
	10	2	1.0	1.3	95.5
	11	2	1.0	1.3	96.8
	13	1	.5	.6	97.4
	14	1	.5	.6	98.1
	15	2	1.0	1.3	99.4
	20	1	.5	.6	100.0
	Total	155	77.9	100.0	
Missing	System	44	22.1		
Total		199	100.0		

## 21.7 Kitchen types (%)

### 21.7.1 Kitchen

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Inside house	76	38.2	49.0	49.0
	Outside house	73	36.7	47.1	96.1
	Other(specify)	6	3.0	3.9	100.0
	Total	155	77.9	100.0	
Missing	System	44	22.1		
Total		199	100.0		

## PUBLIC SERVICES (FORM D-5)

### 22.1 Electricity (%)

#### 22.1.1 Electricity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No electricity	33	16.6	21.2	21.2
	Generator	1	.5	.6	21.8
	Solar	3	1.5	1.9	23.7
	Electricity	109	54.8	69.9	93.6
	Other(specify)	10	5.0	6.4	100.0

	Total	156	78.4	100.0	
Missing	System	43	21.6		
Total		199	100.0		

## 22.2 Drinking water connection (%)

### 22.2.1 Drinking water connection

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	1	.5	.7	.7
	Tap inside/outside home	14	7.0	9.3	9.9
	Collect from public tap or standpipe or pump	68	34.2	45.0	55.0

	Rainwater	42	21.1	27.8	82.8
	Other(specify)	26	13.1	17.2	100.0
	Total	151	75.9	100.0	
Missing	System	48	24.1		
Total		199	100.0		

## 22.3 Source of drinking water (%)

### 22.3.1 Drinking water source

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	3	1.5	2.0	2.0
	Public network	35	17.6	23.3	25.3
	Borehole or protected well	36	18.1	24.0	49.3
	Unprotected well	59	29.6	39.3	88.7
	Other(specify)	17	8.5	11.3	100.0
	Total	150	75.4	100.0	
Missing	System	49	24.6		
Total		199	100.0		

## 22.4 Sanitation (%)

### 22.4.1 Sanitation

		Frequency	Percent	Valid Percent	Cumulative Percent
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No toilet or latrine	8	4.0	5.2	5.2
Flush toilet to a septic tank or sewer	12	6.0	7.8	13.1
Private latrine with a slab or plate-form made from cement or wood with a squatting hole or seat	65	32.7	42.5	55.6
Private latrine without a slab or plate-form, just a mud floor with a hole in the ground	67	33.7	43.8	99.3
Public or shared latrine	1	.5	.7	100.0
Total	153	76.9	100.0	
System	46	23.1		
Total	199	100.0		

## 23. MEANS OF COMMUNICATION AND TRANSPORTATION (FORM D-5)

		23.1 Number of communication items owned									Total
		1	2	3	4	5	6	7	9	16	
Mobile phone	Effectif	66	45	26	13	6	3	1	1	1	162
	%	40,74	27,78	16,05	8,02	3,70	1,85	0,62	0,62	0,62	100
Radio	Effectif	100	12	4	1	1	1	0	0	0	119
	%	84,03	10,08	3,36	0,84	0,84	0,84	0	0	0	100
Television	Effectif	104	3	2	0	0	0	1	0	0	110
	%	94,5	2,7	1,8	0	0	0	0,91	0	0	100
Total	Effectif	270	60	32	14	7	4	2	1	1	391
	%	69,05	15,35	8,18	3,58	1,79	1,02	0,51	0,26	0,26	100

23.2 Number of transportation items owned									Total
		0	1	2	3	6	7	11	
Motorcycle	Effectif	13	78	2	0	0	0	1	94
	%	13,83	82,98	2,13	0	0	0	1,06	100
Car	Effectif	21	13	3	2	1	1	0	41
	%	51,22	31,71	7,32	4,878	2,439	2,44	0	100
Bicycle	Effectif	22	8	2	1	0	0	0	33
	%	66,67	24,24	6,06	3,03	0	0	0	100
Total	Effectif	56	99	7	3	1	1	1	168
	%	33,33	58,93	4,17	1,786	0,595	0,6	0,6	100

23.3 Access to communication items when not owned					
		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé

Valide	Boutique	3	,3	9,1	9,1
	Callbox	4	,4	12,1	21,2
	Family	1	,1	3,0	24,2
	Neighbour	25	2,3	75,8	100,0
	Total	33	3,1	100,0	
Manquante	No answer	10	,9		
	Système manquant	1036	96,0		
	Total	1046	96,9		
Total		1079	100,0		

23.4 Access to transportation items when not owned					
		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Public transport	75	7,0	91,5	91,5
	Family member	4	,4	4,9	96,3
	particular	3	,3	3,7	100,0
	Total	82	7,6	100,0	
Manquante	No answer	16	1,5		
	Système manquant	981	90,9		
	Total	997	92,4		
Total		1079	100,0		

## EXPENDITURE AND SAVING (FORM E-1)

### 24.1 Total amounts of consumer expenditure per year

Statistics		
Total consumer expenditure		
N	Valid	189
	Missing	11
Mean		739125.9259
Minimum		3000.00
Maximum		8266000.00
Sum		139694800.00

### 24.2 Total amounts of productive expenditure per year

Statistics		
Total productive expenditure		
N	Valid	164
	Missing	36
Mean		288214.6951
Minimum		5000.00
Maximum		3660000.00
Sum		47267210.00

### 24.3 Total annual amounts of expenditure

Statistics		
Total annual expenditure of the household		
N	Valid	191
	Missing	9
Mean		978858.6911
Minimum		38000.00
Maximum		9950000.00
Sum		186962010.00

### 24.4 Three main types of consumer expenditure (%)

Statistics					
		Expenditure on food	Expenditure on drinks	Expenditure on clothes	Expenditure on utilities
N	Valid	163	127	109	154
	Missing	37	73	91	46
Mean		264034.9387	109784.1496	96400.83486	36476.9870
Minimum		99.00	99.00	99.000	99.00
Maximum		1825000.00	1500000.00	4000000.000	480000.00
Sum		43037695.00	13942587.00	10507691.000	5617456.00

Statistics							
		Expenditure on rents	Expenditure on transport	Expenditure on medicine	Expenditure on schooling	Expenditure on social	Expenditure on others
N	Valid	130	107	117	161	104	153
	Missing	70	93	83	39	96	47

Mean	7062.9769	69099.7664	108582.8034	164587.4534	84369.0000	67581.4706
Minimum	99.00	99.00	99.00	99.00	99.00	99.00
Maximum	84000.00	1600000.00	1000000.00	3000000.00	1000000.00	4133000.00
Sum	918187.00	7393675.00	12704188.00	26498580.00	8774376.00	10339965.00

Three					
		Expenditure on hired labour	Expenditure on hired equipments	Expenditure on transport	Expenditure on membership fee
N	Valid	106	39	50	23
	Missing	94	161	150	177
Mean		125745.2830	76102.5641	46860.0000	194391.3043
Minimum		2000.00	2000.00	1000.00	2000.00
Maximum		2065000.00	760000.00	400000.00	3000000.00
Sum		13329000.00	2968000.00	2343000.00	4471000.00

Statistics					
		Expenditure on seeds	Expenditure on fertilizer	Expenditure on water/irrigation	Expenditure on other
N	Valid	91	146	12	4
	Missing	109	54	188	196
Mean		75683.6264	110139.7260	70500.0000	85650.0000
Minimum		1000.00	5000.00	10000.00	100.00
Maximum		750000.00	1600000.00	300000.00	182500.00
Sum		6887210.00	16080400.00	846000.00	342600.00

## 24.6 Main person of household to decide on expenditure

Who in your HH decides on expenditure?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Head	45	22.6	95.7	95.7
	Spouse	3	1.0	4.3	100.0
	Total	47	23.6	100.0	
Missing	System	152	76.4		
Total		200	100.0		

## 24.7 Average amounts of savings per year

Statistics		
Amounts of savings per year		
N	Valid	22
	Missing	178
Mean		661454.5455
Minimum		1000.00
Maximum		6000000.00
Sum		14552000.00

## CONCLUSION - FINAL REFLECTIONS

### Main findings

- 1) The increasing importance of the Irish potato in the livelihoods of Cameroonians in recent decades,
- 2) In the diet,
- 3) Its role in the relationship between town and countryside (strengthening social cohesion product)
- 4) Product maintaining local commercial national channels, it opened Cameroon to international trade (sub regional),
- 5) The practice of the cultivation of Irish potato is among those;,,,,, that trigger daily, weekly, monthly or seasonal mobility between residential and production areas.
- 6) It contributes substantially to household incomes, their material and psychological balance.

### Reflections on rural-urban linkages

- 1) In recent years, rural-urban connections are less asymmetrical and are therefore becoming increasingly egalitarian
- 2) The exchange of goods and people are no longer one-way as before. While the countryside continues to give more than it receives, the gap seems to disappear, the two space becoming complementary.
- 3) The countryside is no longer the starting area of work, flow migration (migration flux) and of the search of exotic,,,,, to the cities. An opposite tendency is observed because the countryside when diversifying its activities, reduced the role of agriculture in the definition of this space, attracts more citizens.
- 4) By installing basic infrastructure and services that were only found in cities, the countryside has become attractive and the two spaces tend to be harmonized.
- 5) Transportation by motor bikes further integrated the different parts of the country between them firstly and secondly the countryside to the city.
- 6) Distributors of mobile phones, covering most of the national territory with their network, eventually integrated these different components of the puzzle that were previously disjointed. However, this could be the motto of the phone "call more, travel less" which goes against another slogan equally integrative "easily and safely go wherever necessary"

## Answers to research questions

### What are the general characteristics of the site in terms of land use,

In terms of land use, the zone is characterized by its overexploited lands. In the mountain area, the densities are often close to cities densities with average of 300-1000 inhabitants / km . Any space that could be developed was and likewise that which could not was easily transformed into farmlands. In this context, each household tries to produce on its tiny plots everything it needs for survival.

In the whole, in the territory of Irish potato, 100 producing households exploits 328 plots making 129,43 ha of land for an average of 4 plots and of 0,44 ha per household. As concern the producers and non producers of Irish potato, the utilisation of land is identical : 97,5 % of these land are under cultivation, 1,9 % in fallow and the remaining is pasture, forest plots or raphia palms.

On the other hand, non producers of Irish potato exploit 253 plots of 133ha for an average of 3plots and 0,6ha per household.

In the two cases, maximum surface area is 6ha.

### Land tenure

A steady deterioration of the tenure system was observed (30.6%),

- ✓ 41% of farmers believe that the land issue has maintained the status quo.
- ✓ 28.5% saw their situation improved. What a good performance in a country where space is finite.
- ✓ In terms of access to land, 20.23% increased their cultivated area. This growth is due to the increase in households owned land (21%) and rental of plots (14%).
- ✓ 15.6% saw the space of family farms decline. Owned land to households decreased by 16.5%, leased land decreased by about 11%

	Non producers	producers
Owned by HH	19.6	21,1
Rented	20.4	20,7
Borrowed	20.9	18,9
Community land	17.3	17
State land	13.3	14,5
Other	8.4	7,7
Total	100.0	



## Market integration?

- National, regional, divisional and rural roads (often in poor condition) crisscross the site connecting markets to each other and markets to cities and other centers of consumption.

## Is it possible to identify any significant changes in the agrarian structure like an increasing commercialization

Significant changes have been observed in the last two decades due to the coffee crisis. Production has shifted from subsistence to commercial crops. Every product is sold. Even small size Irish potato which is used for seeds is sold much more expensive (4500-5000 Fcfa than consumable one (3000-4500 FCFA for a fifteen litre bucket). Producers only consume lower grade products.

Globally, about 10 of the producers sell less than 25% of their Irish potato output, 44% of producers sell 75 to 100% of their output and 65 % sell between 50 and 100% of their output. Irish potato seems to be a veritable speculation product. The selling of Irish potato has therefore contributed in the course of the year between 461767500 and 105137520 FCFA, against 32888055.64 and 73514128.98 for the other products.

## Diversification of crops?

Even on the plateau area hit by economic crisis, there have been attempts, sometimes happily, of diversification of grown crops. For instance, the recent introduction of sunflower cultivation, some varieties of vegetables in the Bamboutos, new varieties of bean and at least 12 different species of Irish potato.

In the site, we numbered at least 35 crops of different types and origin. On each plot, 3 to 5 crops are cultivated.

But innovation is observed more in the sense of intensification than in increased diversification. The producers gamble more on the performance of existing crops per area unit (yield) than on new but unknown crops that would complicate an already hectic schedule. The mountain, from 1600 m to the top (2650m) is the place par excellence of agricultural innovation, where new crops come and go at the will of the urban market demand.

## New labour hiring

Hired labour is undoubtedly one of the important activities of this decade. It is, by its ubiquity, the number and quality of the actors, the access policies in the labour market, that it is structured in order to protect the interests of the body developed.

The proportion of Irish potato producing households using only hired labour is weak, 1% against 8,6% for the non producers.

83% of producers combine family labour and paid labour and hired labour is remunerated as against 68% for non-producers.

The boom in terms of labour is particularly sensitive in the production of Irish potato. At different phases of production it uses 5 to 10 times more labour than the other products. The production of Irish potato utilizes 86% hired labour.

	Use of hired migrant labour Land preparation	Use of hired migrant labour Sowing/weeding	Use of hired migrant labour Harvesting	Use of hired migrant labour Post harvesting	Use of hired migrant labour Other(specify)	Total	%
Irish potato	113	102	100	38	34	<b>387</b>	<b>86</b>
Other crops	21	24	13	2	2	<b>62</b>	<b>14</b>
Total	134	126	113	40	36	<b>449</b>	<b>100</b>

### Deployment practices?

The radius of constantly growing mobility can be explained by the fact that women and men from Bamboutos position themselves as experts in this newly born profession .Labour from Bamboutos Mountains get progressively structured in workers teams that can sign short-term contracts with individuals leading them to work in farms in other regions of the country whatever the distance

### Major large-scale schemes (private, state or JVs)?

For the moment, in the study site, there exist no great project or envisaged exploitation for Irish potato. Until now, she is essentially produced in family exploitations and hardly more than 10ha.

### Shift in commercial channels (new types of buyers)

There has been diversification of sale places, but periodic markets still control 41% of Irish potato commerce most especially that produce by small scale farmers; grouped sales and sales through small scale farmer organizations make up 22% of the Irish potato commerce

In terms of buyers, the market is control (between 50 and 75% ) by local negotiators (men and women) paid by the great urban buyers who finance the buying and motivate the negotiators financially.

The large scale producers directly supply their customers at Douala, Yaounde, capitals of Central Africa ((Bangui, Brazzaville, Gabon, Djamena etc.).

### Restrictions in access to production assets and common poolresources

### What are the consequences of migration and mobility for the ‘sending’ households?

Dr. Samuel Kélodjoué (2009) in a study on women migration workers in the Batcham society of the Bamboutos division concluded that, the consequences of migration and mobility of workers is « the modification of family roles ». She is an equilibrium factor but also a source of conflicts on the other hand between a cooperative husband, jealousy, given the impression that his wife has abandoned him or his being bully though in other cases, the woman remains

humble or respectful despite her new purchasing power or becomes arrogant because she no longer assumes her social obligation. In a specific manner, financial autonomy of women and to a certain extent of the children, their increasing participation in the functioning of households and decision making, the following is observed:

**A redistribution of responsibilities within the household.** In acquiring an economic and monetary power though it remains relative, the rural woman acquired her financial autonomy and increase her financial participation to the obligations of the household if it concern that which she is responsible for. In fact, “when the husband discovers that the woman has money, **he pretends bankruptcy** and decides to abandoned some of his responsibilities to the woman » This entails the beginning of transposition of Head of household roles in this society that for a long time has been considered unchangeable and which strongly affects the women. (Adjamagbo, 1993).

**A supervision deficit irrespective of the type of Mobility (Daily, monthly or seasonal etc.).** Rural migration of farm **labour** of active members from their residence. **These repeated absences from their home have** serious repercussions on children supervision and on fertility or reproductive calendar. For the woman, the role of mother-Educator and nursing cannot be totally accomplished. The security and reassuring presence of a male creates a void which is difficult to fill. The children most often are victims because they are abandoned by themselves, their seniors or grandparents are oblige to learn how to take care of themselves or indulge in practices which exposes them to be delinquent. Hence, we can see children of about 10years who are in charge of the preparation of meals and take care of their juniors while waiting for the return of their mothers. It creates in the household tension which is not always address by the financial gains that the migrants usually bring from their agricultural expedition.

**Transformation of structures and family roles.** Labour Mobility can also be understood as a reinterpretation of household members, nursing–woman and the children especially their role at the household level. In fact, the constant absence of actors (four to six months per year) modifies the family structure:

A fast adaptation to ensure the daily management of the home

- ✓ It has consequences on the renegotiation of gender relations but also on phenomenon such as (adolescence night activity) early marriages, **early pregnancy of unmarried girls**, birth spacing or fertility. We observe in the region a relatively new dynamics in the fertility indices and activity.

- ✓ **Evolutions des sur les Hautes Terres de l'Ouest Cameroun**

	1976	1987	1991	1998	2004
Household size				5,5	
Actual synthetic fertility Indice	6	6,9	5,96	4,7	6
Expected synthetic fertility Indice	6,5	-	6,2	6	6

Rate of contraceptives utilisation	9,0	-	23,2	32,5	39,5
Rate of women activity in rural zones	51,4	-		71,1	74,5
Average age at first marriage	-	-	17,9	18,2	17,1

-

**Sources :** RGPH (1976,1987) ENF (1978), EDSC (1991,1998, 2004) cité par S. Kélodjoué (2009)

It can be seen from the recent evolution (1976-2004) that the situation has been modified relatively fast. The general trends of fertility index and the attitudes related to birth planification illustrates a favorable attitude as regard the reduction of offspring for the men and women. However, the use of contraceptives still remain weak with just a constant increase. The changes observe in fertility in the region contributes to a more global process which affects the whole social organization and particularly, the production system is limited by this possibility of reproduction. (Adjamagbo, 1993, quoted by Kélodjoué, 2009).

### Who decides at household level whether a member migrates?

With exception made on children of school age, the decision to migrate depends on the parents and also members of the destination household who assures the reception and lodging, the decision to migrate is taken by future migrant who informs the other members of the household. Order is given when the necessary conditions are favorable for a departure (reception, and lodging most especially). Hence, individuals in their respective ways can contribute to the preparation of travel and departure. The parents can express their wishes but the final decision comes from the future migrant.

### Does migration/mobility mitigate poverty?

Migration and fight against poverty is a slogan whose pertinence depends on certain number of factors:

- ✓ The fastness and degree of migrant success in his adventure ( that is the fastness to find work),
- ✓ The length of transition period during which, the migrant solely depends on the household for assistance, reception or for relations, (impoverishment factor),
- ✓ The migrants' capacity to integrate in his new environment and her capacity to save money,
- ✓ Type of migration. Agricultural migration is an exception in that work is available and most often migrants have the problem of choice. Most agricultural migrants are interested to cover much work so as to make maximum income during the agricultural season in order to address his personal needs in his departing household and her society. Finally, the importance or absence of sending money depends on the type of relations that the migrants have with his relatives and his level of responsibility. The study shows with the aid of an interpreter who facilitated data collection or information on the amount received from within and out of the country ), the limited amount of money sent in relation to the total household budget.( ?)

### **Does it lead to an improvement of the livelihoods of 'sending' households?**

From what has been said above, when it concern rural-urban migrants, the answer to this question is but obvious, though there are certain deviations from reality possible considering the context of each household. This is so because it is posture of adventure with all his risks. The cases of rural-rural agricultural migration, urban-rural are more beneficial because it is the precise moment to find solutions or bring contribution to a vital and urgent economic situation. The populations of the western highlands have lived and equally witness migrations towards the mountain, the volcanic and alluvial plains. She has therefore passed the state of very small-scale exploiters to those of average and large scale exploiters with economic and social consequences.

### **How does migration/mobility influence the family relations in terms of gender and generation?**

In the west of Cameroon, migration after everything is a kind of lifestyle which:

- ✓ Reinforces social cohesion and solidarity, creates a sense of mutuality, complementarity within the family and group.

✓ it reinforces or enhances the division of work between gender and power within the family, Unfortunately, it is also a source of incomprehension and of an immoral behavior, source of instability within the household which could leads to divorce. (See equally what is said above on the consequences on migration/mobility)

### **What is the effect of migration/mobility on the social status of the migrant?**

sucess (with reference to entrepreneurial ) or failure of migrant's economic project is at the base of the status and respect given to it. It conditioned his inscription in the course of honor list or his precipitated return to the village. The migrant's capacity to integrate in the reception territory, enhances cordial relations with the local chief, the opportunity to share the migrant 's social status.

### **Under what conditions does it lead to marginalisation?**

The mobility patterns from one place to another (rural-rural or urban-rural) depends on the type of good neighborhood relations existing between the communities. If not the migrant is not welcome or he is marginalized. In Cameroon, we talk of "invaders, come no go "The individual and social relationship are most often extended. The failure of most organised colonisation projects is due to the fact that, the promoter of such enterprise(State) do not entertain the history of reception and arriving groups. In this case, the migrant status, despite the existing laws, can only be precarious and the two communities hardly come to a compromise.

### **Under what conditions does it lead to upward social mobility?**

- **How are remittances being used by the 'sending' households? For consumptive or productive purposes? In the rural 'home' region or rather in urban settlements? Is there a structural difference between the uses of internal vs. transnational remittances?**

**The expenditure structures as a result of sending and utilisation of money is simple. It is decomposed into:**

#### **1) Welfare expenditures**

The average size of the household «5 members ,maximum 13» explains the importance of welfare

care:

- ✓ Direct and indirect consumption ( Social care)
- ✓ Health,
- ✓ Education,
- ✓ Displacement,
- ✓ Clothing ...etc.

Rural men progressively reduce their incomprehensive expenditures of which he allows to the woman.

## 2) Investment Expenditures

- ✓ scolarisation,
- ✓ Meetings (Saving)
- ✓ Assistance given to children that have completed their study or unemployed in town
- ✓ Construction of houses
- ✓ Very young migrants invest their money in buying dresses and kitchen equipments (Pots, plates) in prevision of their eventual marriage.

## Has any particular State policy had an impact on the site's agricultural development 'trajectory'?

### 1) Research carried out by State organisations

In 1967, the Cameroon government created in Dschang the Centre for Study , Instruction and Seedlings Production (CEIPS) which influenced in a decisive way the development and production of Irish potato in the region called the high plateaux. Imported species from Europe were tested, selected and multiplied.

In 1983, the Research Institute for Agricultural Development (IRAD) was created thanks to the project IRAD/CIP of Bambui Centre ( North- West ) put in place and commercialized six species of diseases resistance Irish potato.

'Bambui Wonder" tubers, producing 40 to 45 tonnes per hectare with two tonnes of seeds (cycle of 120 and 140 days).

- ✓ Jacob 05 and Maffo, all of large size, cycle of 90 days, 30 to 35 tonnes per hectare with two tones of seeds.
- ✓ Cipira, Tubira and Irad 2005. Mostly cultivated in the west and North West. The price of kilogram of seed was 1000 francs Cfa

The National Support Program for the Irish potato sub sector has as general objectives to fight against rural poverty, ameliorate Irish potato producers revenue, and by upgrading their living standard through the reinforcement of managerial capacities ( efficient management of production and commercialization activity ) and their active participation in the management of the territory .The specific objectives were to consolidate the sub –sector on the technical, organizational and commercial plan with the perspective to increase the farmers revenue, capacity building of farmers organizations at the base and boost total production of Irish potato from 126 000 tonnes to 250 000 tonnes in 2007.

The support Program to Relaunched the Irish potato sub-sector (PRFPT) created in May 2008 financed by the PPTE Fund and the Cameroon government.

« Programme to Strengthen Solanum Potato Subsector » of the Ministry of Agriculture and Rural Development (MINADER)

Urgent Plan for the increase of agricultural production in order to increase the availability of

food supply by the reinforcement of production in the subsector considering the challenges of food security like the banana/ plantain, rice and principal tubers of MINADER ( supply to farmers of vegetal material, subvention of pesticides and fertilizers at 20 à 50% ; boost credits to a good rate; creation of five pilot agricultural pools and support to about 15% ; acquisition of tractors ; increase the transformation capacity, storage and conditioning).

## **Producer Organisations and institutions**

Several formal and informal producer groupings in the west and North-west whose principal activity is the Irish potato subsector.

Accorded by the State judicial and legal status of association, the West Provincial Irish Potato Committee (COPROPOTE) and that of the North-west (NWPPC), concertation structures of different actors of the Irish potato subsector of the West and North West was founded in 1999. It is made up of men and women who are specialized in production, multiplication of Irish potato seeds, representatives of seeds importers, representatives of Irish potato production zones committee, brokers (bayam- sallam), representatives of support NGO and structures in charge of supervision and all persons having interest in the subsector.

*The acknowledgement and support of the State to other producers groupings is done permanently or according to the availability of quality seeds, in the cultivation of Irish potato : BINUM, AFRISEM, GICATO, AMUSEP etc. in the West region, PAIN, EIC, NMFG, MMFG, etc., in the North West region.*

## **Direct interference in land use or farm ownership structure and new non-farm activities**

The State encourages the registration of land in order to ensure land tenure security. Certain State programmes (National Programme for Vulgarisation and Agricultural Research (PNVRA), Agents of Vulgarisation Zone (AVZ) ensures the vulgarisation to the farmers' research results). The deconcentrated services of the State in the regions, divisions, sub divisions each in her competence, NGOs are active in the domain of diversification of activities and promotion of non-agricultural activities.

## **Improved infrastructure**

National Rehabilitation Programme and Rural Roads Construction (PN2R) of MINTP (Ministry of Public Works ) has as objective to arrest the obstacle to socio-economic development which is dominated by the lack of all season rural roads, IRR (Inventory of Rural Roads ) is a technical assistance convention between MINTP and INS (National Institute of Statistics) which aims at putting in place pertinent information on all rural roads in Cameroon.

## **Has any particular state policy had an impact on livelihood transformation and mobility, like: National level policies impacting on rural (farmer) livelihoods?**

### **(which and how?)**

All the programmes and projects mention above are within the framework of State policy aimed at ameliorating the living conditions and welfare of households.



### **Policies on land and agricultural transformation**

The concept mentioned and launched by the president of the republic « **Second generation agriculture** » illustrate the well envisaged vision ; the transformation of agriculture in order to attain the status of an emerging country by 2035 by the putting in place of a scientific agriculture with precision, productivist, mecanisation (opening recently at Ebolowa a factory to assemble and distribute Chinese tractors after the agricultural show in view to attain the status of an emerging country by 2035 by putting in place a scientific agriculture precisely during the agro pastoral show at Ebolowa, (tractors agricultural development structures), the construction of a fertilizer production factory.

### **Spatial planning policies, e.g. Villagisation and rural development centres; urban growth)**

The period where state policy involved the creation of State or parapublic macro-structure projects, financed at high cost have passed after the limit of this policy was made known. The recent policy is based on community development meaning the promotion of development from the bottom or from the base. The State accompanies farmer organizations, farmer groupings in their development projects. It benefits from the private initiative advantage, on the private sector to boost the economic and social development.



# **AGRICULTURAL CHANGE AND RURAL LIVELIHOODS IN MOUNGO, CAMEROON**

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The period where state policy involved the creation of State or para-public large scale projects, financed at high cost have passed after the limits of this policy was made known before the introduction of the structural adjustment program. The recent policy is based on community development meaning the promotion of development from the bottom or base. The State accompanies farmer organizations, farmer groupings in their development projects. It benefits from private initiative advantages, and on the private sector to boost economic and social development.....	154

### Executive summary

Maize is a crop of high potential and third of the most cultivated food crops in Cameroon. It has had the support from the politics of food security in almost all the regions of Cameroon. Equally, its importance is appreciated through :

- Its place in the cooking habits of Cameroonians. It is consumed by 2/3 of the national population.
- Its place in generating income for the producer's households, associated production and labor.
- Son rôle social.

The indicators for this importance were manifested since the colonial era. Since then, its commercialization and its output for some regions of the country were regulated by the law. At the end of the decade 2000, it was the first source of revenue for more than 3 million people with 700000 small scale farmers. During the same period, it contributed for more than 150 billion FCFA to the Gross Domestic Product (GDP).

It has also for a long time been the primary material for the feeding of birds. In effects, according to specialists, it constitutes 70% of feeds composition such as food for animals. It is highly solicited by the brasseries industries which number is on the increase in Cameroon.

Its production has increased from 1 178 921 tons in 2005 for yields estimated at 1,1t/ha. It has therefore witnessed a net progression compared to 2004 where it was only 966106 t (INS 2008). Officially, in 2013-2014, the national production of maize attained 1, 6 million tons, for a national demand estimated at 2, 2 million tons, hence indicator of a production deficit of 600 000 tons.

Paradoxically, maize does not seem to have addressed the expectations of the public authorities like other cereals particularly rice. The creation of National Support Program for the maize sub-sector (PNAFM) by the State aimed at increasing production by 400000t/an demonstrate a renewed interest for the plant and the high expectation from this plant. There is need in the production domain to forge to the superior stage by introducing in the agricultural landscape, large exploitation in order to ameliorate the performances of family exploitations. It is then for what bases that, emphasizes are made on State policy of « second generation agriculture »

In this context, the performances of family exploitations are questionable :

- The strategies of production,
- The real contribution to households revenue,
- Social role of this cereal in a society where cohesion is regulated by solidarity; solidarity between individuals given the priority before solidarity between two spaces which are countryside that produce and the principal consumer's town. The region is found between the town of Nkongsamba and that of Melong (Littoral region) was considered as our study site because of ecological and strategic reasons.

The soils are formed by recent volcanism (Tertiary to Quaternary), the hot and pluvial climate, and relief of mountain slopes assuring the flow of water are ecological elements favoring at least two seasons for maize cultivation. The study site is found between two

consumption centres, between the western highlands and littoral region which polarize the town of Douala.

## **2. Methodological Background of the study**

### *2.1 Which criteria were used for the selection of the site (justification)?*

Ecological reasons :

- Soils formed by recent volcanism (Tertiary to Quaternary),
- Pluvial and hot climate,
- The relief of mountain slope assures the optimum flow of water creates drainage that assures the optimum flow of water favorable for maize cultivation.  
The consequences of this good ecology favors two to three seasons of maize cultivation per year.

Strategic reasons

The study is the western terminal of a transit corridor and central position between the hinterland and the coast. It is found between two great regions of consumption:

- The populated western highlands where maize is a staple food (especially the Bamoun which remain the highest consumers in the West and perhaps in Cameroon).
- The Littoral region which polarize the coastal town of Douala (more than 2 million inhabitants).
- The Mounjo Corridor (452722 inhabitants in 2001 and 122inhabitants/km ) is already a great motivation for local production. Agrotowns covers about 150 km from Melong (71 199 inhabitants) to Douala. Nkongsamba the principal town has a population of 104 050 inhabitants (2005)), Manjo, Loum, Penja and Mbanga are towns which have each a population of about 50 to 70000 inhabitants.

The Mounjo supplies towns in the West and littoral with off season fresh maize. This maize, roasted along road axes of the town by women and children is a very prosperous small commerce.

### *2.2 How was the sampling frame for the survey constructed?*

It was an investigation by questionnaire executed in the households head. It was then preceded by preliminary investigation which permitted us to adopt the questionnaire. The team of investigators formed carried out the task in the households at Ekangté and at Mbouroukou for about one week. To the questionnaire was associated a discuss to better take note of aspects of treated problem that was not consider by the questionnaire. It was our wish that the study site integrate a periurban zone (of Nkongsamba II) essentially made up of non indigenous (allogenes or strangers) farmers and a typical autochtone village: Mbouroukou, people of Mbo. This choice permitted us to have varried results.

### ***Give numbers of ‘respondents’ and ‘non-respondents’***

The investigation covers 1136 households’ members. The number of respondents and non respondents depends on the posed question. It can vary between 100% of respondents to 20 and at times 30% of non respondents.

### ***2.3 How was the survey implemented? When (dates)? How many enumerators? Quality of the enumerators (etcetera)***

- The principal phase of the investigation took place from the 26 January to March 2014
- At Mbouroukou : 12 enumerators, students of Master I and II of the University of Dschang were trained on investigation and discuss techniques.
- Nkongsamba II (Ekangté). 10 enumerators, students of Master I and II of the University of Dschang were trained on investigation and discuss techniques.

### ***2.4 (if pertinent): what local adaptations to the questionnaire were implemented?***

No special adaptation was made, with the exception as already mention, the question related to the utilisation of mobile phones.

### ***2.5 Methods of data analysis?***

The data was analyzed using the software SPSS. We laid emphasis on the frequencies and when necessary, we proceeds to tables. We have to generate tables which give the research parameters.

### ***2.6 Main limitations of the research?***

The limits of study were already indicated. It is of two dimensions. Those common with all investigation by questionnaire and most especially the important role accorded to household head as the only legitimate person to give information on the other members of the household.

### ***2.7 .....any other comments***

## **3. Map of the research site (including topographical characteristics)**

## **4. Descriptive account of relevant contextual characteristics of the research area.**

**Include information – preferably in separate sections – on:**

### ***4.1 Topography/elevation/soils/hydrology/environmental issues***

The study area covers the southern slopes of mount Manengouba which is found above Nkongsamba at 2396 m. It is a immense volcanic cone hence the functioning started at the middle of the tertiary (Miocene) and continuous until the Quaternary. The most recent phase constructed the adventives strombolian cones which expose the region to volcanic ashes. The field extends to the foot of the mountain at 750-800 m till 1500-1800 m.

The soils are very fertile due to the presence of volcanic ashes. On the foot of the mountain, the potential agronomic aptitudes attracted the Europeans colonial masters that make the zone remarkable for the cultivation of plantation crops par excellence.

The climate characterized by high precipitation is influence by the south west monsoon and relief (mount Nlonako 1800m and the Manengouba 2396m). The area registers 3000 mm of rainfall annually and distributed into two seasons. The rainy season starts from March to mid November. The short dry season which last for 3 to 4 months. In reality, the so called dry season is only a moment of precipitation recession or retreat as it can rain at any moment. The average temperature is 24°. The maximum can attain 32°, the minimum 20°. Atmospheric humidity is constantly close to saturation.

Hydrographic network is reduce to turbulent flow which descend the mountain in the trench. As concern natural vegetation, montane forest, is highly degraded by livestock rearing , it is only found from 1500-1800 m of altitude. It is well conserve in inaccessible zones. Every way, European colonial masters, bamiléké and the indigenes (autochthones) have transformed the space.

#### ***4.2 Agricultural system (cropping patterns; land use; land tenure, etcetera)***

The type of production associates the smallest family exploitation less than 1 ha and small and average exploitations. Until of recent time, the production was mainly for family consumption (70-80%), the surplus (20-30%) was commercialized. The systems of cultivation practiced is a combination of traditional practices ( planting, weeding, and other cultivation methods) and modern ; the practice of intercropping (polyculture with the association of crops such as cassava, beans , cocoyam, yams, oil palms , Robusta coffee) with variable and non optimum densities;

- The practice of pure maize cultivation in the region where land is available;
- The generalized practice of the cultivation of rain fed crops in the off-season;
- The seldom generalized practice of the cultivation of off-season crops by irrigation.

Occupation of arable land is a representation of force relation existing between the white colonial masters who occupies the central part of corridor of less accidented relief ; the

immigrants farmers coming from other regions of the country which occupied the space at the margin of capitalist plantations up to 1000-1200 m, the indigenous (autochthones) farmers which are highly offended, are obliged by different types of colonial masters to move towards the high altitude and finally the grazers of cattle, horses, etc and Mbororo who have transformed the high summit to pastures.

#### **4.3 Relevant historical background**

Contrary to crops such as rice, Irish potato whose history is well known, we master little of maize history. However, it is established that, during colonisation, it was already an object of socio-economic stakes at the national scale.

- In 1982, a national economic operator created at Ngaoundéré on the Adamaoua plateau, la Société Camerounaise de Maïserie (MAISCAM), which engaged in exploitation in 1985 employing a total of 100 to 250 persons of all categories. she cultivates maize and soya beans in a large scale, produce maize oil, feeds for the animals, develop extension program of his maize plantations in other regions and soya beans oil refinery
- (<http://www.estherdang.net/2011/06/maiscam.html#sthash.P67cTCfP.dpuf>). The principal customers are the State of Cameroon who buys through an intermediary of Ministry of Finances and World Food Program (P.A.M).

The SABC is another structure of modern transformation of maize at large scale. It produces animal feeds. Besides these great structures, the transformation of maize is artisanal, limited to grinding mill and fabrication of liquor and local alcohol.

In 2006, the State creates national support Program for the Maize sub-sector (PNAFM) in the Ministry of Agriculture and Rural Development through this program, the Cameroonian government has proposed:

- The National Support Program for the maize sub-sector (PNAFM) of the Ministry of Agriculture and Rural Development, supported by the consultative Committee and follow up of the PPTE resources put in place in 06 October 2000
- To finance the production and distribution to producers 900 tons of certified maize.
- Maize program in the Ministry of Agriculture and Rural Development (financing producers)
- To ameliorate production and maize Producers revenues and members of the sub-sector
- To facilitate the utilization of quality seeds,
- support the acquisition of production Equipment and infrastructure and commercialization
- Support the reinforcement of Producer 's capacities;
- Reinforce the structuration and organization of the sub-sector

In terms of strategies, the strategies put in place are articulated towards micro projects initiated and presented by farmer's organizations. This include: technical and material support to these organizations at the level of production, conservation, and

commercialization; reinforce their capacities at various levels; support their structuration and organization of the sub- sector (*Pierre EVEMBE*).

The project named “Investment Projects and the development of agricultural markets (PIDMA)” started in June 2014 with the availability of the sum of 50 million francs Cfa. These sums are to produce more cassava, Maize and sorghum. PIDMA ambition is to satisfy the annual demand of Agro-industrial enterprises; Maize (200 000 tons), sorghum (30 000 tons) and cassava (1, 4 million tons).

#### **4.5 Human Development Index**

- Level of Human Development relative to national average (e.g. HDI; poverty; deprivation; gini index; educational levels; life expectancy, *etcetera*)
- In the year 2013, the HDI in Cameroon was situated at 0.495 from 0.523 in 2009.
- Cameroon is characterized by a low gross domestic product (GDP) per capita, with 40 percent of the population living below the poverty line. This is especially more concentrated in rural areas where 56% of the population are situated below the poverty line (FAO, 2012).
- According to Jean Aristide 2011, the poverty rate calculated from ECAM 3 statistics situated the western regions at 0.4295 while the national rate stands at 0.4631. It is evident that the presence of fertile soils alone, cannot guarantee poverty reduction levels unless markets are restructured and output better managed through the creation of auxiliary facilities for its transformation.
- Education levels are relatively high in Cameroon, situated at 82.7%. Men are more educated than women with net education rates of 95.8% and 93.6% respectively coupled to the fact that the urban population is more educated than the rural population with 94.6% as opposed to 75.0%. This difference may be explained by the increased number of educational facilities and institutions found in the urban areas. Also, with the increased poverty levels to be found in the rural milieu, financial means to effectively sponsor children in schools are limited than in the urban areas.
- Life expectancy at birth is situated around 59.0 years and the male population has shorter life spans than the female gender i.e. 56.7 and 61.3 years for the male and female gender respectively. This difference may be explained by the nature of work undertaken by the male gender and the huge amounts of alcohol intake. The infant mortality rate is 62 per thousand live births.

#### **4.4 General mobility patterns in the research area**

Like the Bamboutos, the dominant mobility is observed from the bottom to top. The specificity of the study site is seen in its importance of daily town-rural mobility because of

the presence in the site two big agglomerations such as Nkongsamba and Melong populated with a high percentage of farmers. Unfortunately, this dimension may not be observed due to the structure of the questionnaire.

Also very important is rural-rural mobility, rural-urban or urban-urban, intra and interregional due to migrations and population integration which accompany the colonization and continue after the colonial period. The region of Moundou is at 80-85% populated with the Bamileké originated from the western highlands. The relation they have with their village of origin always motivated them to frequently return home for varied reasons. The inverse movement is also important. This concerns family's resident in the western highlands that visits or emigrate to see relatives. If investigation at Nkongsamba have considered the urban periphery, Mbouroukou was chosen because it is a typical native village (autochthones) habited by the Mbo.

#### ***4.5 Settlement pattern (dispersed, nucleated; villages vs. urban, etcetera)***

Colonization and the route have imposed on the landscape a habitat organization that has not change with time. For instance:

Along the national route Bafoussam Douala (western highlands -Littoral) is found almost without discontinuity village-route and agro towns. In the mountains are found villages of the Natives (autochthones). The colonization of central arable land by capitalist exploitations and their margins by national immigrants have obliged the former occupants to refuge or settle in a position where access is practically difficult.

Nkongsamba, divisional town, initially the centre for treatment and marketing of coffee, terminal of railway line Douala-Nkongsamba, have little economic influence in her region. This, is directly polarised by Douala.

#### ***4.6 Infrastructure***

The economic importance of the corridor has offered the region a comparative advantage concerning communication, religious, educational, and health infrastructures etc. these infrastructures are public, private (developed by agro-industries) and laic (catholic, protestant, Muslim and Jehovah witness etc....)

#### ***4.7 Connections to nearest urban settlements and/or major towns (e.g. roads, transport, trade, etcetera)***

The structure communication network is simple, elementary; national route n°5 (Douala-Bafoussam) traverses the region in its centre on more than 150 km. concerning the exploitation path, are the rural routes and that which serve farmers camp.

#### ***Market facilities***



The markets mark the habitat structure, and hold almost every day. It exist however specific days when the market of this or that locality is observe. Nevertheless, the commerce of maize is very different from those of other food stuff . it is done in two circuits : those of fresh maize generally of short duration and that of dry maize which covers a considerable period of the year. The relative easy conservation of maize make it such that each producer supply the market at his favorable period depending on the demand and most especially her financial needs. This attitude of the actors can justify the degree of fluctuation and frequency of supply.

#### ***4.10 Public services (incl. educational and health care facilities; transport and communication)***

In the study zone more precisely, the town of Nkongsamba (divisional headquarter) and Melong (sub divisional headquarter) have all the public services administrative and some political structures. Between the two localities, health centre serve the villages. These, have each at least a primary school (public or laic) and sometimes general and technical secondary schools Mbouroukou has benefited from historical distortion to equip his health centre, high school, it is link to Melong by a tarred route, some touristic centers with hotels exposing the locality to the rest of the world.

#### ***4.11 Institutions and regulations (incl. inheritance systems, collective control; polygamy; etcetera)***

The zone is a melting-pot for population coming from all horizons, each trying to conserve the ancestral customs. This is to emphasis on the diversity of situations. Here as everywhere in Africa, European colonization gave birth to the superposition of modern law (based on that of Western countries style) and the traditional, customary or religious regulations of land ownership. In principle, modern law over-rides other systems. But in practice, there is cohabitation between modern and traditional law (Nkankeu). Globally, under the authority of divisional officer commonly known as « chef de terre » is found the village head which can according to the classification by the administration is rank from the 1<sup>st</sup>, 2<sup>nd</sup> or 3<sup>rd</sup> degree. The villagers territory or grouping is then divided into quarters under the control of a quarter head which answerable to the village head or head of the grouping. In this already complex hierarchization, in the territory where coexist the migrants, each migrant community is regrouping into meetings of indigenes from ..... most often authorized and registered in the file of the divisional officer. It entails the distribution of roles and authority or powers in to optimize the circulation of information and good social management. Another level of regrouping is that of internal family which unite brothers, sisters, cousins living out of their territory of origin in the same space ( village, sub division, division etc.). Generally, tontine, aid fund (solidarity fund) are strong bond of these groups.

Polygamy is omnipresence, but losing its value, replace or in course of being overcome by other forms of social functioning.

#### ***4.12 Ethnic composition and social differentiation of the population***

Mbo and Bamileke are the most dominating ethnic group in terms of numbers. The other ethnic groups: bassa, betis, tikar, and those from the North West are the minority. Social inequality or differentiation is done base on :

- 1) Firstly on merit which depend on the level of instruction,
- 2) The affiliation to a pressure network or group and to a greater extend the influence of political or social status of the family of origin, Land ownership and the traditional authority monopolized by the autochthones (Mbo)
- 3) The inequality or differentiation by revenue is recurrent. The Bamileke, because of their dynamism to farm work are omnipresence and are essentially tenants with high aptitude to negotiate. They have the economic power.

#### **4.13 Land conflicts**

To better understand the intensity of land conflicts in corridors of Moungo, what should always have in mind?

The aims of European colonization: the search for fertile agricultural soil, favorable for cash crops as coffee, cocoa, banana, oil palm and robber tree.

European companies were often set up on several thousands of hectares of very fertile agricultural land which belonged to autochthonous populations.

The need of indigenous labor for the plantations obliged the Whites to import many people from overpopulated villages of the highlands to this pioneer front.

These immigrants needed land to cultivate so that to have food. They started valorizing land at the peripheral of colonial plantations. These lands belonged to the company or they negotiated them to natives.

*The idea that they were deprived of their land is hardly forgotten and at any moment they think of it, they always pose their grievances to anybody who can listen to their plight.* This situation has given rise to land conflicts on peripheral lands opposing mainly individuals or groups of natives and local migrants considered as “invaders”.

Today because of the authority of administration, there is calm which give the impression of a pacific coexistence between groups. However, most often, during occasion of great electoral consultations, the devils are awakened and project the global problem of autochthons allogens, by some persons for intensions not known to everybody. Tension exists between those who give their land for rent and tenants. The first accuse the later for overexploitation and land impoverishment before handing it to them.

#### **4.14 (Observable) social networks (e.g. producer associations, cooperatives, clubs)**

At the national scale, initiatives in matter of regrouping, production-commercialization or supervision of organized farmers in op is always evident. For instance, the intervention in the maize production of projects such as PSSA, the National Employment Fund (FNE), SODECOTON, National Vulgarization program for Agricultural Research (PNVRA), the mission for the development of North- West (MIDENO), SOWEDA, ASPPA ADER and the NGOs. Maize represents a good proportion in the policy of inter-patronat grouping in Cameroon (GICAM) which encourages the elites to create plantations (one influential elite one plantation). Locally, a number of GIC which are active in maize production and piggery can be census which benefit from what is called post harvest lost.

#### **4.15 Description of main transformations of the local and/or regional economy, including their causal factors (e.g. state policies, innovations, foreign companies; etcetera)**

The coffee crisis is at the origin of great socioeconomic change in the region. It is manifested by:

- The closure of processing factories and conditioning of coffee to be exported,

- Certain rebirth of some names (Tzouvelos which becomes « North South Synergy » which is done in coffee-cocoa).
- Par la cession des exploitations détenues par les Blancs à l'élite locale,
- The deterioration of plantations and some abandon,
- The passage of monoculture of coffee to mixed plantations where coffee play only a secondary role ,
- The promotion of substitution plants such as maize, oil palm and generally food crops,
- Generalization of off season maize cultivation in the valleys.
- Intensification of pluri-activity.

The deficit of national production of maize estimated at 20000t (Comité de compétitivité 2015), justify without doubt the actual interest accorded by the State to this crop. However, no specific State policy concern the study zone. The registered transformations are due to the internal dynamics often supported by the internal and external elites: Market law, life project of each individual, social demand etc.

Particular emphasis is put on the promotion of tourism by the valorization of potentials offered by mount Manengouba and River Nkam.

#### ***4.16 Local labor market (which are large employers, if any?)***

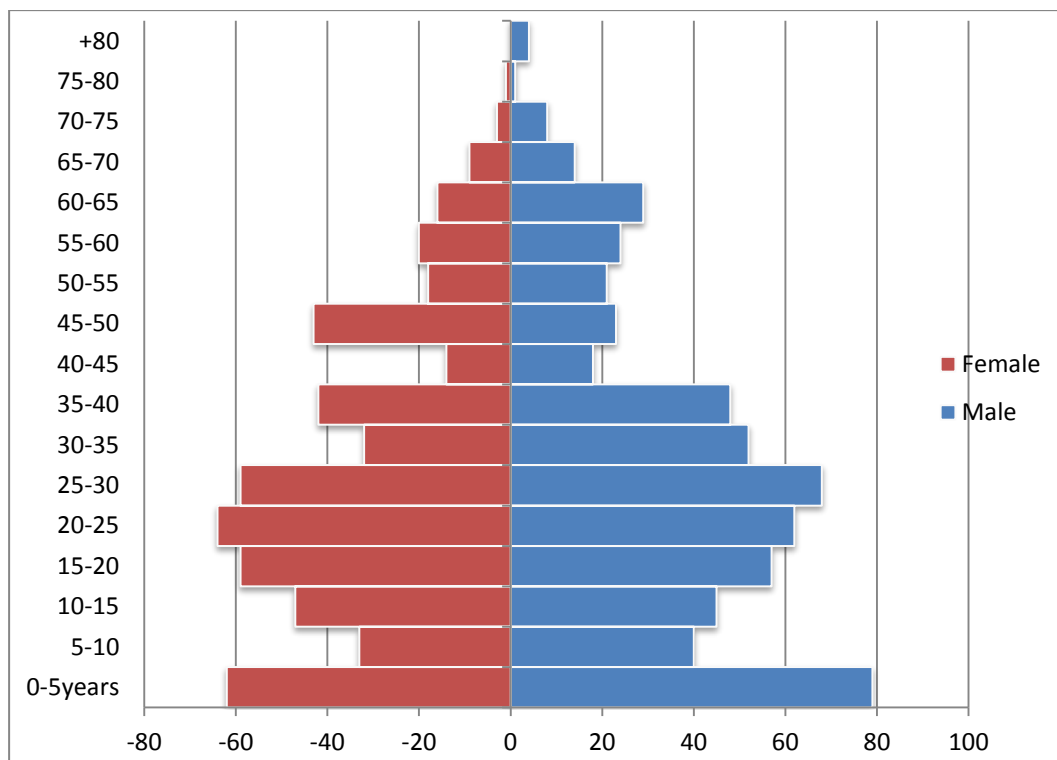
Mbouroukou have two hotels and two rest houses which employ one international customer attendance or employee.

#### ***4.17 Importance of non-farming enterprises in the area (e.g. mining, manufacture, construction, commerce, services; also: public sector institutions)***

- Building construction,
- Wood Works
- Commerce
- Hotel management
- Tourism (tourist guide)

## **5. Population characteristics (Form A-1 – Household roster)**

### **5.1 Population pyramid by age/gender as & of population in 5-year age classes.**



### 5.1.1. Gender of heads of households

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	156	78,0	78,4	78,4
	Female	43	21,5	21,6	100,0
	Total	199	99,5	100,0	
Missing	99	1	,5		
Total		200	100,0		

### 5.2 Average size of household

The Average size of the household is 5.6 persons/household. It was found by dividing the total of respondents 1127 by the number of households 200.

### 5.3 Educational attainment levels (% by age and gender)

High level * Gender Crosstabulation				
Count				

		Gender		Total
		Male	Female	
High level	To young for school	43	44	87
	Primary school	279	263	542
	Secondary first cycle	105	90	195
	Secondary second cycle	59	32	91
	Higher education	21	13	34
	Master-Doctorate	18	11	29
	No formal education	16	20	36
Total		541	473	1014

#### 5.4 Highest educational attainment level (categories) by age groups Crosstabulation

High level * Group of age Crosstabulation									
Count									
		High level							Total
		To young or school	Primary school	Secondary first cycle	Secondary second cycle	Higher education	Master-Doctorate	No formal education	
Group of age	0-5years	28	35	19	9	8	6	27	132
	5-10	0	62	2	0	0	0	1	65
	10-15	0	70	14	1	1	0	0	86
	15-20	1	75	22	12	3	1	0	114
	20-25	3	71	20	13	8	4	1	120
	25-30	9	45	29	18	7	8	1	117
	30-35	3	30	25	12	1	3	1	75
	35-40	5	31	26	14	2	1	0	79
	40-45	1	15	5	6	0	2	0	29
	45-50	6	32	11	1	0	4	0	54
	50-55	2	21	4	2	2	0	0	31
	55-60	8	24	6	0	0	0	0	38
	60-65	6	11	10	3	1	0	1	32
	65-70	4	11	0	0	1	0	2	18
	70-75	0	6	2	0	0	0	0	8

	75-80	1	0	0	0	0	0	0	1
	+80	1	3	0	0	0	0	0	4
Total		78	542	195	91	34	29	34	1003

### 5.5 % of households with one or more members categorized usually absent

Resident					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Resident	187	93,5	94,0	94,0
	Usually absent	12	6,0	6,0	100,0
	Total	199	99,5	100,0	
Missing	99	1	,5		
Total		200	100,0		

### 5.6 % of population who live elsewhere and contribute to households livelihood

Resident					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Resident	702	61,8	62,3	62,3
	Usually absent	425	37,4	37,7	100,0
	Total	1127	99,2	100,0	
Missing	Not applicable	9	,8		
Total		1136	100,0		

### 5.7-5.10 % of households with a head of household aged under 35 years

% of households with head of household aged below 35 years, between 35-65 and above 65 years					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-35years	35	17,5	18,1	18,1

Missing	35-65years	126	63,0	65,3	83,4
	under65	32	16,0	16,6	100,0
	Total	193	96,5	100,0	
	System	7	3,5		
Total		200	100,0		

### 5.11 Dependency rate

Main activity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Income generating	427	37,6	40,6	40,6
	School	400	35,2	38,0	78,5
	Unemployed	46	4,0	4,4	82,9
	Retired	25	2,2	2,4	85,3
	Disabled	4	,4	,4	85,7
	Subsistence production	97	8,5	9,2	94,9
	Domestic work	39	3,4	3,7	98,6
	Other(specify)	15	1,3	1,4	100,0
	Total	1053	92,7	100,0	
Missing	0	27	2,4		
	99	56	4,9		
	Total	83	7,3		
Total		1136	100,0		

This ratio for our study site is about 1.28 and calculated from the number of the active population divided by the number of the inactive population.

### 5.12 Main activity by active age group and gender

- By group age

group age * Main activity Crosstabulation											
			Main activity								Total
			Income generating	School	Unemployed	Retired	Disabled	Subsistence production	Domestic work	Other(specify)	
group	below 18years	Count	6	219	3	0	1	1	0	0	230

age		% within group age	2,6%	95,2%	1,3%	,0%	,4%	,4%	,0%	,0%	100,0%
		% of Total	,6%	22,6%	,3%	,0%	,1%	,1%	,0%	,0%	23,7%
		Count	170	138	29	0	1	29	13	7	387
	18-35years	% within group age	43,9%	35,7%	7,5%	,0%	,3%	7,5%	3,4%	1,8%	100,0%
		% of Total	17,5%	14,2%	3,0%	,0%	,1%	3,0%	1,3%	,7%	39,9%
		Count	194	5	10	18	1	58	21	7	314
	35-65years	% within group age	61,8%	1,6%	3,2%	5,7%	,3%	18,5%	6,7%	2,2%	100,0%
		% of Total	20,0%	,5%	1,0%	1,9%	,1%	6,0%	2,2%	,7%	32,3%
		Count	21	0	1	6	1	7	3	1	40
	under65	% within group age	52,5%	,0%	2,5%	15,0%	2,5%	17,5%	7,5%	2,5%	100,0%
		% of Total	2,2%	,0%	,1%	,6%	,1%	,7%	,3%	,1%	4,1%
		Count	391	362	43	24	4	95	37	15	971
Total	% within group age	40,3%	37,3%	4,4%	2,5%	,4%	9,8%	3,8%	1,5%	100,0%	
	% of Total	40,3%	37,3%	4,4%	2,5%	,4%	9,8%	3,8%	1,5%	100,0%	

• By gender

Gender * Main activity Crosstabulation										
		Gender						Total		
		Male			Female					
			% within			% within			% within	
		Count	Gender	% of Total	Count	Gender	% of Total	Count	Gender	% of Total
Main activity	Income generating	245	43,8%	23,3%	182	36,9%	17,3%	427	40,6%	40,6%
	School	211	37,7%	20,0%	189	38,3%	17,9%	400	38,0%	38,0%



	Unemployed	21	3,8%	2,0%	25	5,1%	2,4%	46	4,4%	4,4%
	Retired	24	4,3%	2,3%	1	,2%	,1%	25	2,4%	2,4%
	Disabled	2	,4%	,2%	2	,4%	,2%	4	,4%	,4%
	Subsistence production	46	8,2%	4,4%	51	10,3%	4,8%	97	9,2%	9,2%
	Domestic work	2	,4%	,2%	37	7,5%	3,5%	39	3,7%	3,7%
	Other(specify)	9	1,6%	,9%	6	1,2%	,6%	15	1,4%	1,4%
Total		560	100,0%	53,2%	493	100,0%	46,8%	1053	100,0%	100,0%

5.13 % of Population born in same place/area and elsewhere

% of population born in the same division					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Born in same district	930	81,9	82,4	82,4
	Born elsewhere	198	17,4	17,6	100,0
	Total	1128	99,3	100,0	
Missing	No anwser	8	,7		
Total		1136	100,0		

5.14 For immigrants: top-3 main places/areas of previous residence

Previous place of residence					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Vina	1	,1	,1	,1
	Lekie	1	,1	,1	,2
	Mbam-et-kim	1	,1	,1	,3
	Mfoundi	43	3,8	4,4	4,7
	Boumba-et-ngoko	1	,1	,1	4,8
	Lom-et-djerem	5	,4	,5	5,4
	Diamare	2	,2	,2	5,6
	Moungo	752	66,2	77,5	83,1
	Sanaga-maritime	16	1,4	1,6	84,7
	Wouri	64	5,6	6,6	91,3
	Benoue	7	,6	,7	92,1
	Bui	2	,2	,2	92,3
	Mezam	1	,1	,1	92,4

	Bamboutos	2	,2	,2	92,6
	Haut-nkam	16	1,4	1,6	94,2
	Menoua	6	,5	,6	94,8
	Mifi	22	1,9	2,3	97,1
	Hauts-plateaux	5	,4	,5	97,6
	Koung-khi	8	,7	,8	98,5
	Nde	4	,4	,4	98,9
	Fako	8	,7	,8	99,7
	Kupe-et-Manengouba	1	,1	,1	99,8
	Ndian	1	,1	,1	99,9
	Abroad	1	,1	,1	100,0
	Total	970	85,4	100,0	
Missing	No answer	58	5,1		
	Not applicable	108	9,5		
	Total	166	14,6		
Total		1136	100,0		

## 5.16 Importance of subsistence production

Main activity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Income generating	427	37,6	40,6	40,6
	School	400	35,2	38,0	78,5
	Unemployed	46	4,0	4,4	82,9
	Retired	25	2,2	2,4	85,3
	Disabled	4	,4	,4	85,7
	Subsistence production	97	8,5	9,2	94,9
	Domestic work	39	3,4	3,7	98,6
	Other(specify)	15	1,3	1,4	100,0
	Total	1053	92,7	100,0	
Missing	0	27	2,4		
	99	56	4,9		
	Total	83	7,3		
Total		1136	100,0		

## 6. LIVELIHOOD CHARACTERISTICS

### 6.1. Economically active population as % of total population (female and male)

Dependency ratio \* Gender Crosstabulation

			Gender		Total
			Male	Female	
Dependency ratio	Active population	Count	304	279	583
		% of Total	28,9%	26,5%	55,4%
	Dependent population	Count	256	214	470
		% of Total	24,3%	20,3%	44,6%
Total	Count		560	493	1053
	% of Total		53,2%	46,8%	100,0%

### 6.2. Economically active population: % distribution over occupational groups; Total; Male; Female

Main activity \* Gender Crosstabulation

			Gender		Total
			Male	Female	
Main activity	Income generating	Count	245	182	427
		% of Total	23,3%	17,3%	40,6%
	School	Count	211	189	400
		% of Total	20,0%	17,9%	38,0%
	Unemployed	Count	21	25	46
		% of Total	2,0%	2,4%	4,4%
	Retired	Count	24	1	25
		% of Total	2,3%	,1%	2,4%
	Disabled	Count	2	2	4
		% of Total	,2%	,2%	,4%
	Subsistence production	Count	46	51	97
		% of Total	4,3%	5,1%	9,4%
	Total		1053	493	1546
	% of Total		67,7%	32,3%	100,0%

	% of Total	4,4%	4,8%	9,2%
Domestic work	Count	2	37	39
	% of Total	,2%	3,5%	3,7%
Other(specify)	Count	9	6	15
	% of Total	,9%	,6%	1,4%
Total	Count	560	493	1053
	% of Total	53,2%	46,8%	100,0%

### 6.3. Labour position in main occupation (Var. 38) (Male/Female)

#### Labour position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Self-employed	318	28,0	87,6	87,6
	Employer	29	2,6	8,0	95,6
	Permanent wage labour	7	,6	1,9	97,5
	Long term contract(one year and above)	6	,5	1,7	99,2
	Casual wage labour	1	,1	,3	99,4
	Family workers without pay	2	,2	,6	100,0
	Total	363	32,0	100,0	
Missing	No answer	9	,8		
	99	764	67,3		
	Total	773	68,0		
Total		1136	100,0		

### 6.4. Crosstab: Var 37 by Var 38 (Male/Female)

**Labour position \* Gender Crosstabulation**

			Gender		Total
			Male	Female	
Labour position	Self-employed	Count	157	161	318
		% of Total	43,3%	44,4%	87,6%
	Employer	Count	19	10	29
		% of Total	5,2%	2,8%	8,0%
	Permanent wage labour	Count	3	4	7
		% of Total	,8%	1,1%	1,9%
	Long term contract(one year and above)	Count	3	3	6
		% of Total	,8%	,8%	1,7%
	Casual wage labour	Count	1	0	1
		% of Total	,3%	,0%	,3%
	Family workers without pay	Count	1	1	2
		% of Total	,3%	,3%	,6%
	Total	Count	184	179	363
		% of Total	50,7%	49,3%	100,0%

**6.5. Crosstab: Var 24 (education) by Var 37 (Occupational group) (Male/Female)**
**Main income generating activity \* Gender Crosstabulation**

			Gender		Total
			Male	Female	
Main income generating activity	Domestic work	Count	53	62	115
		% of Total	14,5%	16,9%	31,4%
	Transport	Count	3	0	3
		% of Total	,8%	,0%	,8%

	% of Total	,8%	,0%	,8%
Bulding production	Count	10	3	13
	% of Total	2,7%	,8%	3,6%
Services(bank/commerce)	Count	4	4	8
	% of Total	1,1%	1,1%	2,2%
Police	Count	3	7	10
	% of Total	,8%	1,9%	2,7%
Education	Count	3	1	4
	% of Total	,8%	,3%	1,1%
Religion	Count	2	5	7
	% of Total	,5%	1,4%	1,9%
Agriculture	Count	68	76	144
	% of Total	18,6%	20,8%	39,3%
Breeding	Count	0	1	1
	% of Total	,0%	,3%	,3%
Fishing	Count	1	0	1
	% of Total	,3%	,0%	,3%
Retired	Count	8	0	8
	% of Total	2,2%	,0%	2,2%
Tailoring	Count	1	2	3
	% of Total	,3%	,5%	,8%
Aesthetic	Count	6	4	10
	% of Total	1,6%	1,1%	2,7%
Wood work	Count	2	2	4
	% of Total	,5%	,5%	1,1%
Mechanic construction	Count	21	14	35
	% of Total	5,7%	3,8%	9,6%
Total	Count	185	181	366
	% of Total	50,5%	49,5%	100,0%

**Labour position \* Education attainment levels \* Gender Crosstabulation**

Gender	Education attainment levels
--------	-----------------------------

				No formal education	Primary education	Secondary first cycle	Secondary second cycle	Higher education
Male	Labour position	Self-employed	Count	2	80	46	16	4
			% of Total	1,1%	45,5%	26,1%	9,1%	2,3%
		Employer	Count	0	15	4	0	0
			% of Total	,0%	8,5%	2,3%	,0%	,0%
		Permanent wage labour	Count	0	3	0	0	0
			% of Total	,0%	1,7%	,0%	,0%	,0%
		Long term contract(one year and above)	Count	0	2	0	0	1
			% of Total	,0%	1,1%	,0%	,0%	,6%
		Casual wage labour	Count	0	0	1	0	0
			% of Total	,0%	,0%	,6%	,0%	,0%
		Family workers without pay	Count	0	1	0	0	0
			% of Total	,0%	,6%	,0%	,0%	,0%
	Total	Count	2	101	51	16	5	
		% of Total	1,1%	57,4%	29,0%	9,1%	2,8%	
Female	Labour position	Self-employed	Count	3	100	41	4	
			% of Total	1,8%	60,2%	24,7%	2,4%	
		Employer	Count	0	9	1	0	
			% of Total	,0%	5,4%	,6%	,0%	
		Permanent wage labour	Count	0	1	3	0	
			% of Total	,0%	,6%	1,8%	,0%	
		Long term contract(one year and above)	Count	0	1	2	0	
			% of Total	,0%	,6%	1,2%	,0%	
		Family workers without pay	Count	0	0	1	0	
			% of Total	,0%	,0%	,6%	,0%	
	Total	Count	3	111	48	4		
		% of Total	1,8%	66,9%	28,9%	2,4%		

**Crosstab: Var 24 (education) by Var 38 (Labour position) (Male/Female)**

**Main income generating activity \* Education attainment levels \* Gender Crosstabulation**

Gender					Education attainment levels				
					No formal education	Primary education	Secondary first cycle	Secondary second cycle	Higher education
Male	Main income generating activity	Domestic work	Count	0		41	7	1	0
			% of Total	,0%		23,2%	4,0%	,6%	,0%
		Transport	Count	0		2	1	0	0
			% of Total	,0%		1,1%	,6%	,0%	,0%
		Bulding production	Count	0		10	0	0	0
			% of Total	,0%		5,6%	,0%	,0%	,0%
		Services(bank/commerce)	Count	0		3	0	0	1
			% of Total	,0%		1,7%	,0%	,0%	,6%
		Police	Count	0		2	1	0	0
			% of Total	,0%		1,1%	,6%	,0%	,0%
		Education	Count	0		1	1	1	0
			% of Total	,0%		,6%	,6%	,6%	,0%
		Religion	Count	0		1	0	0	1
			% of Total	,0%		,6%	,0%	,0%	,6%
		Agriculture	Count	2		20	25	14	3
			% of Total	1,1%		11,3%	14,1%	7,9%	1,1%
		Fishing	Count	0		0	1	0	0
			% of Total	,0%		,0%	,6%	,0%	,0%
		Retired	Count	0		5	3	0	0
			% of Total	,0%		2,8%	1,7%	,0%	,0%
		Tailoring	Count	0		0	1	0	0
			% of Total	,0%		,0%	,6%	,0%	,0%
		Aesthetic	Count	0		1	5	0	0
			% of Total	,0%		,6%	2,8%	,0%	,0%
		Wood work	Count	0		0	2	0	0
			% of Total	,0%		,0%	1,1%	,0%	,0%
		Mechanic construction	Count	0		15	5	0	0
			% of Total	,0%		8,5%	2,8%	,0%	,0%
	Total			Count	2	101	52	16	5
				% of Total	1,1%	57,1%	29,4%	9,0%	2,4%



Female	Main income generating activity	Domestic work	Count	1	47	3	0
			% of Total	,6%	28,1%	1,8%	,0%
		Bulding production	Count	0	3	0	0
			% of Total	,0%	1,8%	,0%	,0%
		Services(bank/commerce)	Count	0	2	2	0
			% of Total	,0%	1,2%	1,2%	,0%
		Police	Count	0	7	0	0
			% of Total	,0%	4,2%	,0%	,0%
		Education	Count	0	0	0	1
			% of Total	,0%	,0%	,0%	,6%
		Religion	Count	0	5	0	0
			% of Total	,0%	3,0%	,0%	,0%
		Agriculture	Count	2	34	34	3
			% of Total	1,2%	20,4%	20,4%	1,8%
		Breeding	Count	0	1	0	0
			% of Total	,0%	,6%	,0%	,0%
		Tailoring	Count	0	1	1	0
			% of Total	,0%	,6%	,6%	,0%
		Aesthetic	Count	0	3	1	0
			% of Total	,0%	1,8%	,6%	,0%
		Wood work	Count	0	0	2	0
			% of Total	,0%	,0%	1,2%	,0%
		Mechanic construction	Count	0	11	3	0
			% of Total	,0%	6,6%	1,8%	,0%
	Total		Count	3	114	46	4
			% of Total	1,8%	68,3%	27,5%	2,4%

## 6.6. Non-agriculturally employed: distance to work (in time and/or kms)

Place of non-agricultural activity (name of place) \* Time Crosstabulation

Count				
		Place of non-agricultural activity (name of place)		
		Town	Village	Abroad
				Total

Time	0.05	1	0	0	1
	0.08	0	3	0	3
	0.083	1	0	0	1
	0.16	1	1	0	2
	0.25	17	2	0	19
	0.35	1	0	0	1
	0.45	2	1	0	3
	0.5	7	3	0	10
	0.58	2	0	0	2
	0.75	2	2	0	4
	0.8	1	0	0	1
	1	21	4	0	25
	1.3	1	0	0	1
	1.5	1	0	0	1
	2	7	2	0	9
	2.5	0	0	1	1
	3	1	0	0	1
	5	3	0	0	3
	6	1	0	0	1
	10	0	1	0	1
	15	1	0	0	1
	30	6	1	0	7
	35	1	0	0	1
Total		78	20	1	99

**Place of non-agricultural activity (name of place) \* Km**

**Crosstabulation**

Count				
		Place of non-agricultural activity (name of place)		
		Town	Village	Total
Km	0.1	1	1	2

0.2	1	0	1
0.25	1	0	1
0.3	1	0	1
0.5	3	1	4
1	7	8	15
1.2	0	1	1
2	25	3	28
3	1	2	3
3.5	1	0	1
4	4	0	4
7	1	0	1
8	1	0	1
9	1	0	1
10	11	2	13
15	7	1	8
135	1	0	1
180	1	0	1
Total	68	19	87

#### 6.7. Number of (different) income generating activities per household

##### Main income generating activity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Domestic work	62	31,0	32,8	32,8
	Transport	2	1,0	1,1	33,9
	Bulding production	6	3,0	3,2	37,0
	Services(bank/commerce)	3	1,5	1,6	38,6

	Police	4	2,0	2,1	40,7
	Education	3	1,5	1,6	42,3
	Religion	2	1,0	1,1	43,4
	Agriculture	85	42,5	45,0	88,4
	Fishing	1	,5	,5	88,9
	Retired	8	4,0	4,2	93,1
	Tailoring	1	,5	,5	93,7
	Aesthetic	3	1,5	1,6	95,2
	Wood work	1	,5	,5	95,8
	Mechanic construction	8	4,0	4,2	100,0
	Total	189	94,5	100,0	
Missing	99	11	5,5		
Total		200	100,0		

## 6.8. Average number of economically active household members per household

Our study area has a total of about 583 active members from 200 households randomly selected. To know the average number of active household members per household, the total number of active household members is divided by the total number of households. This gives us an average of 3 active persons per household.

## 6.9. Importance of non-farming income relative to total household income

## 7. LIVELIHOOD DIVERSIFICATION AND TRANSFORMATION (FORM A-4)

### 7.1 Describe relevant changes in activity/income (What changes + why to what effect for purchasing power)

Change in main income activity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	134	67,0	75,3	75,3
	No	44	22,0	24,7	100,0
	Total	178	89,0	100,0	
Missing	0	3	1,5		
	99	19	9,5		
	Total	22	11,0		
Total		200	100,0		

#### Income change

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Deteriorated	59	29,5	33,0	33,0
	Same	65	32,5	36,3	69,3
	Improved	55	27,5	30,7	100,0
	Total	179	89,5	100,0	
Missing	0	5	2,5		
	99	16	8,0		
	Total	21	10,5		
Total		200	100,0		

#### Purchasing power

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less goods	56	28,0	31,1	31,1
	Same goods	65	32,5	36,1	67,2
	More goods	59	29,5	32,8	100,0
	Total	180	90,0	100,0	
Missing	0	2	1,0		
	99	18	9,0		
	Total	20	10,0		
Total		200	100,0		

### Purchasing power

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less goods	56	28,0	31,1	31,1
	Same goods	65	32,5	36,1	67,2
	More goods	59	29,5	32,8	100,0
	Total	180	90,0	100,0	
Missing	0	2	1,0		
	99	18	9,0		
	Total	20	10,0		

### Reasons for change in main income activity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High prices of fertilizer	3	1,5	6,5	6,5
	Encrease responsability/death/mariage	2	1,0	4,3	10,9
	Multi-activity/association of farmers_cattle-breeder	8	4,0	17,4	28,3
	Poverty of the soil/degradation of the soil/low production	6	3,0	13,0	41,3
	Periodicity of the activity	4	2,0	8,7	50,0
	High production/better technique of agricole	2	1,0	4,3	54,3
	Retired/ old age	12	6,0	26,1	80,4
	Assistance	1	,5	2,2	82,6
	Employment change	6	3,0	13,0	95,7
	Other	2	1,0	4,3	100,0
	Total	46	23,0	100,0	
Missing	0	6	3,0		
	99	148	74,0		
	Total	154	77,0		
Total		200	100,0		

**Why(explain)<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High prices of fertilizer	8	13,1	13,8	13,8
	Encrease responsability/death/mariage	6	9,8	10,3	24,1
	Pauvrete du sols/degradation des sols/baisse de la production	21	34,4	36,2	60,3
	Periodicity of the activity	2	3,3	3,4	63,8
	Old age	11	18,0	19,0	82,8
	Reduction of the area cultivated	2	3,3	3,4	86,2
	Other	8	13,1	13,8	100,0
	Total	58	95,1	100,0	
Missing	0	3	4,9		
Total		61	100,0		

a. Income change = Deteriorated

**Why(explain)<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High prices of fertilizer	13	17,6	36,1	36,1
	Encrease responsability/death/mariage	5	6,8	13,9	50,0
	Multi-activity/association of agriculteurs_cattle-breeder	2	2,7	5,6	55,6
	Pauvrete du sols/degradation des sols/baisse de la production	8	10,8	22,2	77,8
	Old age	2	2,7	5,6	83,3
	Assistance	1	1,4	2,8	86,1
	Other	5	6,8	13,9	100,0
	Total	36	48,6	100,0	

Missing	0	23	31,1		
	99	15	20,3		
	Total	38	51,4		
Total		74	100,0		

a. Income change = Same

#### Why(explain)<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High prices of fertilizer	1	1,8	1,9	1,9
	Multi-activity/association of agriculteurs_cattle-breeder	5	8,8	9,3	11,1
	Pauvrete du sols/degradation des sols/baisse de la production	2	3,5	3,7	14,8
	Periodicity of the activity	2	3,5	3,7	18,5
	High production/ better agricultural technic	33	57,9	61,1	79,6
	Old age	2	3,5	3,7	83,3
	Assistance	5	8,8	9,3	92,6
	Employment change	1	1,8	1,9	94,4
	Other	3	5,3	5,6	100,0
	Total	54	94,7	100,0	
Missing	0	1	1,8		
	99	2	3,5		
	Total	3	5,3		
Total		57	100,0		

a. Income change = Improved

#### Cross-tabulation, change in income\*change in purchasing power

##### Income change \* Change in main income activity Crosstabulation

	Change in main income activity	Total
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			Yes	No	
Income change	Deteriorated	Count	44	16	60
		% of Total	23,7%	8,6%	32,3%
	Same	Count	66	7	73
		% of Total	35,5%	3,8%	39,2%
	Improved	Count	33	20	53
		% of Total	17,7%	10,8%	28,5%
Total	Count	143	43	186	
	% of Total	76,9%	23,1%	100,0%	

#### Income change \* Change in main income activity Crosstabulation

			Change in main income activity			Total
			No answer	Changed	Same	
Income change	Deteriorated	Count	29	10	15	54
		% of Total	14,6%	5,1%	7,6%	27,3%
	Same	Count	24	19	28	71
		% of Total	12,1%	9,6%	14,1%	35,9%
	Improved	Count	14	22	37	73
		% of Total	7,1%	11,1%	18,7%	36,9%
Total	Count	67	51	80	198	
	% of Total	33,8%	25,8%	40,4%	100,0%	

**7.2 If there have been shifts in income generating activities during the past 10 years; is it predominantly changes from farming to non-agricultural employment? Or is non-farming activity mainly to be considered as additional occupation?**

**7.3 Connect changing land ownership (C-2) to livelihood diversification and diversification from farming. Is there a relationship between decreasing or increasing land ownership and changes in occupation/additional activities?**

**Owned by the household \* Income change Crosstabulation**

			Income change			Total
			Deteriorated	Same	Improved	
Owned by the household	Decreased	Count	2	0	1	3
		% of Total	7,7%	,0%	3,8%	11,5%
	Same	Count	6	9	3	18
		% of Total	23,1%	34,6%	11,5%	69,2%
	Increased	Count	0	1	4	5
		% of Total	,0%	3,8%	15,4%	19,2%
Total	Count	8	10	8	26	
	% of Total	30,8%	38,5%	30,8%	100,0%	

#### 7.4 Connect entrepreneurship (having small or bigger business/shop) with land ownership (number of plots and size of land)

We don't have any question concerning the type or the size (small or bigger) of the shop of the interviewed population. So, it is not possible to connect this element with the number of plots.

#### 7.5 Changes over time in labour position? Eg. a change from self-employed to wage-labour?

There is not a question concerning this aspect in the questionnaire.

#### 7.6 What is the difference in livelihood diversification between female headed households (or single parent households) and male headed households? (eg; does being/becoming a single parent household demand the parent to look for multiple activities next to their main activity?)

##### Household head

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	157	78,5	78,5	78,5
	Female	43	21,5	21,5	100,0
	Total	200	100,0	100,0	

#### **livelihood diversification of male headed households**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	One activity	74	37,0	47,4	47,4
	Multiple activities	82	41,0	52,6	100,0
	Total	156	78,0	100,0	
Missing	System	44	22,0		
Total		200	100,0		

#### **livelihood diversification of female headed households**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	One activity	31	15,5	70,5	70,5
	Multiple activities	13	6,5	29,5	100,0
	Total	44	22,0	100,0	
Missing	System	156	78,0		
Total		200	100,0		

## **8. MULTI-LOCALITY AND MOBILITY**

**8.1 Difference between the type of occupation (Hm\_main\_occ) for households members resident and household members "usually absent" (implying: differences between the occupation locally and occupation in other locations)**

#### **Main income generating activity<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Domestic work	102	14,5	33,1	33,1
	Transport	2	,3	,6	33,8
	Bulding production	5	,7	1,6	35,4
	Services(bank/commerce)	7	1,0	2,3	37,7
	Police	6	,9	1,9	39,6
	Education	3	,4	1,0	40,6
	Religion	6	,9	1,9	42,5

	Agriculture	143	20,4	46,4	89,0
	Breeding	1	,1	,3	89,3
	Retired	8	1,1	2,6	91,9
	Tailoring	2	,3	,6	92,5
	Aesthetic	6	,9	1,9	94,5
	Wood work	2	,3	,6	95,1
	Mechanic construction	15	2,1	4,9	100,0
	Total	308	43,9	100,0	
Missing	99	394	56,1		
Total		702	100,0		

a. Resident = Resident

#### Main income generating activity<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Domestic work	13	3,1	22,4	22,4
	Transport	1	,2	1,7	24,1
	Bulding production	8	1,9	13,8	37,9
	Services(bank/commerce)	1	,2	1,7	39,7
	Police	4	,9	6,9	46,6
	Education	1	,2	1,7	48,3
	Religion	1	,2	1,7	50,0
	Agriculture	1	,2	1,7	51,7
	Fishing	1	,2	1,7	53,4
	Tailoring	1	,2	1,7	55,2
	Aesthetic	4	,9	6,9	62,1
	Wood work	2	,5	3,4	65,5
	Mechanic construction	20	4,7	34,5	100,0
	Total	58	13,6	100,0	
Missing	0	2	,5		
	99	365	85,9		
	Total	367	86,4		
Total		425	100,0		

a. Resident = Usually absent

## 8.2 Importance of household members who are "usually absent", that is, medium- or long term migrants?

## 8.3 Who are these medium- and long-term migrants? Why have they left? How much time since they left? Where have they gone to? Frequency and reasons for these migrants to visit their rural household?

### 8.3.1 Who are these medium- and long-term migrants

Relation to HH head<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Head	12	2,8	2,8	2,8
	Spouse	11	2,6	2,6	5,4
	Child	366	86,1	86,1	91,5
	Father/mother	1	,2	,2	91,8
	Brother/sister	28	6,6	6,6	98,4
	Grandparent	2	,5	,5	98,8
	Grandchild	2	,5	,5	99,3
	Other family member	3	,7	,7	100,0
	Total	425	100,0	100,0	

a. Resident = Usually absent

### 8.3.2 Why have they left?

Reasons for leaving<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Education	144	33,9	35,5	35,5
	Work	215	50,6	53,0	88,4
	Family assistance	34	8,0	8,4	96,8

Marriage	13	3,1	3,2	100,0
Total	406	95,5	100,0	
Missing No answer	19	4,5		
Total	425	100,0		

a. Resident = Usually absent

### 8.3.3 How much time since they left?

#### Duration since leaving/years<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0.5	1	,2	,7	,7
	0.6	1	,2	,7	1,4
	1	15	3,5	10,8	12,2
	2	17	4,0	12,2	24,5
	3	9	2,1	6,5	30,9
	4	12	2,8	8,6	39,6
	5	7	1,6	5,0	44,6
	6	14	3,3	10,1	54,7
	7	8	1,9	5,8	60,4
	8	6	1,4	4,3	64,7
	9	3	,7	2,2	66,9
	10	5	1,2	3,6	70,5
	11	4	,9	2,9	73,4
	12	8	1,9	5,8	79,1
	13	3	,7	2,2	81,3
	14	3	,7	2,2	83,5
	15	12	2,8	8,6	92,1
	16	2	,5	1,4	93,5
	17	1	,2	,7	94,2
	19	2	,5	1,4	95,7
	22	1	,2	,7	96,4
	24	2	,5	1,4	97,8

	26	2	,5	1,4	99,3
	30	1	,2	,7	100,0
	Total	139	32,7	100,0	
Missing	No	35	8,2		
	answer				
	System	251	59,1		
	Total	286	67,3		
Total		425	100,0		

a. Resident = Usually absent

### 8.3.4 Where have they gone to?

#### Current location<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nearby village	8	1,9	4,7	4,7
	Village in same district	1	,2	,6	5,2
	Town/city	156	36,7	90,7	95,9
	Abroad	7	1,6	4,1	100,0
	Total	172	40,5	100,0	
Missing	System	253	59,5		
Total		425	100,0		

a. Resident = Usually absent

#### Specify code of place<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mfoundi	20	4,7	13,9	13,9
	Haut-nyong	1	,2	,7	14,6
	Kadey	1	,2	,7	15,3
	Logone-et-chari	1	,2	,7	16,0
	Moungo	19	4,5	13,2	29,2

	Wouri	75	17,6	52,1	81,2
	Benoue	1	,2	,7	81,9
	Bamboutos	4	,9	2,8	84,7
	Menoua	6	1,4	4,2	88,9
	Mifi	2	,5	1,4	90,3
	Noun	1	,2	,7	91,0
	Ocean	2	,5	1,4	92,4
	Fako	3	,7	2,1	94,4
	Ndian	1	,2	,7	95,1
	Abroad	7	1,6	4,9	100,0
	Total	144	33,9	100,0	
Missing	No answer	28	6,6		
	System	253	59,5		
	Total	281	66,1		
Total		425	100,0		

a. Resident = Usually absent

### 8.3.5 Frequency and reasons for these migrants to visit their rural household?

How many times do they visite this HH<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	29	6,8	19,1	19,1
	2	21	4,9	13,8	32,9
	3	26	6,1	17,1	50,0
	4	20	4,7	13,2	63,2
	5	4	,9	2,6	65,8
	6	4	,9	2,6	68,4
	7	8	1,9	5,3	73,7
	10	9	2,1	5,9	79,6
	12	8	1,9	5,3	84,9
	20	12	2,8	7,9	92,8
	24	2	,5	1,3	94,1
	33	1	,2	,7	94,7



	48	8	1,9	5,3	100,0
	Total	152	35,8	100,0	
Missing	0	22	5,2		
	System	251	59,1		
	Total	273	64,2		
Total		425	100,0		

a. Resident = Usually absent

#### For what reasons do they visit this HH<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Feast	5	1,2	3,1	3,1
	Holliday	20	4,7	12,3	15,4
	Death ceremony	11	2,6	6,8	22,2
	Funeral	4	,9	2,5	24,7
	Supply/agricultural activity/work	4	,9	2,5	27,2
	Familial meeting/familial visit	113	26,6	69,8	96,9
	Other	5	1,2	3,1	100,0
	Total	162	38,1	100,0	
Missing	0	12	2,8		
	System	251	59,1		
	Total	263	61,9		
Total		425	100,0		

a. Resident = Usually absent

**8.4 Who are the temporary migrants (form B)? Where do they go? How often? What means of transport? For what purpose?**

#### 8.4.1 Who are the temporary migrants (form B)?

##### Relation to HH haed

	Frequency	Percent	Valid Percent	Cumulative Percent
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Valid	Head	124	57,9	57,9	57,9
	Spouse	53	24,8	24,8	82,7
	Child	29	13,6	13,6	96,3
	Father/mother	2	,9	,9	97,2
	Brother/sister	6	2,8	2,8	100,0
	Total	214	100,0	100,0	

#### 8.4.2 Where do they go?

##### Destination of work related migration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mfoundi	12	5,6	6,3	6,3
	Moungo	139	65,3	72,8	79,1
	Wouri	25	11,7	13,1	92,1
	Bamboutos	1	,5	,5	92,7
	Haut-nkam	2	,9	1,0	93,7
	Menoua	3	1,4	1,6	95,3
	Mifi	4	1,9	2,1	97,4
	Hauts-plateaux	2	,9	1,0	98,4
	Noun	1	,5	,5	99,0
	Ocean	2	,9	1,0	100,0
	Total	191	89,7	100,0	
Missing	0	22	10,3		
Total		213	100,0		

##### Specify if urban or rural destination

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rural	63	29,6	33,0	33,0
	Urban	128	60,1	67,0	100,0
	Total	191	89,7	100,0	

Missing	0	22	10,3		
Total		213	100,0		

#### 8.4.3 How often?

##### Frequency of these trips

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily commuting	76	35,7	37,6	37,6
	Every week	42	19,7	20,8	58,4
	Every month	19	8,9	9,4	67,8
	A few times a year	21	9,9	10,4	78,2
	Seasonally	8	3,8	4,0	82,2
	Occasionally	36	16,9	17,8	100,0
	Total	202	94,8	100,0	
Missing	0	11	5,2		
Total		213	100,0		

#### 8.4.4 What means of transport?

##### Most used means of transport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bus	55	25,8	27,2	27,2
	Car	46	21,6	22,8	50,0
	motobike	28	13,1	13,9	63,9
	Bicycle	1	,5	,5	64,4
	Autre	16	7,5	7,9	72,3
	Pied	55	25,8	27,2	99,5
	Avion	1	,5	,5	100,0
	Total	202	94,8	100,0	
Missing	0	11	5,2		
Total		213	100,0		

#### 8.4.5 For what purpose?

##### Main purpose of these trips

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Commerce/business	60	28,2	30,5	30,5
	Travail/agriculture/peche/ele vage	118	55,4	59,9	90,4
	Achat intrant agricole	8	3,8	4,1	94,4
	Education	11	5,2	5,6	100,0
	Total	197	92,5	100,0	
Missing	0	16	7,5		
Total		213	100,0		

#### 8.5 How much time do mobile/migrant household members spend in urban and/or other rural areas?

##### time spend in rural area in %

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 10%	8	3,7	4,4	4,4
	10-20	5	2,3	2,8	7,2
	20-30	2	,9	1,1	8,3
	30-40	1	,5	,6	8,8
	40-50	8	3,7	4,4	13,3
	50-60	1	,5	,6	13,8
	60-70	12	5,6	6,6	20,4
	70-80	34	15,9	18,8	39,2
	80-90	75	35,0	41,4	80,7
	90-100	35	16,4	19,3	100,0
	Total	181	84,6	100,0	
Missing	System	33	15,4		
Total		214	100,0		

##### time spend in urban area in %

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 10%	74	34,6	47,7	47,7
	10-20	35	16,4	22,6	70,3
	20-30	15	7,0	9,7	80,0
	30-40	1	,5	,6	80,6
	40-50	7	3,3	4,5	85,2
	50-60	1	,5	,6	85,8
	60-70	1	,5	,6	86,5
	70-80	4	1,9	2,6	89,0
	80-90	9	4,2	5,8	94,8
	90-100	8	3,7	5,2	100,0
	Total	155	72,4	100,0	
Missing	System	59	27,6		
Total		214	100,0		

**8.6 What is the difference (if any) in household member mobility between female-headed households (or single parent households) and male-headed households?**

**8.7 What is the difference (if any) in household member mobility between households with a head of household aged under 35 years and those with a head of household aged 35 years and above?**

**8.8 Compare frequency and purpose of mobility to urban areas with frequency and purpose to other rural areas**

**time spend in rural area in % \* Frequency of these trips Crosstabulation**

	Frequency of these trips				
	Daily commuting	Every week	Every month	A few times a year	Seasonal
time spend in rural Less than Count	0	4	2	0	0

area in %	10%	% of Total	,0%	2,2%	1,1%	,0%	,0%
	10-20	Count	0	1	2	0	0
		% of Total	,0%	,6%	1,1%	,0%	,0%
20-30	Count	0	0	0	1	0	0
	% of Total	,0%	,0%	,0%	,6%	,0%	,0%
30-40	Count	0	0	1	0	0	0
	% of Total	,0%	,0%	,6%	,0%	,0%	,0%
40-50	Count	5	1	0	1	1	1
	% of Total	2,8%	,6%	,0%	,6%	,6%	,6%
50-60	Count	0	0	1	0	0	0
	% of Total	,0%	,0%	,6%	,0%	,0%	,0%
60-70	Count	1	3	3	4	0	0
	% of Total	,6%	1,7%	1,7%	2,2%	,0%	,0%
70-80	Count	9	12	6	2	0	0
	% of Total	5,0%	6,7%	3,3%	1,1%	,0%	,0%
80-90	Count	23	15	4	9	1	1
	% of Total	12,8%	8,3%	2,2%	5,0%	,6%	,6%
90-100	Count	29	5	0	1	0	0
	% of Total	16,1%	2,8%	,0%	,6%	,0%	,0%
Total	Count	67	41	19	18	2	2
	% of Total	37,2%	22,8%	10,6%	10,0%	1,1%	1,1%

**time spend in urban area in % \* Frequency of these trips Crosstabulation**

			Frequency of these trips				
			Daily commuting	Every week	Every month	A few times a year	Sea
time spend in urban area in %	Less than 10%	Count	22	17	3	9	1
		% of Total	14,3%	11,0%	1,9%	5,8%	,6%
	10-20	Count	10	11	6	1	0
		% of Total	6,5%	7,1%	3,9%	,6%	,0%
	20-30	Count	1	4	4	5	0
		% of Total	,6%	2,6%	2,6%	3,2%	,0%

	30-40	Count	0	0	1	0	0
		% of Total	,0%	,0%	,6%	,0%	,0%
	40-50	Count	4	1	0	1	1
		% of Total	2,6%	,6%	,0%	,6%	,6%
	50-60	Count	0	0	1	0	0
		% of Total	,0%	,0%	,6%	,0%	,0%
	60-70	Count	0	0	1	0	0
		% of Total	,0%	,0%	,6%	,0%	,0%
	70-80	Count	0	1	1	1	0
		% of Total	,0%	,6%	,6%	,6%	,0%
	80-90	Count	0	4	2	0	0
		% of Total	,0%	2,6%	1,3%	,0%	,0%
	90-100	Count	3	1	0	2	1
		% of Total	1,9%	,6%	,0%	1,3%	,6%
	Total	Count	40	39	19	19	3
		% of Total	26,0%	25,3%	12,3%	12,3%	1,9%

## 8.9 Compose two maps...

**8.10 In what respect and for what reasons has mobility changed during the past 10 years? (form B). Are more households members than before moving away or commuting to other places? Or less? Why?**

### Change in mobility

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Increased	46	21,5	29,1	29,1
	Same	63	29,4	39,9	69,0
	Decreased	49	22,9	31,0	100,0
	Total	158	73,8	100,0	
Missing	0	13	6,1		
	System	43	20,1		
	Total	56	26,2		
Total		214	100,0		

**Explanation of mobility change**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Climatic instability	3	1,4	2,4	2,4
	Use of mobile phones	5	2,3	3,9	6,3
	Limited financial means	23	10,7	18,1	24,4
	Regular work/increased work/insufficient time/need the money	19	8,9	15,0	39,4
	Old age/ill health/fatigue	27	12,6	21,3	60,6
	Increase in charges/increase in responsibilities/marriage	22	10,3	17,3	78,0
	Reduction of activities/Competition	12	5,6	9,4	87,4
	Search for arable land	8	3,7	6,3	93,7
	School	2	,9	1,6	95,3
	Limited opportunities	6	2,8	4,7	100,0
	Total	127	59,3	100,0	
Missing	0	44	20,6		
	System	43	20,1		
	Total	87	40,7		
Total		214	100,0		

**9. TYPOLOGY OF MOBILITY**



Time dimension	Spatial pattern					
	Rural-rural	%	Rural-urban	%	Urban-rural	Urban-urban
Commuting	Commerce/ business Work/agriculture To by inputs Education		Commerce/ business Work/agriculture To by inputs		Work	
Periodic / short term	Commerce/ business Work/agriculture To by inputs Education		Commerce/ business Work/agriculture To by inputs Education		Agriculture	
Long term	Education Work Marriages Family meetings		Education Work Marriages		Agriculture Domestic Services Education Bank/Trade/computer	

## 10. PLOTS

### 10.1 What is the average size of landholdings per household (indicate max and min size)?

#### Statistics<sup>a</sup>

Estimated area/ha

N					
Valid	Missing	Mean	Minimum	Maximum	Sum
160	374	1,6493	,00	12,00	263,89

a. Respondent group = Maize producer

**Statistics<sup>a</sup>**

Estimated area/ha

N					
Valid	Missing	Mean	Minimum	Maximum	Sum
157	445	2,0089	,00	20,00	315,40

a. Respondent group = Non producer

**10.2. Make a frequency diagram or a table of total estimated land (acres) per household divided in 0<1, 1<2, 2<3,.....9<10, 10<15, 15<20, 20<25, 25<30,.....**

**Estimated area new<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1ha	55	10,3	34,4	34,4
	1-2	74	13,9	46,2	80,6
	2-3	12	2,2	7,5	88,1
	3-4	8	1,5	5,0	93,1
	4-5	5	,9	3,1	96,2
	5-6	1	,2	,6	96,9
	6-7	1	,2	,6	97,5
	9-10	3	,6	1,9	99,4
	10-15	1	,2	,6	100,0
	Total	160	30,0	100,0	
Missing	System	374	70,0		
Total		534	100,0		

a. Respondent group = Maize producer

**Estimated area new<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1ha	51	8,5	32,5	32,5
	1-2	73	12,1	46,5	79,0
	2-3	15	2,5	9,6	88,5

	3-4	4	,7	2,5	91,1
	4-5	4	,7	2,5	93,6
	5-6	1	,2	,6	94,3
	6-7	1	,2	,6	94,9
	7-8	1	,2	,6	95,5
	9-10	2	,3	1,3	96,8
	10-15	4	,7	2,5	99,4
	15-20	1	,2	,6	100,0
	Total	157	26,1	100,0	
Missing	System	445	73,9		
Total		602	100,0		

a. Respondent group = Non producer

### 10.3 What is the average number of plots (indicate max and min number)?

#### Statistics<sup>a</sup>

Number of plots per household

N					
Valid	Missing	Mean	Minimum	Maximum	Sum
97	437	3,5361	1,00	9,00	343,00

a. Respondent group = Maize producer

#### Statistics<sup>a</sup>

Number of plots per household

N					
Valid	Missing	Mean	Minimum	Maximum	Sum
98	504	3,3469	1,00	6,00	328,00

a. Respondent group = Non producer

### 10.4 What is the average size and share of cultivated land in total land use?

### 10.5 Describe in your own words the data on the perceived distance to plots

### 10.6 What is the dominant form of land tenure (calculate the shares on aggregate level and list notable 'outliers' at household level)?

Land use<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cultivated	175	32,8	95,1	95,1
	Fallow	8	1,5	4,3	99,5
	Other(specify)	1	,2	,5	100,0
	Total	184	34,5	100,0	
Missing	99	350	65,5		
Total		534	100,0		

a. Respondent group = Maize producer

Land use<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cultivated	181	30,1	98,4	98,4
	Fallow	3	,5	1,6	100,0
	Total	184	30,6	100,0	
Missing	0	1	,2		
	99	417	69,3		
	Total	418	69,4		
Total		602	100,0		

a. Respondent group = Non producer

### 10.7 Which inputs are used on plots with the specific (emerging/booming) crop and other major crops (select what is most relevant). Check for all inputs.

**Respondent group = Maize producer**

### Statistics<sup>a</sup>

		Inputs Bought seeds	Inputs Inorganic fertilizer	Inputs Organic fertilizer	Inputs Pest/herbicides	Inputs Irrigation	Inputs Other
N	Valid	96	137	143	103	8	0
	Missing	438	397	391	431	526	534

a. Respondent group = Maize producer

### Inputs Bought seeds<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	96	18,0	100,0	100,0
Missing	System	438	82,0		
Total		534	100,0		

a. Respondent group = Maize producer

### Inputs Inorganic fertilizer<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	1	,2	,7	,7
	Inorganic fertilizer	133	24,9	97,1	97,8
	Pesticide/herbicide	3	,6	2,2	100,0
	Total	137	25,7	100,0	
Missing	System	397	74,3		

### Inputs Inorganic fertilizer<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	1	,2	,7	,7
	Inorganic fertilizer	133	24,9	97,1	97,8
	Pesticide/herbicide	3	,6	2,2	100,0
	Total	137	25,7	100,0	
Missing	System	397	74,3		
Total		534	100,0		

a. Respondent group = Maize producer

### Inputs Organic fertilizer<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Inorganic fertilizer	1	,2	,7	,7
	Organic fertilizer	142	26,6	99,3	100,0
	Total	143	26,8	100,0	
Missing	System	391	73,2		
Total		534	100,0		

a. Respondent group = Maize producer

### Inputs Pest/herbicides<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Organic fertilizer	1	,2	1,0	1,0
	Pesticide/herbicide	102	19,1	99,0	100,0
	Total	103	19,3	100,0	
Missing	System	431	80,7		
Total		534	100,0		

a. Respondent group = Maize producer

### Inputs Irrigation<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	1	,2	12,5	12,5
	Pesticide/herbicide	1	,2	12,5	25,0
	Irrigation	6	1,1	75,0	100,0
	Total	8	1,5	100,0	
Missing	System	526	98,5		
Total		534	100,0		

a. Respondent group = Maize producer

### Inputs Other(specify)<sup>a</sup>

	Frequency	Percent
Missing System	534	100,0

a. Respondent group = Maize producer

### Respondent group = Non producer

#### Statistics<sup>a</sup>

		Inputs Bought seeds	Inputs Inorganic fertilizer	Inputs Organic fertilizer	Inputs Pest/herbicides	Inputs Irrigation	Inputs Other
N	Valid	84	124	113	101	14	1
	Missing	518	478	489	501	588	601

a. Respondent group = Non producer

### Inputs Bought seeds<sup>a</sup>

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Bought seeds	83	13,8	98,8	98,8
Inorganic fertilizer	1	,2	1,2	100,0
Total	84	14,0	100,0	
Missing 0	7	1,2		
System	511	84,9		



Total	518	86,0		
Total	602	100,0		

a. Respondent group = Non producer

#### Inputs Inorganic fertilizer<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Inorganic fertilizer	124	20,6	100,0	100,0
Missing	0	6	1,0		
	System	472	78,4		
	Total	478	79,4		
Total		602	100,0		

a. Respondent group = Non producer

#### Inputs Organic fertilizer<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Inorganic fertilizer	1	,2	,9	,9
	Organic fertilizer	112	18,6	99,1	100,0
	Total	113	18,8	100,0	
Missing	0	7	1,2		

System	482	80,1		
Total	489	81,2		
Total	602	100,0		

a. Respondent group = Non producer

#### Inputs Pest/herbicides<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pesticide/herbicide	101	16,8	100,0	100,0
Missing	0	7	1,2		
	System	494	82,1		
	Total	501	83,2		
Total		602	100,0		

a. Respondent group = Non producer

#### Inputs Irrigation<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Irrigation	14	2,3	100,0	100,0
Missing	0	7	1,2		
	System	581	96,5		

Total	588	97,7		
Total	602	100,0		

a. Respondent group = Non producer

#### Inputs Other(specify)<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other(specify)	1	,2	100,0	100,0
Missing	0	7	1,2		
	System	594	98,7		
	Total	601	99,8		
Total		602	100,0		

a. Respondent group = Non producer

#### 10.7 What is the share of households that use these inputs?

##### share of households that use inputs<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	4	4,0	4,0	4,0
	Use inputs	96	96,0	96,0	100,0
	Total	100	100,0	100,0	

a. Repondant group = Maize producers

##### share of households that use inputs<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	14	14,0	14,0	14,0
	Use inputs	86	86,0	86,0	100,0
	Total	100	100,0	100,0	

a. Repondant group = Non-producers

## 10.8 What is the proportion of plots with only family labour? Is there any connection between use of cultivated plot and use of only family labour?

### 10.8.1 What is the proportion of plots with only family labour?

#### Labour<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	hired labour	10	1,9	5,7	5,7
	Family	77	14,4	43,8	49,4
	combination of both	89	16,7	50,6	100,0
	Total	176	33,0	100,0	
Missing	0	2	,4		
	99	355	66,5		
	System	1	,2		
	Total	358	67,0		
Total		534	100,0		

a. Respondent group = Maize producer

#### Labour<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	hired labour	3	,5	1,7	1,7
	Family	74	12,3	42,5	44,3
	combination of both	97	16,1	55,7	100,0
	Total	174	28,9	100,0	
Missing	99	428	71,1		
Total		602	100,0		

a. Respondent group = Non producer

### 10.8.2 Is there any connection between use of cultivated plot and use of only family labour?

#### Chi-Square Tests<sup>b</sup>

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1,190 <sup>a</sup>	3	,756
Likelihood Ratio	1,569	3	,666
Linear-by-Linear Association	,000	1	,986
N of Valid Cases	52		

a. 5 cells (62,5%) have expected count less than 5. The minimum expected count is ,02.

b. Respondent group = Maize producer

#### Symmetric Measures<sup>d</sup>

		Value	Asymp. Error <sup>a</sup>	Std. Approx. T <sup>b</sup>	Approx. Sig.
Nominal by Nominal	Phi	,151			,756
	Cramer's V	,151			,756
Interval by Interval	Pearson's R	,003	,021	,018	,986 <sup>c</sup>
Ordinal by Ordinal	Spearman Correlation	,132	,067	,943	,350 <sup>c</sup>
N of Valid Cases		52			

a. Not assuming the null hypothesis.

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

c. Based on normal approximation.

d. Respondent group = Maize producer

#### Chi-Square Tests<sup>b</sup>

	Value
Pearson Chi-Square	, <sup>a</sup>
N of Valid Cases	47

a. No statistics are computed because Land use is a constant.

b. Respondent group = Non producer

### Symmetric Measures<sup>b</sup>

	Value
Nominal by Nominal Phi	<sup>a</sup>
N of Valid Cases	47

a. No statistics are computed because Land use is a constant.

b. Respondent group = Non producer

## 11. LIVESTOCK

### 11.1 What is the average number of different types of livestock per household (indicate max and min number)?

#### Statistics<sup>a</sup>

	N		Mean	Minimum	Maximum
	Valid	Missing			
Number of cattle	0	100			
Number of pigs	24	76	4,8333	1,00	18,00
Number of sheep	4	96	5,0000	1,00	9,00
Number of goats	25	75	2,4800	1,00	9,00
Number of chicken	49	51	11,1020	1,00	100,00
Number of other	0	100			
Number of rabbits	0	100			
Number of guinea pig	0	100			
Number of domestic pets	0	100			

a. Repondant group = Maize producers

#### Number of cattle<sup>a</sup>

	Frequency	Percent
Missing No answer	2	2,0
System	98	98,0

Total	100	100,0
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a. Repondant group = Maize producers

**Number of pigs<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	4,0	16,7	16,7
	2	6	6,0	25,0	41,7
	3	4	4,0	16,7	58,3
	5	2	2,0	8,3	66,7
	7	3	3,0	12,5	79,2
	8	1	1,0	4,2	83,3
	9	1	1,0	4,2	87,5
	10	1	1,0	4,2	91,7
	12	1	1,0	4,2	95,8
	18	1	1,0	4,2	100,0
	Total	24	24,0	100,0	
Missing	System	76	76,0		
Total		100	100,0		

a. Repondant group = Maize producers

### Number of sheep<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1,0	25,0	25,0
	2	1	1,0	25,0	50,0
	8	1	1,0	25,0	75,0
	9	1	1,0	25,0	100,0
	Total	4	4,0	100,0	
Missing	System	96	96,0		
Total		100	100,0		

a. Repondant group = Maize producers

### Number of goats<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	9,0	36,0	36,0
	2	7	7,0	28,0	64,0
	3	5	5,0	20,0	84,0
	4	1	1,0	4,0	88,0
	5	1	1,0	4,0	92,0
	6	1	1,0	4,0	96,0
	9	1	1,0	4,0	100,0



Missing	Total	25	25,0	100,0	
	No answer	1	1,0		
	System	74	74,0		
	Total	75	75,0		
Total		100	100,0		

a. Repondant group = Maize producers

**Number of chicken<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	6,0	12,2	12,2
	2	2	2,0	4,1	16,3
	3	6	6,0	12,2	28,6
	4	6	6,0	12,2	40,8
	5	4	4,0	8,2	49,0
	7	3	3,0	6,1	55,1
	9	1	1,0	2,0	57,1
	10	7	7,0	14,3	71,4
	11	1	1,0	2,0	73,5
	12	2	2,0	4,1	77,6
	13	1	1,0	2,0	79,6

	14	1	1,0	2,0	81,6
	15	4	4,0	8,2	89,8
	30	2	2,0	4,1	93,9
	40	1	1,0	2,0	95,9
	50	1	1,0	2,0	98,0
	100	1	1,0	2,0	100,0
	Total	49	49,0	100,0	
Missing	System	51	51,0		
Total		100	100,0		

a. Repondant group = Maize producers

#### Number of other<sup>a</sup>

		Frequency	Percent
Missing	No answer	1	1,0
	System	99	99,0
	Total	100	100,0

a. Repondant group = Maize producers

#### Number of rabbits<sup>a</sup>

	Frequency	Percent
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Missing	System	100	100,0
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a. Repondant group = Maize producers

#### Number of guinea pig<sup>a</sup>

		Frequency	Percent
Missing	System	100	100,0

a. Repondant group = Maize producers

#### Number of domestic pets<sup>a</sup>

		Frequency	Percent
Missing	System	100	100,0

a. Repondant group = Maize producers

### Repondant group = Non-producers

#### Statistics<sup>a</sup>

	N		Mean	Minimum	Maximum
	Valid	Missing			
Number of cattle	1	99	50,0000	50,00	50,00
Number of pigs	27	73	4,1852	1,00	27,00
Number of sheep	6	94	4,5000	1,00	12,00
Number of goats	22	78	4,0000	1,00	15,00
Number of chicken	33	67	142,8182	1,00	4000,00
Number of other	2	98	15,0000	10,00	20,00

Number of rabbits	0	100			
Number of guinea pig	0	100			
Number of domestic pets	0	100			

a. Repondant group = Non-producers

#### Number of cattle<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	50	1	1,0	100,0	100,0
Missing	No answer	1	1,0		
	System	98	98,0		
	Total	99	99,0		
Total		100	100,0		

a. Repondant group = Non-producers

#### Number of pigs<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	5,0	18,5	18,5
	2	7	7,0	25,9	44,4
	3	1	1,0	3,7	48,1
	4	6	6,0	22,2	70,4
	5	3	3,0	11,1	81,5

	6	3	3,0	11,1	92,6
	7	1	1,0	3,7	96,3
	27	1	1,0	3,7	100,0
	Total	27	27,0	100,0	
Missing	No answer	1	1,0		
	System	72	72,0		
	Total	73	73,0		
Total		100	100,0		

a. Repondant group = Non-producers

#### Number of sheep<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1,0	16,7	16,7
	2	1	1,0	16,7	33,3
	3	1	1,0	16,7	50,0
	4	1	1,0	16,7	66,7
	5	1	1,0	16,7	83,3
	12	1	1,0	16,7	100,0
	Total	6	6,0	100,0	
Missing	No answer	1	1,0		

System	93	93,0		
Total	94	94,0		
Total	100	100,0		

a. Repondant group = Non-producers

#### Number of goats<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	7,0	31,8	31,8
	2	3	3,0	13,6	45,5
	3	1	1,0	4,5	50,0
	4	4	4,0	18,2	68,2
	5	1	1,0	4,5	72,7
	6	3	3,0	13,6	86,4
	8	1	1,0	4,5	90,9
	10	1	1,0	4,5	95,5
	15	1	1,0	4,5	100,0
	Total	22	22,0	100,0	
Missing	No answer	1	1,0		
	System	77	77,0		
	Total	78	78,0		

**Number of goats<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	7,0	31,8	31,8
	2	3	3,0	13,6	45,5
	3	1	1,0	4,5	50,0
	4	4	4,0	18,2	68,2
	5	1	1,0	4,5	72,7
	6	3	3,0	13,6	86,4
	8	1	1,0	4,5	90,9
	10	1	1,0	4,5	95,5
	15	1	1,0	4,5	100,0
	Total	22	22,0	100,0	
Missing	No answer	1	1,0		
	System	77	77,0		
	Total	78	78,0		
Total		100	100,0		

a. Repondant group = Non-producers

**Number of chicken<sup>a</sup>**

	Frequency	Percent	Valid Percent	Cumulative Percent
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Valid	1	3	3,0	9,1	9,1
	2	2	2,0	6,1	15,2
	3	3	3,0	9,1	24,2
	4	1	1,0	3,0	27,3
	5	2	2,0	6,1	33,3
	8	1	1,0	3,0	36,4
	9	1	1,0	3,0	39,4
	10	9	9,0	27,3	66,7
	13	1	1,0	3,0	69,7
	15	1	1,0	3,0	72,7
	23	1	1,0	3,0	75,8
	25	1	1,0	3,0	78,8
	30	3	3,0	9,1	87,9
	50	1	1,0	3,0	90,9
	60	1	1,0	3,0	93,9
	300	1	1,0	3,0	97,0
	4000	1	1,0	3,0	100,0
	Total	33	33,0	100,0	
Missing	No answer	2	2,0		
	System	65	65,0		
	Total	67	67,0		
Total		100	100,0		



a. Repondant group = Non-producers

**Number of other<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10	1	1,0	50,0	50,0
	20	1	1,0	50,0	100,0
	Total	2	2,0	100,0	
Missing	System	98	98,0		
Total		100	100,0		

a. Repondant group = Non-producers

**Number of rabbits<sup>a</sup>**

		Frequency	Percent
Missing	System	100	100,0

a. Repondant group = Non-producers

**Number of guinea pig<sup>a</sup>**

		Frequency	Percent
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Missing	System	100	100,0
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a. Repondant group = Non-producers

#### Number of domestic pets<sup>a</sup>

		Frequency	Percent
Missing	System	100	100,0

a. Repondant group = Non-producers

**11.2 How is the use of animal products distributed per type of livestock (give narrative interpretation of the importance of subsistence relative to market production)?**

**Repondant group = Maize producers**

#### Statistics<sup>a</sup>

		Use of cattle products	Use of pig products	Use of sheep products	Use of goat products	Use of chicken products	Use of other products	Use of rabbit products
N	Valid	2	24	4	26	45	1	0
	Missing	98	76	96	74	55	99	100

a. Repondant group = Maize producers

### Frequency Table

#### Use of cattle products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sale	1	1,0	50,0	50,0
	Both	1	1,0	50,0	100,0
	Total	2	2,0	100,0	
Missing	System	98	98,0		
Total		100	100,0		

a. Repondant group = Maize producers

#### Use of pig products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sale	11	11,0	45,8	45,8
	Both	13	13,0	54,2	100,0
	Total	24	24,0	100,0	
Missing	System	76	76,0		
Total		100	100,0		

a. Repondant group = Maize producers

#### Use of sheep products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
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Valid	Sale	2	2,0	50,0	50,0
	Both	2	2,0	50,0	100,0
	Total	4	4,0	100,0	
Missing	System	96	96,0		
Total		100	100,0		

a. Repondant group = Maize producers

#### Use of goat products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Subsistence	5	5,0	19,2	19,2
	Sale	10	10,0	38,5	57,7
	Both	11	11,0	42,3	100,0
	Total	26	26,0	100,0	
Missing	System	74	74,0		
Total		100	100,0		

a. Repondant group = Maize producers

#### Use of chicken products<sup>a</sup>

	Frequency	Percent	Valid Percent	Cumulative Percent
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Valid	Subsistence	11	11,0	24,4	24,4
	Sale	6	6,0	13,3	37,8
	Both	28	28,0	62,2	100,0
	Total	45	45,0	100,0	
Missing	System	55	55,0		
Total		100	100,0		

a. Repondant group = Maize producers

#### Use of other products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Subsistence	1	1,0	100,0	100,0
Missing	System	99	99,0		
Total		100	100,0		

a. Repondant group = Maize producers

#### Use of rabbit products<sup>a</sup>

		Frequency	Percent
Missing	System	100	100,0

a. Repondant group = Maize producers

### use of guinea pig products<sup>a</sup>

	Frequency	Percent
Missing System	100	100,0

a. Repondant group = Maize producers

### Use of domestic pet products<sup>a</sup>

	Frequency	Percent
Missing System	100	100,0

a. Repondant group = Maize producers

## Repondant group = Non-producers

### Statistics<sup>a</sup>

	Use of cattle products	Use of pig products	Use of sheep products	Use of goat products	Use of chicken products	Use of other products	Use of rabbit products	Use of other pi
N Valid	1	27	6	22	31	2	0	0
Missing	99	73	94	78	69	98	100	100

a. Repondant group = Non-producers

## Frequency Table

### Use of cattle products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sale	1	1,0	100,0	100,0
Missing	No answer	1	1,0		
	System	98	98,0		
	Total	99	99,0		
Total		100	100,0		

a. Repondant group = Non-producers

### Use of pig products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Subsistence	2	2,0	7,4	7,4
	Sale	15	15,0	55,6	63,0
	Both	10	10,0	37,0	100,0
	Total	27	27,0	100,0	
Missing	No answer	1	1,0		
	System	72	72,0		

Total	73	73,0		
Total	100	100,0		

a. Repondant group = Non-producers

#### Use of sheep products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Subsistence	1	1,0	16,7	16,7
	Sale	2	2,0	33,3	50,0
	Both	3	3,0	50,0	100,0
	Total	6	6,0	100,0	
Missing	No answer	1	1,0		
	System	93	93,0		
	Total	94	94,0		
Total		100	100,0		

a. Repondant group = Non-producers

#### Use of goat products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Subsistence	2	2,0	9,1	9,1



Missing	Sale	11	11,0	50,0	59,1
	Both	9	9,0	40,9	100,0
	Total	22	22,0	100,0	
	No answer	1	1,0		
	System	77	77,0		
	Total	78	78,0		
Total		100	100,0		

a. Repondant group = Non-producers

#### Use of chicken products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Subsistence	8	8,0	25,8	25,8
	Sale	3	3,0	9,7	35,5
	Both	20	20,0	64,5	100,0
	Total	31	31,0	100,0	
Missing	No answer	1	1,0		
	System	68	68,0		
	Total	69	69,0		
Total		100	100,0		

a. Repondant group = Non-producers

**Use of other products<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Both	2	2,0	100,0	100,0
Missing	System	98	98,0		
Total		100	100,0		

a. Repondant group = Non-producers

**Use of rabbit products<sup>a</sup>**

		Frequency	Percent
Missing	System	100	100,0

a. Repondant group = Non-producers

**use of guinea pig products<sup>a</sup>**

		Frequency	Percent
Missing	System	100	100,0

a. Repondant group = Non-producers

**Use of domestic pet products<sup>a</sup>**

		Frequency	Percent
Missing	System	100	100,0

a. Repondant group = Non-producers

## 12. Changes in size and tenure of land (Form C-2)

**12.1What is the proportion of households that have experienced overall increase in the size of their landholdings?**

**12.2What is the proportion of households that have experienced overall decrease in the size of their landholdings?**

### **Land allocated<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	16	16.0	16.0	16.0
	Same	66	66.0	66.0	82.0
	More	17	17.0	17.0	99.0
	99	1	1.0	1.0	100.0
	Total	100	100.0	100.0	

a. Respondent group = Maize producer

### **Land allocated<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	1.0	1.0	1.0
	Less	25	25.0	25.0	26.0
	Same	50	50.0	50.0	76.0
	More	23	23.0	23.0	99.0
	99	1	1.0	1.0	100.0
	Total	100	100.0	100.0	

a. Respondent group = Non producer, Relation to HH haed = Head

12.3 What is the average size of the increase (list notable 'outliers')?

12.4 What is the average size of the decrease (list notable 'outliers')?

**12.4.1 Describe in your own words the distribution of the increase and decrease per type of tenure.**

Land allocated <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	12	15.4	15.4	15.4
	Same	51	65.4	65.4	80.8
	More	14	17.9	17.9	98.7
	99	1	1.3	1.3	100.0
	Total	78	100.0	100.0	
a. Respondent group = Maize producer, Ownership/tenure = Owned by HH					

Land allocated <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	20	26.0	26.0	26.0
	Same	37	48.1	48.1	74.0
	More	19	24.7	24.7	98.7
	99	1	1.3	1.3	100.0
	Total	77	100.0	100.0	

a. Respondent group = Non producer, Ownership/tenure = Owned by HH

Land allocated <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Less	1	14.3	14.3	14.3
	Same	4	57.1	57.1	71.4
	More	2	28.6	28.6	100.0
	Total	7	100.0	100.0	

a. Respondent group = Maize producer, Ownership/tenure = Rented

Land allocated <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	25.0	25.0	25.0
	Less	1	25.0	25.0	50.0
	Same	2	50.0	50.0	100.0
	Total	4	100.0	100.0	

a. Respondent group = Non producer, Ownership/tenure = Rented

Land allocated <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	1	11.1	11.1	11.1
	Same	7	77.8	77.8	88.9
	More	1	11.1	11.1	100.0
	Total	9	100.0	100.0	

a. Respondent group = Maize producer, Ownership/tenure = Borrowed

Land allocated <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	2	40.0	40.0	40.0
	Same	2	40.0	40.0	80.0
	More	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

a. Respondent group = Non producer, Ownership/tenure = Borrowed

Land allocated <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	1	50.0	50.0	50.0
	Same	1	50.0	50.0	100.0
	Total	2	100.0	100.0	
a. Respondent group = Maize producer, Ownership/tenure = State land					

Land allocated <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	1	50.0	50.0	50.0
	Same	1	50.0	50.0	100.0
	Total	2	100.0	100.0	

a. Respondent group = Non producer, Relation to HH haed = Head, Ownership/tenure = Community land

**12.4.2 Are there any general reasons for either increase or decrease of landholdings under different types of tenure – please gather responses in categories (e.g. old age, illness in family, expansion of production, etc.)? Or is it highly individualized? Give examples.**

**Reasons for change in land owned by HH**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	6	6.0	6.0	6.0
	Lack of time	3	3.0	3.0	9.0
	Money limited/lack of money/no opportunity/no support	18	18.0	18.0	27.0
	Regular work	3	3.0	3.0	30.0

Highess production/highess income	11	11.0	11.0	41.0
Old age/sickness	3	3.0	3.0	44.0
Low spaces/limited space	15	15.0	15.0	59.0
Family property/heritage/fragmentation of the farm	4	4.0	4.0	63.0
Fallow	2	2.0	2.0	65.0
Responsability	3	3.0	3.0	68.0
Lack of hired labour/migration of children	3	3.0	3.0	71.0
not need to encrease the farm	5	5.0	5.0	76.0
Other	10	10.0	10.0	86.0
99	14	14.0	14.0	100.0
Total	100	100.0	100.0	

a. Respondent group = Maize producer, = Head, Land tenure = Owned by HH

Why?<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	10	11.6	11.8	11.8
	Money limited/lack of money/no opportunity/no support	21	24.4	24.7	36.5
	Highess production/highess income	10	11.6	11.8	48.2
	Old age/sickness	4	4.7	4.7	52.9
	Low spaces/limited space	12	14.0	14.1	67.1
	Family property/heritage/fragmentation of the farm	3	3.5	3.5	70.6
	Responsability	1	1.2	1.2	71.8
	Lack of hired labour/migration of children	2	2.3	2.4	74.1

	not need to encrease the farm	3	3.5	3.5	77.6
	Other	6	7.0	7.1	84.7
	99	13	15.1	15.3	100.0
	Total	85	98.8	100.0	
Missing	System	1	1.2		
Total		86	100.0		

a. Respondent group = Non producer, = Owned by HH

#### Reasons for change in rented land

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	1.4	1.4	1.4
	Money limited/lack of money/no opportunity/no support	3	4.3	4.3	5.7
	Low spaces/limited space	1	1.4	1.4	7.1
	Other	1	1.4	1.4	8.6
	99	64	91.4	91.4	100.0
	Total	70	100.0	100.0	

a. Respondent group = Maize producer, = Spouse, Land tenure = Rented

## 13. CROP OUTPUT

### 13.1 What is the average size of planted area (household level) of the main crops (list also min and max size)

Statistics				
Area planted(h)				
N	Mean	Minimum	Maximum	Sum



Valid	Missing				
280	856	1,8597	,00	21,00	520,72

**13.2 How much varies the productivity between households and what is the average productivity for each of the major crops (combine data for area planted and production per year)?**

Statistics <sup>a</sup>					
Totale production per year					
N					
Valid	Missing	Mean	Minimum	Maximum	Sum
238	296	1,8557	,00	100,00	441,67
a. Respondent group = Maize producer					

Statistics <sup>a</sup>					
Totale production per year					
N					
Valid	Missing	Mean	Minimum	Maximum	Sum
152	450	2,0679	,00	20,00	314,32
a. Respondent group = Non producer					

**13.3 Give a narrative account of the differences (per crop) in the importance of subsistence production and production for the market. Does the data allow for a sensible quantitative statement of the importance?**

Farm gate(a)	Maize	Banana/plantain	Cocoyam	Manioc	Cafe
Other farmer/villager	14,7	9,5	16,7	20	3,8
Local trader	15,5	9,5	16,7	20	19,2
Market(a)	Maize	Banana/plantain	Cocoyam	Manioc	Cafe
Other farmer/villager	7,8	9,5	0	20	7,7
Local trader	57,8	61,9	50	0	34,6
Company gate(a)	Maize	Banana/plantain	Cocoyam	Manioc	Cafe
Other farmer/villager	0,9	0	0	0	3,8
Local trader	0,9	4,5	0	0	7,7
Farmer organisation(a)	Maize	Banana/plantain	Cocoyam	Manioc	Cafe
Cooperative	0,9	0	0	0	5,9

Local trader	0,9	4,8	0	0	2,0
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**13.4 What is the average price (listed per crop) and what are the averages of the lowest and highest prices? Does the span between highest and lowest price differ among respondents?**

	Valid	Minimum	Mean	Maximum	Sum
Crops lowest price(Maize)	125	2500	197223,9	1090909	24652984
Crops lowest price(Bean)	64	4000	437884,2	2909090	28024588
Crops lowest price(Banane/plantain)	66	700	60079,45	2181818	3965244
Crops lowest price(Cocoyam)	17	4500	280515,6	2181818	4768765
Crops lowest price(Manioc)	23	5000	157001	254545	3611023
Crops lowest price(Potatos)	14	27000	139591,8	363636	1954285
Crops lowest price(Chili pepper)	5	150000	258573	400000	1292865
Crops lowest price(Cafe)	37	6000	459209,9	2000000	16990766

	Valid	Minimum	Mean	Maximum	Sum
Crops highest price(Maize)	127	3500	316017	1818181	40134157
Crops highest price(Bean)	64	7000	637822,5	1090909	40820638
Crops highest price(Banane/plantain)	66	3000	187500	3636363	12374998
Crops highest price(Cocoyam)	17	5000	436718,3	2545454	7424211
Crops highest price(Manioc)	24	6000	244700,1	509090	5872803
Crops highest price(Potatos)	14	54000	203858	290910	2854012
Crops highest price(Chili pepper)	5	457145	614287	900000	3071435
Crops highest price(Cafe)	38	20000	682896	2909090	25950047

**13.5 Is the use of hired labour prevalent in the production of the different major crops**

Use of hired local labour for Maize production	
	Percent
Land preparation	61,6
Sowing/weeding	43,4
Harvesting	34,3
Post harvesting	11,1

Use of hired local labour for plantain/banana production		
		Percent
Land preparation		52,4
Sowing/weeding		33,3
Harvesting		42,9
Post harvesting		14,3

Use of hired local labour for cafe production	
	Percent
Land preparation	65,4
Sowing/weeding	23,1
Harvesting	26,9
Post harvesting	15,4

The use of hired labour for the production of the following products (Bean, Cocoyam, Manioc, Potatoes, Chili pepper) is actually insignificant.

**If so, is there a particular type (migrant/local) who dominates? And is labour only hired for specific tasks?**

Statistics <sup>a</sup>						
		Use of hired local labour Land preparation	Use of hired local labour Sowing/weeding	Use of hired local labour Harvesting	Use of hired local labour Post harvesting	Use of hired local labour Other(specify)
N	Valid	62	43	34	11	0
	Missing	38	57	66	89	100
a. Respondent group = Maize producer						

Statistics <sup>a</sup>						
		Use of hired local labour Land preparation	Use of hired local labour Sowing/weeding	Use of hired local labour Harvesting	Use of hired local labour Post harvesting	Use of hired local labour Other(specify)
N	Valid	64	42	41	17	2
	Missing	36	58	59	83	98
a. Respondent group = Non producer						

Statistics <sup>a</sup>						
		Use of hired migrant labour Land preparation	Use of hired migrant labour Sowing/weeding	Use of hired migrant labour Harvesting	Use of hired migrant labour Post harvesting	Use of hired migrant labour Other(specify)
N	Valid	6	7	4	0	0
	Missing	94	93	96	100	100
a. Respondent group = Maize producer,						

Statistics <sup>a</sup>						
		Use of hired migrant labour Land preparation	Use of hired migrant labour Sowing/weeding	Use of hired migrant labour Harvesting	Use of hired migrant labour Post harvesting	Use of hired migrant labour Other(specify)
N	Valid	6	3	5	2	0
	Missing	94	97	95	98	100
a. Respondent group = Non producers						

**13.6 For the specific (booming) crop: is there an identifiable pattern in the 'location' of the crop purchase?**

Statistics <sup>a</sup>					
		Farm gate	Market	Company gate	Farmer organisation
N	Valid	88	201	1	3

Statistics <sup>a</sup>					
		Farm gate	Market	Company gate	Farmer organisation
N	Valid	88	201	1	3
a. Respondent group = Maize producer					

### 13.7 For the specific (booming) crop: is there an identifiable pattern in the buyer type?

Statistics <sup>a</sup>					
		Farm gate	Market	Company gate	Farmer organisation
N	Valid	85	201	1	3
	Missing	449	333	533	531

Farm gate <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other farmer/villager	42	7,9	49,4	49,4
	Farmer organisation	1	,2	1,2	50,6
	Local trader	42	7,9	49,4	100,0
	Total	85	15,9	100,0	
a. Respondent group = Maize producer					

Market <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other farmer/villager	8	1,5	4,0	4,0
	Farmer organisation	1	,2	,5	4,5
	Local trader	192	36,0	95,5	100,0
	Total	201	37,6	100,0	
a. Respondent group = Maize producer					

Company gate<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Local trader	1	,2	100,0	100,0
Missing	0	4	,7		
	99	529	99,1		
	Total	533	99,8		
Total		534	100,0		
a. Respondent group = Maize producer					

Farmer organisation <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cooperative	2	,4	66,7	66,7
	Local trader	1	,2	33,3	100,0
	Total	3	,6	100,0	
a. Respondent group = Maize producer					

Statistics <sup>a</sup>					
		Farm gate	Market	Company gate	Farmer organisation
N	Valid	70	186	12	11
	Missing	532	416	590	591
a. Respondent group = Non producer					

Farm gate <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other farmer/villager	43	7,1	62,3	62,3
	Local trader	26	4,3	37,7	100,0
	Total	69	11,5	100,0	
a. Respondent group = Non producer					

Market <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other farmer/villager	22	3,7	11,8	11,8
	Cooperative	1	,2	,5	12,4

	Local trader	163	27,1	87,6	100,0
	Total	186	30,9	100,0	
a. Respondent group = Non producer					

Company gate <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other farmer/villager	5	,8	45,5	45,5
	Farmer organisation	3	,5	27,3	72,7
	Cooperative	2	,3	18,2	90,9
	Local trader	1	,2	9,1	100,0
	Total	11	1,8	100,0	
a. Respondent group = Non producer					

Farmer organisation <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other farmer/villager	1	,2	9,1	9,1
	Cooperative	2	,3	18,2	27,3
	Local trader	8	1,3	72,7	100,0
	Total	11	1,8	100,0	
a. Respondent group = Non producer					

## 14. CHANGES IN CROPS (FORM C-4)

**14.1Et 14.2 What is the proportion of households that have experienced overall increase in the land allocated for each of the main crops and What is the proportion of households that have experienced overall decrease in the land allocated for each of the main crops?**

Land allocated <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Same	55	10,3	16,2	16,2

	Less	230	43,1	67,6	83,8
	More	55	10,3	16,2	100,0
	Total	340	63,7	100,0	
Missing	99	194	36,3		
Total		534	100,0		
a. Respondent group = Maize producer					

Land allocated <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	3	,5	,9	,9
	Same	78	13,0	23,2	24,1
	Less	177	29,4	52,7	76,8
	More	78	13,0	23,2	100,0
	Total	336	55,8	100,0	
Missing	99	266	44,2		
Total		602	100,0		
a. Respondent group = Non producer					

**14.3 For each crop, what is the share of households who now have higher (or lower) expenditures on labour? Same question for non-labour inputs.**

Use of inputs(labour) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Same	64	12,0	19,9	19,9
	More	163	30,5	50,8	70,7
	less	94	17,6	29,3	100,0
	Total	321	60,1	100,0	
Missing	99	213	39,9		
Total		534	100,0		
a. Respondent group = Maize producer					

Use of inputs(labour) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	3	,5	,9	,9
	Same	77	12,8	24,4	25,3



	More	155	25,7	49,1	74,4
	less	81	13,5	25,6	100,0
	Total	316	52,5	100,0	
Missing	99	286	47,5		
Total		602	100,0		
a. Respondent group = Non producer					

**14.4Has subsistence production (own consumption) increased or decreased (list share of households)? Same question for production for sale.**

Crop output consumption					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	124	10,9	19,3	19,3
	Same	185	16,3	28,9	48,2
	More	332	29,2	51,8	100,0
	Total	641	56,4	100,0	

Crop output sale					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	245	21,6	38,9	38,9
	Same	161	14,2	25,6	64,4
	More	224	19,7	35,6	100,0
	Total	630	55,5	100,0	

**14.4.1Has subsistence production (own consumption) increased or decreased (list share of households)?**

Crop output consumption <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	68	12,7	20,6	20,6
	Same	101	18,9	30,6	51,2
	More	161	30,1	48,8	100,0
	Total	330	61,8	100,0	

Missing	99	204	38,2		
Total		534	100,0		
a. Respondent group = Maize producer					

Crop output consumption <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	56	9,3	18,0	18,0
	Same	84	14,0	27,0	45,0
	More	171	28,4	55,0	100,0
	Total	311	51,7	100,0	
Missing	99	291	48,3		
Total		602	100,0		
a. Respondent group = Non producer					

#### 14.4.2 Same question for production for sale.

Crop output sale <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	132	24,7	41,0	41,0
	Same	76	14,2	23,6	64,6
	More	114	21,3	35,4	100,0
	Total	322	60,3	100,0	
Missing	99	212	39,7		
Total		534	100,0		
a. Respondent group = Maize producer					

Crop output sale <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	113	18,8	36,7	36,7
	Same	85	14,1	27,6	64,3
	More	110	18,3	35,7	100,0

	Total	308	51,2	100,0	
Missing	99	294	48,8		
Total		602	100,0		
a. Respondent group = Non producer					

#### 14.5 What is the pattern of buyers – has it changed over the period?

Buyer <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Same	125	23,4	43,4	43,4
	Changed	163	30,5	56,6	100,0
	Total	288	53,9	100,0	
Missing	99	246	46,1		
Total		534	100,0		
a. Respondent group = Maize producer					

Buyer <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Same	103	17,1	37,5	37,5
	Changed	172	28,6	62,5	100,0
	Total	275	45,7	100,0	
Missing	0	1	,2		
	99	326	54,2		
	Total	327	54,3		
Total		602	100,0		
a. Respondent group = Non producer					

#### 14.6 Give a narrative account on the general trends for main changes in crops, inputs and outputs?

Changes in crops over the past ten years					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decline	51	4,5	33,1	33,1

	Stagnation	40	3,5	26,0	59,1
	Variation	34	3,0	22,1	81,2
	Increase	29	2,6	18,8	100,0
	Total	154	13,6	100,0	

Changes in inputs over the past ten years					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less investments	34	3,0	20,6	20,6
	Same investment	37	3,3	22,4	43,0
	Variation in investments	29	2,6	17,6	60,6
	Increase of investments	65	5,7	39,4	100,0
	Total	165	14,5	100,0	

Changes in output over the past ten years					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	65	5,7	51,2	51,2
	Same	21	1,8	16,5	67,7
	Variation	8	,7	6,3	74,0
	Increase	33	2,9	26,0	100,0
	Total	127	11,2	100,0	

Have there been changes in the composition and size of livestock					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Reduction of size	48	4,2	67,6	67,6
	Encrease of size	20	1,8	28,2	95,8
	Change of size	3	,3	4,2	100,0
	Total	71	6,2	100,0	

**What are the main reasons for these changes?**

Reasons for changes in composition and size of livestock					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diseases	23	2,0	36,5	36,5
	Reproduction/Natural growth	16	1,4	25,4	61,9
	Good markets	5	,4	7,9	69,8
	Deception	3	,3	4,8	74,6
	Lack of money	9	,8	14,3	88,9
	Lack of time	1	,1	1,6	90,5
	Attack by Natural predators	1	,1	1,6	92,1
	Sold out	1	,1	1,6	93,7
	Theft	4	,4	6,3	100,0
	Total	63	5,5	100,0	

**14.7Is there a general trend concerning the crops that have been abandoned over the period, i.e. have many households skipped a particular crop?**

abandon crops					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maize	1	,1	1,2	1,2
	Bean	1	,1	1,2	2,4
	Irish potato	2	,2	2,4	4,9
	Onions	2	,2	2,4	7,3
	Cabbage	3	,3	3,7	11,0
	Cocoyam	11	1,0	13,4	24,4
	Cocoyam2	14	1,2	17,1	41,5
	Manioc	7	,6	8,5	50,0
	Sweet potato	2	,2	2,4	52,4
	Chilli pepper	3	,3	3,7	56,1
	Coffee	18	1,6	22,0	78,0
	Yam	7	,6	8,5	86,6
	Cocoa	1	,1	1,2	87,8
	Other	7	,6	8,5	96,3
	Peanuts	3	,3	3,7	100,0
	Total	82	7,2	100,0	

#### 14.7.2.If so, what are the main reasons?

Reasons for abandon					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disease of plant/rot/attack by parasites	17	3,2	32,7	32,7
	Low yield/infertility of the soil/inappropriate culture	15	2,8	28,8	61,5
	High investment/high prices of fertilizer/lack of money	6	1,1	11,5	73,1
	Lack of expertise	3	,6	5,8	78,8
	Variation of the price on the market/pauvrety of the market/low demand	6	1,1	11,5	90,4
	Climat variation	2	,4	3,8	94,2
	Fire	2	,4	3,8	98,1
	Need much time and physical effort	1	,2	1,9	100,0
	Total	52	9,7	100,0	
Missing	0	2	,4		
	99	480	89,9		
	Total	482	90,3		
Total		534	100,0		
a. Respondent group = Maize producer					

Reasons for abandon <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Desease of plant/rot/attack of parasite	6	1,0	20,0	20,0
	Low yield/infertility of the soil/inappropriate culture	8	1,3	26,7	46,7
	High investment/high prices of fertilizer/lack of money	3	,5	10,0	56,7

	Lack of expertise	1	,2	3,3	60,0
	Variation of the price on the market/pauvreté of the market/low demand	6	1,0	20,0	80,0
	Climat variation	1	,2	3,3	83,3
	Need much time and physical effort	3	,5	10,0	93,3
	Lack of space	2	,3	6,7	100,0
	Total	30	5,0	100,0	
a. Respondent group = Non producer					

## 14.8 IS IT POSSIBLE TO IDENTIFY A PATTERN IN THE COMPOSITION OF LIVESTOCK ON THE HOUSEHOLD LEVEL OVER THE PERIOD? IF SO, WHAT ARE THE MAIN REASONS?

### 14.8.1 Pattern in the composition of livestock on the household level over the period

Have there been changes in the composition and size of livestock <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Reduction of size	32	6,0	78,0	78,0
	Encrease of size	8	1,5	19,5	97,6
	Change of size	1	,2	2,4	100,0
	Total	41	7,7	100,0	
a. Respondent group = Maize producer					

Have there been changes in the composition and size of livestock <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Reduction of size	16	2,7	53,3	53,3
	Encrease of size	12	2,0	40,0	93,3
	Change of size	2	,3	6,7	100,0
	Total	30	5,0	100,0	
a. Respondent group = Non producer					

## 15. PRODUCTION ASSETS

### 15.1 What is the share of households that own the four different types of agricultural equipment mentioned?

Statistics <sup>a</sup>		
	N	
	Valid	Missing
Number of Ox-plough owned	0	100
Number of tractors owned	1	99
Number of carts owned	3	97
Number of milling machine owned	10	90
a. Repondant group = Maize producers		

Number of tractors owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	1,0	100,0	100,0
Missing	System	99	99,0		
Total		100	100,0		
a. Repondant group = Maize producers					

Number of carts owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2,0	66,7	66,7
	3	1	1,0	33,3	100,0
	Total	3	3,0	100,0	
Missing	System	97	97,0		
Total		100	100,0		
a. Repondant group = Maize producers					

Number of milling machine owned <sup>a</sup>					
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		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	3,0	30,0	30,0
	2	5	5,0	50,0	80,0
	4	1	1,0	10,0	90,0
	5	1	1,0	10,0	100,0
	Total	10	10,0	100,0	
Missing	System	90	90,0		
Total		100	100,0		
a. Repondant group = Maize producers					

Statistics <sup>a</sup>					
		Number of Ox-plough owned	Number of tractors owned	Number of carts owned	Number of milling machine owned
N	Valid	0	0	0	17
	Missing	100	100	100	83
a. Repondant group = Non-producers					

Number of milling machine owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	9,0	52,9	52,9
	2	3	3,0	17,6	70,6
	3	2	2,0	11,8	82,4
	4	2	2,0	11,8	94,1
	10	1	1,0	5,9	100,0
	Total	17	17,0	100,0	
Missing	System	83	83,0		
Total		100	100,0		
a. Repondant group = Non-producers					

**15.2 Give examples of other production assets owned by the households. Is it only few households who own these assets?**

Statistics<sup>a</sup>

	N	
	Valid	Missing
Number of hoes owned	83	17
Number of cutlasses owned	81	19
Number of sprayers owned	22	78
Number of watering cans owned	3	97
Number of dabats owned	2	98
Number of planters owned	4	96
Number of axes owned	2	98
Number of spades owned	3	97
Number of others owned	11	89
a. Repondant group = Maize producers		

Number of hoes owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	17	17,0	20,5	20,5
	2	15	15,0	18,1	38,6
	3	22	22,0	26,5	65,1
	4	10	10,0	12,0	77,1
	5	7	7,0	8,4	85,5
	6	3	3,0	3,6	89,2
	7	2	2,0	2,4	91,6
	8	2	2,0	2,4	94,0
	9	1	1,0	1,2	95,2
	10	4	4,0	4,8	100,0
	Total	83	83,0	100,0	
Missing	0	4	4,0		
	System	13	13,0		
	Total	17	17,0		
Total		100	100,0		
a. Repondant group = Maize producers					

**Number of cutlasses owned<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	24	24,0	29,6	29,6
	2	22	22,0	27,2	56,8
	3	10	10,0	12,3	69,1
	4	6	6,0	7,4	76,5
	5	6	6,0	7,4	84,0
	6	3	3,0	3,7	87,7
	7	2	2,0	2,5	90,1
	8	3	3,0	3,7	93,8
	10	3	3,0	3,7	97,5
	16	1	1,0	1,2	98,8
	20	1	1,0	1,2	100,0
	Total	81	81,0	100,0	
Missing	0	2	2,0		
	System	17	17,0		
	Total	19	19,0		
Total		100	100,0		
a. Repondant group = Maize producers					

Number of sprayers owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	18,0	81,8	81,8
	2	3	3,0	13,6	95,5
	4	1	1,0	4,5	100,0
	Total	22	22,0	100,0	
Missing	System	78	78,0		
Total		100	100,0		
a. Repondant group = Maize producers					

Number of watering cans owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	3,0	100,0	100,0
Missing	System	97	97,0		

Number of watering cans owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	3,0	100,0	100,0
Missing	System	97	97,0		
Total		100	100,0		
a. Repondant group = Maize producers					

Number of dabats owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2,0	100,0	100,0
Missing	0	1	1,0		
	System	97	97,0		
	Total	98	98,0		
Total		100	100,0		
a. Repondant group = Maize producers					

Number of planters owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	4,0	100,0	100,0
Missing	System	96	96,0		
Total		100	100,0		
a. Repondant group = Maize producers					

Number of axes owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1,0	50,0	50,0
	2	1	1,0	50,0	100,0
	Total	2	2,0	100,0	
Missing	0	2	2,0		
	System	96	96,0		
	Total	98	98,0		
Total		100	100,0		
a. Repondant group = Maize producers					

Number of spades owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	3,0	100,0	100,0
Missing	0	1	1,0		
	System	96	96,0		
	Total	97	97,0		
Total		100	100,0		
a. Repondant group = Maize producers					

Number of others owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	7,0	63,6	63,6
	2	3	3,0	27,3	90,9
	3	1	1,0	9,1	100,0
	Total	11	11,0	100,0	
Missing	System	89	89,0		
Total		100	100,0		
a. Repondant group = Maize producers					

Statistics <sup>a</sup>		
	N	
	Valid	Missing
Number of hoes owned	84	16
Number of cutlasses owned	75	25
Number of sprayers owned	22	78
Number of watering cans owned	8	92
Number of dabats owned	5	95
Number of planters owned	2	98
Number of axes owned	4	96
Number of spades owned	6	94
Number of others owned	11	89
a. Repondant group = Non-producers		

Number of hoes owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	16	16,0	19,0	19,0
	2	23	23,0	27,4	46,4
	3	14	14,0	16,7	63,1
	4	11	11,0	13,1	76,2
	5	6	6,0	7,1	83,3
	6	4	4,0	4,8	88,1
	7	5	5,0	6,0	94,0
	12	3	3,0	3,6	97,6
	13	1	1,0	1,2	98,8
	30	1	1,0	1,2	100,0
	Total	84	84,0	100,0	
Missing	0	2	2,0		
	System	14	14,0		
	Total	16	16,0		
Total		100	100,0		
a. Repondant group = Non-producers					

Number of cutlasses owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	18,0	24,0	24,0
	2	25	25,0	33,3	57,3
	3	12	12,0	16,0	73,3
	4	10	10,0	13,3	86,7
	5	2	2,0	2,7	89,3
	6	2	2,0	2,7	92,0
	7	2	2,0	2,7	94,7
	10	2	2,0	2,7	97,3
	15	1	1,0	1,3	98,7
	30	1	1,0	1,3	100,0
	Total	75	75,0	100,0	
Missing	0	2	2,0		
	System	23	23,0		

	Total	25	25,0		
Total		100	100,0		
a. Repondant group = Non-producers					

Number of sprayers owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	18,0	81,8	81,8
	2	3	3,0	13,6	95,5
	3	1	1,0	4,5	100,0
	Total	22	22,0	100,0	
Missing	System	78	78,0		
Total		100	100,0		
a. Repondant group = Non-producers					

Number of watering cans owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	6,0	75,0	75,0
	3	1	1,0	12,5	87,5
	4	1	1,0	12,5	100,0
	Total	8	8,0	100,0	
Missing	System	92	92,0		
Total		100	100,0		
a. Repondant group = Non-producers					

Number of dabats owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	4,0	80,0	80,0
	7	1	1,0	20,0	100,0
	Total	5	5,0	100,0	
Missing	System	95	95,0		
Total		100	100,0		
a. Repondant group = Non-producers					

Number of planters owned <sup>a</sup>					
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		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2,0	100,0	100,0
Missing	System	98	98,0		
Total		100	100,0		
a. Repondant group = Non-producers					

Number of axes owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2,0	50,0	50,0
	2	1	1,0	25,0	75,0
	3	1	1,0	25,0	100,0
	Total	4	4,0	100,0	
Missing	0	2	2,0		
	System	94	94,0		
	Total	96	96,0		
Total		100	100,0		
a. Repondant group = Non-producers					

Number of others owned <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	8,0	72,7	72,7
	2	1	1,0	9,1	81,8
	3	1	1,0	9,1	90,9
	5	1	1,0	9,1	100,0
	Total	11	11,0	100,0	
Missing	0	1	1,0		
	System	88	88,0		
	Total	89	89,0		
Total		100	100,0		
a. Repondant group = Non-producers					



**15.3 What is the share of households who have some kind of access to the agricultural equipment mentioned? Any general picture identifiable in the way access is provided?**

Access to tractor <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Paid services	3	3,0	100,0	100,0
Missing	System	97	97,0		
Total		100	100,0		
a. Repondant group = Non-producers					

## 16. COMMON POOL RESOURCES (FORM C-6)

**16.1 What is the share of households who have access to some kind of common pool of resources?**

Does the HH have access to communal land <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	10	10,0	10,0	10,0
	No	90	90,0	90,0	100,0
	Total	100	100,0	100,0	
a. Repondant = Maize producers					

Does the HH have access to communal land <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	15	15,0	15,0	15,0
	No	69	69,0	69,0	84,0
	99	16	16,0	16,0	100,0
	Total	100	100,0	100,0	
a. Repondant = Non producers of maize					

**16.2 What kind of common pool resources do the households have access to? List numbers of 'yes' for each type of resource.**

If yes, what do you use this land for <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agriculture	6	6,0	60,0	60,0
	Agriculture and livestock	4	4,0	40,0	100,0
	Total	10	10,0	100,0	
Missing	99	90	90,0		
Total		100	100,0		
a. Repondant = Maize producers					

If yes, what do you use this land for <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agriculture	9	9,0	60,0	60,0
	Livestock	2	2,0	13,3	73,3
	Collecting firewood	1	1,0	6,7	80,0
	Collecting food/resources	1	1,0	6,7	86,7
	Agriculture and livestock	2	2,0	13,3	100,0
	Total	15	15,0	100,0	
Missing	99	85	85,0		
Total		100	100,0		
a. Repondant = Non producers of maize					

**16.3 How do the households consider the importance of having access to common pool resources (list shares of each category)?**

How important is access to this land for your HH <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very important	4	4,0	44,4	44,4
	Important	4	4,0	44,4	88,9
	Insignificant	1	1,0	11,1	100,0
	Total	9	9,0	100,0	

Missing	99	91	91,0		
Total		100	100,0		
a. Repondant = Maize producers					

How important is access to this land for your HH <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very important	8	8,0	61,5	61,5
	Important	4	4,0	30,8	92,3
	Other	1	1,0	7,7	100,0
	Total	13	13,0	100,0	
Missing	99	87	87,0		
Total		100	100,0		
a. Repondant = Non producers of maize					

## 17. USE OF CREDIT AND LOANS

### 17.1 % of households making use of credits or loans

From whom/which institution					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	4	2,0	5,3	5,3
	Bank	11	5,5	14,5	19,7
	Micro-finance	6	3,0	7,9	27,6
	Tontine/reunion/association	49	24,5	64,5	92,1
	Particulier	3	1,5	3,9	96,1
	GIC	3	1,5	3,9	100,0
	Total	76	38,0	100,0	

As seen from above, only 38% of households have access and make use of loans

### 17.2 Main types of sources of credit and loans by the household (eg: family, cooperative, microfinance institution, commercial bank)?

From whom/which institution

From whom/which institution					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	4	2,0	5,3	5,3
	Bank	11	5,5	14,5	19,7
	Micro-finance	6	3,0	7,9	27,6
	Tontine/reunion/association	49	24,5	64,5	92,1
	Particulier	3	1,5	3,9	96,1
	GIC	3	1,5	3,9	100,0
	Total	76	38,0	100,0	
Missing	99	124	62,0		
Total		200	100,0		

### 17.3 Main uses (purposes) of credits and loans by the household (%)

Purpose of credit or loan					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	10	5,0	13,0	13,0
	Agriculture/fertiliser	26	13,0	33,8	46,8
	Education/scholarite	15	7,5	19,5	66,2
	Commerce/business	2	1,0	2,6	68,8
	Health	3	1,5	3,9	72,7
	Construction of house	1	,5	1,3	74,0
	Eventual problem	12	6,0	15,6	89,6
	ceremonies	1	,5	1,3	90,9
	Investment	1	,5	1,3	92,2
	buy Equipment	4	2,0	5,2	97,4
	Others	2	1,0	2,6	100,0
	Total	77	38,5	100,0	
Missing	99	123	61,5		
Total		200	100,0		

### 17.4 % Households making use of "mobile money" facilities

Make use of mobile phone for banking/saving					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	2	1,0	1,1	1,1
	yes	2	1,0	1,1	2,2
	No	181	90,5	97,8	100,0
	Total	185	92,5	100,0	
Missing	99	15	7,5		
Total		200	100,0		

### 17.5 Purposes for use of "mobile money" facilities (%)

If yes(explain purpose)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	2	1,0	40,0	40,0
	Business	2	1,0	40,0	80,0
	Savings	1	,5	20,0	100,0
	Total	5	2,5	100,0	
Missing	99	195	97,5		
Total		200	100,0		

### 14.8 main reasons the composition of livestock on the household level over the period

Reasons for changes in composition and size of livestock <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Desease	15	2,8	42,9	42,9
	Reproduction/natural growth	6	1,1	17,1	60,0
	Good market	3	,6	8,6	68,6
	Deception	1	,2	2,9	71,4
	Lack of money	5	,9	14,3	85,7
	Lack of time	1	,2	2,9	88,6
	Natural predator attack	1	,2	2,9	91,4

	Theft	3	,6	8,6	100,0
	Total	35	6,6	100,0	
Missing	0	8	1,5		
	99	491	91,9		
	Total	499	93,4		
Total		534	100,0		
a. Respondent group = Maize producer					

Reasons for changes in composition and size of livestock <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Desease	8	1,3	28,6	28,6
	Reproduction/natural growth	10	1,7	35,7	64,3
	Good market	2	,3	7,1	71,4
	Deception	2	,3	7,1	78,6
	Lack of money	4	,7	14,3	92,9
	Sell	1	,2	3,6	96,4
	Theft	1	,2	3,6	100,0
	Total	28	4,7	100,0	
Missing	0	7	1,2		
	99	567	94,2		
	Total	574	95,3		
Total		602	100,0		
a. Respondent group = Non producer					

## 18. COMPOSITION OF HOUSEHOLD INCOME (FORM D-2)

### 18.1 Total amount of income per year

Statistics					
Annual revenue					
N					
Valid	Missing	Mean	Minimum	Maximum	Sum
123	77	385806,6667	2220,00	11000000,00	47454220,00

### 18.2% of households in which Agricultural production is main source of income

Statistics					
Amount of total HH earnings from agricultural production					
N					
Valid	Missing	Mean	Minimum	Maximum	Sum
128	72	476793,7656	10000,00	11000000,00	61029602,00

### 18.3% of households in which Livestock is main source of income

Statistics					
Amount of total HH earnings from livestock					
N					
Valid	Missing	Mean	Minimum	Maximum	Sum
45	155	3,3049E5	20000,00	10000000,00	14871920,00

### 18.4% of households in which Self-employed work is main source of income

Statistics					
Amount of total HH earnings from self employed work					
N					
Valid	Missing	Mean	Minimum	Maximum	Sum
18	182	2,1425E5	50000,00	1000000,00	3856500,00

**18.5% of households in which Casual wage work is main source of income**

Statistics					
Amount of total HH earnings from casual wage work					
N					
Valid	Missing	Mean	Minimum	Maximum	Sum
20	180	257750,0000	10000,00	3000000,00	5155000,00

**18.6% of households in which Pensions are main source of income**

Statistics					
Amount of total HH earnings from pension					
N					
Valid	Missing	Mean	Minimum	Maximum	Sum
10	190	818060,0000	12000,00	1800000,00	8180600,00

**18.7.%of households in which salaried employment are main source of income**

Statistics					
Amount of total HH earnings from salaried employment					
N					
Valid	Missing	Mean	Minimum	Maximum	Sum
9	191	1337111,1111	40000,00	6000000,00	12034000,00

**18.8. %of households in which Remittances are main source of income**

Statistics					
Amount of total HH earnings from remittances					
N					
Valid	Missing	Mean	Minimum	Maximum	Sum
87	113	290122,9885	7000,00	2400000,00	25240700,00

**18.9% of households that receive remittances**



% of households that receive remittances					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no answer	29	14,5	14,5	14,5
	Households that receive remittances	87	43,5	43,5	58,0
	Households who doesn't receive remittances	84	42,0	42,0	100,0
	Total	200	100,0	100,0	

## 19. REMITTANCES (FORM D-3)

### 19.1 National remittances as % of total remittances

Amount					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5000	2	1,0	2,3	2,3
	10000	5	2,5	5,8	8,1
	15000	1	,5	1,2	9,3
	20000	9	4,5	10,5	19,8
	25000	2	1,0	2,3	22,1
	30000	5	2,5	5,8	27,9
	45000	3	1,5	3,5	31,4
	50000	10	5,0	11,6	43,0
	60000	4	2,0	4,7	47,7
	75000	1	,5	1,2	48,8
	80000	3	1,5	3,5	52,3
	90000	2	1,0	2,3	54,7
	95000	1	,5	1,2	55,8
	100000	10	5,0	11,6	67,4
	150000	10	5,0	11,6	79,1

	180000	1	,5	1,2	80,2
	200000	5	2,5	5,8	86,0
	240000	1	,5	1,2	87,2
	300000	2	1,0	2,3	89,5
	350000	1	,5	1,2	90,7
	360000	2	1,0	2,3	93,0
	480000	1	,5	1,2	94,2
	500000	2	1,0	2,3	96,5
	2000000	2	1,0	2,3	98,8
	2400000	1	,5	1,2	100,0
	Total	86	43,0	100,0	
Missing	No answer	40	20,0		
	Not applicable	74	37,0		
	Total	114	57,0		
Total		200	100,0		

## 19.2 International remittances as % of total remittances

Amount(international remittances)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10000	1	,5	5,0	5,0
	20000	1	,5	5,0	10,0
	50000	2	1,0	10,0	20,0
	60000	1	,5	5,0	25,0
	80000	1	,5	5,0	30,0
	100000	1	,5	5,0	35,0
	150000	2	1,0	10,0	45,0
	300000	1	,5	5,0	50,0
	350000	4	2,0	20,0	70,0
	500000	2	1,0	10,0	80,0
	600000	1	,5	5,0	85,0
	800000	1	,5	5,0	90,0
	1200000	1	,5	5,0	95,0
	1500000	1	,5	5,0	100,0
	Total	20	10,0	100,0	

Missing	No answer	11	5,5		
	Not applicable	169	84,5		
	Total	180	90,0		
Total		200	100,0		

### 19.3 How regularly do households receive national remittances (on average)

How often					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	78	39,0	61,4	61,4
	Once a year	14	7,0	11,0	72,4
	Regularly	35	17,5	27,6	100,0
	Total	127	63,5	100,0	
Missing	0	1	,5		
	99	72	36,0		
	Total	73	36,5		
Total		200	100,0		

### 19.4 How regularly do households receive international remittances (on average)

How often					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	17	8,5	58,6	58,6
	Once a year	5	2,5	17,2	75,9
	Regularly	7	3,5	24,1	100,0
	Total	29	14,5	100,0	
Missing	99	171	85,5		
Total		200	100,0		

### 19.5 Distinction between remittances in cash and remittances in kind. Which type is the most common ? Both?

- Distinction between remittances in cash and remittances in kind

### 19.6 Main channels for receiving national remittances (informal, formal, mobile)

How received(national remittances)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Informal channel(by hand)	24	12,0	19,8	19,8
	Formal channel	79	39,5	65,3	85,1
	1and2	17	8,5	14,0	99,2
	1and3	1	,5	,8	100,0
	Total	121	60,5	100,0	
Missing	0	2	1,0		
	99	77	38,5		
	Total	79	39,5		
Total		200	100,0		

### 19.7 Main channels for receiving international remittances (informal, formal mobile)

How recieved					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Informal channel(by hand)	3	1,5	10,0	10,0
	Formal channel	26	13,0	86,7	96,7
	1and2	1	,5	3,3	100,0
	Total	30	15,0	100,0	
Missing	99	170	85,0		
Total		200	100,0		

### 19.8 For what purpose do households mainly use remittances

Use of remittances					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Household/nutrition	61	30,5	49,2	49,2
	Agriculture	24	12,0	19,4	68,5
	Business	1	,5	,8	69,4

	Education/health	12	6,0	9,7	79,0
	Maintenance	12	6,0	9,7	88,7
	Familial problem	11	5,5	8,9	97,6
	Commerce	3	1,5	2,4	100,0
	Total	124	62,0	100,0	
Missing	No answer	9	4,5		
	Not applicable	67	33,5		
	Total	76	38,0		
Total		200	100,0		

## 20. REVERSE FLOWS OF MONEY AND GOODS (FORM D-4)

### 20.1 % of households that send money and/or goods

Statistics			
		Money(amount)	Goods(specify)
N	Valid	76	141
	Missing	124	59

### 20.2 Average amount of money send per household

Statistics				
Money(amount)				
N				
Valid	Missing	Mean	Minimum	Maximum
76	124	322368,4211	5000,00	6000000,00

### 20.3 Type of goods sent by household

Goods(specify)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Alimentar y	135	67,5	97,1	97,1
	Non-alimentar y	4	2,0	2,9	100,0

	Total	139	69,5	100,0	
Missing	0	2	1,0		
	99	59	29,5		
	Total	61	30,5		
Total		200	100,0		

## 20.4 How regularly do households send money and or goods (on average)?

How often					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	85	42,5	54,5	54,5
	Once a year	7	3,5	4,5	59,0
	Regularly	64	32,0	41,0	100,0
	Total	156	78,0	100,0	
Missing	99	44	22,0		
Total		200	100,0		

## 20.5 Main channels for sending money (informal, formal, mobile)

How sent					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Informal channel(by hand)	50	25,0	32,9	32,9
	Formal channel	53	26,5	34,9	67,8
	Mobile money	2	1,0	1,3	69,1
	1and2	44	22,0	28,9	98,0
	1and3	1	,5	,7	98,7
	2and3	2	1,0	1,3	100,0
	Total	152	76,0	100,0	
Missing	99	48	24,0		
Total		200	100,0		

## 21. HOUSING

### 21.1 Average size of houses (floor space)

The average size of houses is 156,19m<sup>2</sup> this is to audited total sizes of houses and divided by total household

Statistics				
Size of main house				
N		Mean	Minimum	Maximum
Valid	Missing			
151	49	156,1987	16,00	1503,00

### 21.2 Housing tenure status type (%)

Tenure status					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Owned(with registered title)	52	26,0	28,0	28,0
	Owned(without registered title)	119	59,5	64,0	91,9
	Rented	6	3,0	3,2	95,2
	Rent-free use	8	4,0	4,3	99,5
	Other(specify)	1	,5	,5	100,0
	Total	186	93,0	100,0	
Missing	99	14	7,0		
Total		200	100,0		

### 21.3 Construction materials used for floors (%)

Floor					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Concrete	13	6,5	7,0	7,0
	Cement	87	43,5	46,8	53,8
	Tile	6	3,0	3,2	57,0
	Wood	8	4,0	4,3	61,3
	Mud	20	10,0	10,8	72,0

	Bare earth	49	24,5	26,3	98,4
	other(specify)	3	1,5	1,6	100,0
	Total	186	93,0	100,0	
Missing	99	14	7,0		
Total		200	100,0		

## 21.4 Construction materials used for external walls (%)

External walls					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Concrete blocks	47	23,5	25,3	25,3
	Burnt bricks	33	16,5	17,7	43,0
	Mud bricks	32	16,0	17,2	60,2
	Pole/bamboo	74	37,0	39,8	100,0
	Total	186	93,0	100,0	
Missing	99	14	7,0		
Total		200	100,0		

## 21.5 Construction materials used for roofs (%)

Roofing materials					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tiles	13	6,5	7,0	7,0
	Corrugated iron sheets	141	70,5	75,8	82,8
	Tins or metals other than corrugated iron sheets	30	15,0	16,1	98,9
	Asbestos	1	,5	,5	99,5
	Thatch	1	,5	,5	100,0
	Total	186	93,0	100,0	
Missing	99	14	7,0		
Total		200	100,0		

## 21.6 Number of rooms (%)



Statistics				
Number of rooms				
N				
Valid	Missing	Mean	Minimum	Maximum
185	15	4,2973	1,00	9,00

Number of rooms					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	,5	,5	,5
	2	13	6,5	7,0	7,6
	3	42	21,0	22,7	30,3
	4	59	29,5	31,9	62,2
	5	37	18,5	20,0	82,2
	6	17	8,5	9,2	91,4
	7	11	5,5	5,9	97,3
	8	3	1,5	1,6	98,9
	9	2	1,0	1,1	100,0
	Total	185	92,5	100,0	
Missing	99	15	7,5		
Total		200	100,0		

## 21.7 Kitchen types (%)

### Kitchen<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Inside the house	38	19,0	19,0	19,0
	Outside the house	19	9,5	9,5	28,5
	Other (specify)	129	64,5	64,5	93,0
	No answer	14	7,0	7,0	100,0
	Total	200	100,0	100,0	

a. Relation to HH haed = Head

## 22. PUBLIC SERVICES

### 22.1 Electricity (%) HH access to electricity

Electricity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No electricity	32	16,0	17,2	17,2
	Generator	2	1,0	1,1	18,3
	Solar	1	,5	,5	18,8
	Electricity	150	75,0	80,6	99,5
	Other(specify)	1	,5	,5	100,0
	Total	186	93,0	100,0	
Missing	99	14	7,0		
Total		200	100,0		

### 22.2 Drinking water connection (%) HH access to drinking water connection

Drinking water connection					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tap inside/outside home	49	24,5	27,5	27,5
	Collect from public tap or standpipe or pump	113	56,5	63,5	91,0
	Rainwater	6	3,0	3,4	94,4
	Other(specify)	10	5,0	5,6	100,0
	Total	178	89,0	100,0	
Missing	0	6	3,0		
	99	16	8,0		
	Total	22	11,0		
Total		200	100,0		

Drinking water source					
		Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Public network	126	63,0	68,5	68,5
	Borehole or protected well	20	10,0	10,9	79,3
	Unprotected well	12	6,0	6,5	85,9
	Other(specify)	26	13,0	14,1	100,0
	Total	184	92,0	100,0	
Missing	0	2	1,0		
	99	14	7,0		
	Total	16	8,0		
Total		200	100,0		

## 22.4 Sanitation (%)

### HH access to sanitation

Sanitation					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No toilet or latrine	2	1,0	1,1	1,1
	Flush toilet to a septic tank or sewer	19	9,5	10,2	11,3
	Private latrine wit a slab or plateform made from cement or wood with a squatting hohe or seat	92	46,0	49,5	60,8
	Private latrine without a slab or plateform, just a mud floor with a hole in the ground	72	36,0	38,7	99,5
	Public or shared latrine	1	,5	,5	100,0
	Total	186	93,0	100,0	
Missing	99	14	7,0		
Total		200	100,0		

## 23. MEANS OF COMMUNICATION AND TRANSPORTATION

### 23.1 Ownership of mobile phones, radio, television (%)

#### HH assets, number of mobile phones owned

Number of mobile phones owned
-------------------------------

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	2	1,0	1,1	1,1
	1	56	28,0	29,9	31,0
	2	53	26,5	28,3	59,4
	3	29	14,5	15,5	74,9
	4	20	10,0	10,7	85,6
	5	12	6,0	6,4	92,0
	6	3	1,5	1,6	93,6
	7	6	3,0	3,2	96,8
	8	3	1,5	1,6	98,4
	9	1	,5	,5	98,9
	10	1	,5	,5	99,5
	23	1	,5	,5	100,0
	Total	187	93,5	100,0	
Missing	System	13	6,5		
Total		200	100,0		

Number of radios owned					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	6	3,0	4,1	4,1
	1	116	58,0	80,0	84,1
	2	19	9,5	13,1	97,2
	3	1	,5	,7	97,9
	4	3	1,5	2,1	100,0
	Total	145	72,5	100,0	
Missing	System	55	27,5		
Total		200	100,0		

Number of television					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	9	4,5	6,3	6,3
	1	114	57,0	79,7	86,0
	2	15	7,5	10,5	96,5

	3	4	2,0	2,8	99,3
	4	1	,5	,7	100,0
	Total	143	71,5	100,0	
Missing	System	57	28,5		
Total		200	100,0		

### 23.2 Ownership of motorcycle, car, bicycle (%)

Number of motorcycles owned					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	13	6,5	27,7	27,7
	1	30	15,0	63,8	91,5
	2	4	2,0	8,5	100,0
	Total	47	23,5	100,0	
Missing	System	153	76,5		
Total		200	100,0		

Number of cars owned					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	15	7,5	55,6	55,6
	1	9	4,5	33,3	88,9
	2	3	1,5	11,1	100,0
	Total	27	13,5	100,0	
Missing	System	173	86,5		
Total		200	100,0		

Number of bicycles owned					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	16	8,0	84,2	84,2
	1	3	1,5	15,8	100,0
	Total	19	9,5	100,0	

Missing	System	181	90,5		
Total		200	100,0		

**23.3 In case of no ownership, do households in any way have access to these means?  
How?**

<b>What way mobile phones</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	1	,5	9,1	9,1
	Rent	10	5,0	90,9	100,0
	Total	11	5,5	100,0	
Missing	System	189	94,5		
Total		200	100,0		

<b>What way</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	1	,5	4,2	4,2
	Borrow	22	11,0	91,7	95,8
	Rent	1	,5	4,2	100,0
	Total	24	12,0	100,0	
Missing	System	176	88,0		
Total		200	100,0		

<b>What way television</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	1	,5	5,6	5,6
	Borrow	17	8,5	94,4	100,0
	Total	18	9,0	100,0	
Missing	System	182	91,0		
Total		200	100,0		

<b>What way motorcycles</b>
-----------------------------

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Borrow	14	7,0	17,1	17,1
	Rent	67	33,5	81,7	98,8
	4	1	,5	1,2	100,0
	Total	82	41,0	100,0	
Missing	System	118	59,0		
Total		200	100,0		

What way cars					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Borrow	7	3,5	5,2	5,2
	Rent	127	63,5	94,8	100,0
	Total	134	67,0	100,0	
Missing	System	66	33,0		
Total		200	100,0		

What way bicycles					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Borrow	1	,5	50,0	50,0
	Rent	1	,5	50,0	100,0
	Total	2	1,0	100,0	
Missing	System	198	99,0		
Total		200	100,0		

From whom(communication) mobile phones					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	2	1,0	9,1	9,1
	kiosk/Callbox	1	,5	4,5	13,6
	Family	10	5,0	45,5	59,1

	Neighbour	9	4,5	40,9	100,0
	Total	22	11,0	100,0	
Missing	System	178	89,0		
Total		200	100,0		

From whom(communication) television					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	2	1,0	10,5	10,5
	Shop/store	5	2,5	26,3	36,8
	Neighbour	12	6,0	63,2	100,0
	Total	19	9,5	100,0	
Missing	System	181	90,5		
Total		200	100,0		

From whom(transportation) motorcycles					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Public transport	106	53,0	98,1	98,1
	Family member	2	1,0	1,9	100,0
	Total	108	54,0	100,0	
Missing	System	92	46,0		
Total		200	100,0		

From whom(transportation) bicycles					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Public transport	2	1,0	66,7	66,7
	Family member	1	,5	33,3	100,0
	Total	3	1,5	100,0	



Missing	System	197	98,5		
Total		200	100,0		

## 24. EXPENDITURE AND SAVING

### 24.1 Total amounts of consumer expenditure per year

#### Statistics

Total consumer expenditure

N					
Valid	Missing	Mean	Minimum	Maximum	Sum
161	39	981987,8199	500,00	23610000,00	158100039,00

### 24.2 Total amount of productive expenditure per year

Statistics					
Total productive expenditure					
N					
Valid	Missing	Mean	Minimum	Maximum	Sum
138	62	254049,2609	1500,00	4198000,00	35058798,00

### 24.3 total annual amounts of expenditure

#### Statistics

Total annual expenditure of the household

N	Mean	Minimum	Maximum	Sum
200	771132,9950	,00	17120000,00	153455466,00

### 24.4 Three main types of consumer expenditure (%)

Statistics					
	N				
	Valid	Missing	Mean	Minimum	Maximum
Expenditure on food	129	71	264893,0233	2000,00	1200000,00
Expenditure on drinks	98	102	89603,0612	500,00	600000,00
Expenditure on clothes	79	121	78306,32911	100,000	500000,000
Expenditure on utilities	124	76	70157,3387	3000,00	1800010,00
Expenditure on rents	4	196	1391250,0000	12000,00	5475000,00
Expenditure on transport	87	113	89944,8276	1000,00	720000,00
Expenditure on medicine	92	108	417679,3478	1500,00	22000000,00
Expenditure on schooling	100	100	305365,0000	4000,00	4000000,00
Expenditure on social	68	132	305705,8824	5000,00	7000000,00
Expenditure on others	1	199	30000,0000	30000,00	30000,00
Total consumer expenditure	161	39	981987,8199	500,00	23610000,00

#### 24.5 Three main types of productive expenditure (%)

Statistics					
	N				
	Valid	Missing	Mean	Minimum	Maximum
Expenditure on hired labour	75	125	135093,3333	5000,00	2000000,00
Expenditure on hired equipments	54	146	30685,1852	3000,00	500000,00
Expenditure on transport	28	172	43946,4286	1500,00	240000,00
Expenditure on membership fee	43	157	275311,6279	2000,00	3000000,00
Expenditure on seeda	59	141	30067,7966	1000,00	200000,00
Expenditure on fertilizer	103	97	71781,5534	6000,00	500000,00
Expenditure on water/irrigation	5	195	19000,0000	10000,00	50000,00

Statistics					
	N		Mean	Minimum	Maximum
	Valid	Missing			
Expenditure on hired labour	75	125	135093,3333	5000,00	2000000,00
Expenditure on hired equipments	54	146	30685,1852	3000,00	500000,00
Expenditure on transport	28	172	43946,4286	1500,00	240000,00
Expenditure on membership fee	43	157	275311,6279	2000,00	3000000,00
Expenditure on seeda	59	141	30067,7966	1000,00	200000,00
Expenditure on fertilizer	103	97	71781,5534	6000,00	500000,00
Expenditure on water/irrigation	5	195	19000,0000	10000,00	50000,00
Total annual expenditure of the household	146	54	1051064,8356	1500,00	17120000,00

#### 24.6 Main person of household to decide on expenditure

Who in your HH decides on expenditure?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Head	137	68,5	68,8	68,8
	Spouse	28	14,0	14,1	82,9
	Child	1	,5	,5	83,4
	Father/mother	33	16,5	16,6	100,0
	Total	199	99,5	100,0	
Missing	99	1	,5		
Total		200	100,0		

#### 24.7 Average amount of savings per years

Statistics				
If yes, how much				
N				
Valid	Missing	Mean	Minimum	Maximum
65	135	402138,4615	10000,00	6000000,00

## **25. CONCLUSION - FINAL REFLECTIONS:**

### **Main findings**

It is observed that maize represents the main food and cash crop produced in the Moungo site and acts as a major livelihood transformation component. It is the principal crop that structures the Nkongsamba rural and agricultural space and contributes much to the agricultural income of rural households. Though the private individuals through the creation of producer groups and the government through the creation of certain public structures and programs are battling hand in glove to suppress the 17% of maize imported per year to satisfy national demand, a lot remains to be done to achieve the fixed goals. Especially, an increase in output/ha, increase in commercial channels, infrastructural and post-harvest facilities coupled with an increase in high yielding/pest resistant species all this increase household revenue, contribute more to household revenue, alleviate poverty and reduce unemployment rates in the production zones.

### **Reflections on rural-urban linkages**

The countryside is no longer an area of agricultural work, flow migration and of the search of exotic lifestyles in the cities has pushed youths away from the countryside. An opposite tendency is observed because the countryside when diversifying its activities, reduced the role of agriculture in the definition of this space, attracts more citizens.

Nkongsamba lies along the National road linking the Western region to the Coastal cities of the country. Despite this, certain production areas are still enclave and rural infrastructure insufficient to assure communication between the urban and the rural milieu. The rural areas still remain the principal supplier of food and cash crops to the urban centres. Apart from food-crop supplied to the towns, unskilled labour needed by the expanding industries both agricultural and manufacturing are derived from the rural milieu. Other social amenities in the towns also attract the rural population. On the other hand, capital for production and purchase of agricultural products are moved from the town to the countryside. There is a reciprocal exchange of goods and services (e.g. agricultural products for manufactured goods) and a quasi-harmonious relationship between the rural and urban areas though a lot still has to be done at the level of the infrastructure to maximise exchange.

Transportation by motor bikes further integrated the transfer of goods and people between the different parts of the countryside and secondly from the countryside to the city. Network distributors especially for mobile phones, cover most of the national territory with their network, and eventually integrate the different components of the puzzle that were previously disjointed.

By installing basic infrastructure and services that were only found in cities, the countryside has become attractive and the two spaces tend to be harmonized.

### **Answers to research questions:**

#### **What are the general characteristics of the site in terms of land use, land tenure and market integration?**

Amongst the households interviewed, 93% of them possess their personal land while 7% of the households occupy rented land. To crown this high possession of land owned by the household, 73.5% of these households cultivate their land holdings and only 1.5% of the land is left under fallow. An increase in the demand and the prices of food-crops have pushed many families to exploit their lands for production to diversify household incomes. Compared to the last ten years, 12.5% of the households have decreased their cultivated areas, 54% have cultivated the same surfaces while 15.5% of the respondents have increased their land holdings. Soils in this area are relatively rich with satisfactory outputs though uneven and sometimes difficult to develop thus, the relatively reduced number of households to have increased their production surfaces.

Most of the output is commercialized in the local markets though other villagers and a few cooperatives serve as ready markets for producers output. At the level of the markets, 54.5% for the output are sold to local traders with a clientele in other areas. 36% of the producers sell their output to the same buyer while 49% sell to different buyers.

#### **An increasing commercialization and diversification of crops?**

Traders from as far as Gabon, Chad and Equatorial Guinea are now actively involved in the trade of maize in our study site. Demand for maize has increased to the point that almost all of the harvest is sold 75%(ACDIC) and maize is produced two to three times per year on the same plots with the use of organic and inorganic fertilizers though the soils are still relatively rich.

Before the introduction of maize in the Late 1990s as the major cash crop in our study sites, coffee occupied almost every cultivated space. A fall in coffee prices coupled with an increase in the demand and consumption for maize especially by the livestock industry has led to a diversification from coffee to maize. In the year 2008, the price of a kilogram of maize skyrocketed from 70 to 195f CFA. The demand for food crops in most cities in the less developed world have opened up new relationships as far as land use and production systems are concerned. Many families have shifted from cash crop to food crop production due to the

opening of the Cameroonian frontiers. Though coffee still play an important role in agricultural income to certain families, market gardening products and plantain/banana are fast replacing the agricultural landscape with maize as the leading crop.

### **New labour hiring and deployment practices?**

As has been seen above, 37.3% of the population is usually absent and among the absent population, 53.5 travelled out of the region search of work. With the creation of capitalist plantations and manufacturing industries in the Mounjo corridor and the Littoral region, many people have left their families in search of better opportunities in the cities.

<b>Current location</b>				
	Frequency	Percent	Valid Percent	Cumulative Percent
Nearby village	7	3.1	3.1	3.1
Village in same district	4	1.8	1.8	4.8
Town/city	212	93.0	93.0	97.8
Abroad	5	2.2	2.2	100.0
Total	228	100.0	100.0	
a. Reasons for leaving = Work				

Production of maize requires labour though product is not as labour intensive as Irish potato and rice production because phyto-sanitary products have been introduced to replace physical labour. Producers limited income acts as a barrier to the use of these products and the services of hired labour are still used for maize production as well as for the production of other crops as the table below illustrates.

Use of hired local labour by maize producers		Use of hired local labour by non-producers	
	Percent		Percent
Land preparation	62	Land preparation	63
Sowing/weeding	43	Sowing/weeding	42
Harvesting	34	Harvesting	41
Post harvesting	11	Post harvesting	17

### **Any major large-scale schemes (private, state or JVs)?**

As for the moment, no large-scale state scheme has been put in place for the production of maize or any other product in this zone though certain private schemes exist. About 4% of maize producers cultivate surface areas ranging between 10-19ha.

### **Any shift in commercial channels (new types of buyers)**

Maize production has been developed to replace coffee as the major cash crop in our study site. Maize is a major raw material for the livestock and brewery industries and commercial channels have are not exclusive to urban consumption but also to the sectors listed above. Commercial patterns are difficult to map out due to the fact that, the main buyers are based in Douala and other big town and mostly at the level of the local markets are to be found salaried agents who act as middlemen between the peasants and the finale consumers.

### **Restrictions in access to production assets and common pool resources**

The most common production assets in this zone are the hoe and cutlass or machete. Other production assets like tractors and other heavy machinery are rarely found due to the uneven nature, steep slopes and relatively superficial soils of the study zone. To crown the above is the economic situation of the farmers which makes it difficult for a producer to purchase or rent these production assets where they exist. Farm sizes are also relatively small to profitable employ heavy machinery for production purposes.

Only 12.5% of the households have access to communal land and these families mainly use these lands for agricultural purposes or as pasture land for their livestock. Access to these communal lands is qualified by those who use them as very important.

### **Who decides at household level whether a member migrates?**

With exception made on children of school age, the decision to migrate depends on the parents and also members of the destination household who assures the reception and lodging, the decision to migrate is taken by future migrant who informs the other members of the household. Order is given when the necessary conditions are favorable for a departure (reception, and lodging most especially). Hence, individuals in their respective ways can contribute to the preparation of travel and departure. The parents can express their wishes but the final decision comes from the future migrant.

### **What is the effect of migration/mobility on the social status of the migrant? Under what conditions does it lead to upward social mobility? Under what conditions does it lead to marginalisation?**

The Nkongsamba III subdivision has a cosmopolitan population with two main ethnic groups: the Mbo's, original settlers and Bamiléké migrants. This population however is made up agricultural producers and a certain portion of this population is highly mobile during the production season to supply their services as hired labour.

Marginalization of a migrant in the destination depends on the type of good neighborhood relations existing between the communities and on the behavior of the migrant. Most communities are very open and welcoming to migrants though the moral attitude of the migrant is observed and if not compatible with that of the receiving community, the migrant is not welcome and he or she is marginalized.

**How does migration/mobility influence the family relations in terms of gender and generation?**

The repeated absence of certain key family members from their homes have serious repercussions on children supervision and on fertility or reproductive calendar. For the woman, the role of mother-Educator and nursing cannot be totally accomplished. The security and reassuring presence of a male creates a void which is difficult to fill. The children most often are victims because they are abandoned by themselves, their seniors or grandparents are obliged to learn how to take care of themselves or indulge in practices which exposes them to be delinquent. Hence, we can see children of about 10 years who are in charge of the preparation of meals and take care of their juniors while waiting for the return of their mothers. It creates in the household tension which is not always addressed by the financial gains that the migrants usually bring from their agricultural expedition.

It leads to a transformation of family structures and roles. Labour Mobility can also be understood as a reinterpretation of household members, nursing-woman and the children especially their role at the household level. It has consequences on the renegotiation of gender relations but also on phenomenon such as (adolescence night activity) early marriages, early pregnancy of unmarried girls, birth spacing or fertility.

**Does migration/mobility mitigate poverty? Does it lead to an improvement of the livelihoods of 'sending' households?**

Migration and fight against poverty is a slogan whose pertinence depends on certain number of factors:

The fastness and degree of migrant success in his adventure (that is the fastness to find work),

The length of transition period during which, the migrant solely depends on the household for assistance, reception or for relations, (impoverishment factor),

The migrants' capacity to integrate in his new environment and her capacity to save money,

Type of migration. Agricultural migration is an exception in that work is available and most often migrants have the problem of choice. Most agricultural migrants are interested to cover much work so as to make maximum income during the agricultural season in order to address



his personal needs in his departing household and her society. Finally, the importance or absence of sending money depends on the type of relations that the migrants have with his relatives and his level of responsibility but it is certain that, mobility and migration mitigates poverty.

**How are remittances being used by the ‘sending’ households? For consumptive or productive purposes? In the rural ‘home’ region or rather in urban settlements? Is there a structural difference between the uses of internal vs. transnational remittances?**

Use of remittances				
	Frequency	Percent	Valid Percent	Cumulative Percent
No answer	2	1.0	1.5	1.5
Household/nutrition	60	30.0	45.1	46.6
Agriculture	24	12.0	18.0	64.7
Business	1	.5	.8	65.4
Education/health	12	6.0	9.0	74.4
Maintenance	12	6.0	9.0	83.5
Familial problem	11	5.5	8.3	91.7
Commerce	3	1.5	2.3	94.0
Other	8	4.0	6.0	100.0
Total	133	66.5	100.0	
Not applicable	67	33.5		
Total	200	100.0		

There is no significant difference between the uses of national or international remittances. Most families use the money and goods sent by migrants for household nutrition and upkeep.

**Has any particular state policy had an impact on the site’s agricultural development ‘trajectory’?**

Cameroon's agricultural has changed from the five-year plans to the structural adjustment plan to the new agricultural policy and recently to the second generation policy. All these changes have affected the trajectory of agricultural development in the country as a whole and the Mounjo site is not an exception.

The agricultural sector however have been marked by two major phenomena which are; the liberalization of the economy in the early 90's leading to a liberalization in the trade of agricultural products; the reduction of government intervention into the agricultural sector.

Liberalization opened up the way for new market channels while the reduction in government intervention opened up the way for new finance and vulgarization methods of agricultural

practices in the rural areas. For example, MAISCAM popularized maize production in this zone and highlighted its economic importance by acting as a ready market for producers output. The government through its ministry of Agriculture and rural development has put in place certain programs with an aim of increasing maize outputs; all this with a goal of increasing national food security and increasing household revenue.

### **New non-farm activities**

The decentralisation policy of Cameroon has favoured the creation of non-farm activities in many rural areas and Nkongsamba is not an exception. Though no direct state policy has been put in place to diversify activities, the creation of sub-divisional and divisional headquarters bring to light the creation of the various delegations and other non-farm occupations and a certain portion of the population are absorbed into these sectors.

### **Policies on land and agricultural transformation**

The concept mentioned and launched by the president of the republic « **Second generation agriculture** » illustrate the well envisaged vision of the state vis-à-vis agricultural transformation ; the transformation of agriculture in order to attain the status of an emerging country by 2035 by the putting in place of a scientific agriculture with precision on the countries needs, productivity, and mechanization as main characteristics. The opening of a factor at Ebolowa for the assembly and distribution of Chinese tractors and the construction of a fertilizer production factory, after the agricultural show in view to attain the status of an emerging country by 2035 are examples of state policies to promote agricultural transformation from subsistence.

### **Spatial planning policies, e.g. Villagisation and rural development centres; urban growth)**

The period where state policy involved the creation of State or para-public large scale projects, financed at high cost have passed after the limits of this policy was made known before the introduction of the structural adjustment program. The recent policy is based on community development meaning the promotion of development from the bottom or base. The State accompanies farmer organizations, farmer groupings in their development projects. It benefits from private initiative advantages, and on the private sector to boost economic and social development.

# **AGRICULTURAL CHANGE AND RURAL LIVELIHOODS IN NOUN, CAMEROON**

*M. Tsalefac, M. Kuete, D. Azemao, C. Nzeket and E. Mbeng*

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## 1 EXECUTIVE SUMMARY

The study was conducted in Ndop-Ngoudoup plains in the Nun division in the West highlands. The rice production zone extends on the West and North-West highland regions. It is a site of undulating plain partially covered by volcanic ashes, and marshy along the river Noun. The study has the same general objective as the one carried on Irish potato in the Bamboutos mountains: “to better understand how the changes in farming practices, access to market, diversification and mobility due to rural-urban linkages are transforming the livelihoods and economy”.

The Noun plain was practically empty when White colonization started. The plain with all its economic potential was to the eyes of the settlers, a dreamed Eldorado to decongest the overpopulated Bamileke Mountains and to experiment new crop production.

Within few hours of colonization, the plain became a domain of cash crops (Arabica coffee) and food crops. The small markets of Mbouda and Foumbot created to feed the colonial masters, the workers in the plantations with feed of basic necessity, became veritable nodes between the towns of the North, of the Littoral and of the south and of the Centre regions of Cameroon. These towns have conserved and have amplified these initial functions.

The Noun plain and the surrounding highlands maintain solid complementary relationships operationalized by mobility which permits the mountain population to have a remedy on space deficit, a strategy targeting to bring to the households new financial and food resources. In the past, these motilities brought up two aspects: the permanent installation when it concerned long distant migration (Moungo, Nkondjock etc.) and pendulous/circular migrations (daily, weekly, monthly or seasonally) for near destinations. Inter- regional permanent mobility in the large planned perimeter creating most often conflictual situations and sometimes fighting which puts immigrants in a precarious disequilibrium, obliging them to reinforce the link with their original land by the most frequent mobility between the autochthones and the immigrants who are considered as colonizers in contrary to the intra divisional mobility.

The rice of the Noun –Ndop plains is the last crop introduced in the agrarian landscape. Its importance is increasing when it concerns the extension on the space put for its cultivation and its role as a highly commercial crop and of high consumption. If the crop is ancient in Ndop, in Ngoudoup and Bangourain, it's imposed only during 'the gold age' of coffee. The new plant introduced great changes in agricultural policy, the landscape and the functioning of households. In terms of changes that are operating, it's worth noting that in 2009, the State put in place national strategies for the development of rice cultivation in Cameroon. The organization to follow up cultivators and the local market of rice reveal the importance that the State accorded to this crop that the development of the production did not follow the rhythm of population and urbanization increase or trend. It is then for the State to provide urban markets and to reduce the large or massive Asian importations (429 864 tons for 87 billion FCFA in 2006, for a country that produced 80% of her rice in 1975). This national policy of rice impacts the development of households.

In the field, the technical changes that we observed goes in the direction of adopting high yielding varieties, to reinforce the peasant capacity and more especially targeting to solve the problems which made the national production to fall (Document of national strategies for the development of rice cultivation in Cameroon:

- ✓ Difficulty in accessing inputs (fertilizers and pesticides) ;
- ✓ Lack or insufficient improved seeds;

- ✓ The weak organization of cultivators;
- ✓ The low yields or outputs ;
- ✓ The weakness in financing agricultural activities
- ✓ The disenclavement of principal zones of production

The Economic and social development of the Noun and the selfishness that accompany it today constitute a blockage to long period mobility. By control, the level of production excludes the use of family labour only. The employee labour or paid labour becomes important and justifies the rural -rural commuter mobility, urban-rural and especially seasonal underway.

Here like elsewhere, the advent of motorcycle taxi has upset the gift of mobility. It has brought production areas to the workforce; it has facilitated accessibility but did not solve the problem of accessibility to inputs or outputs.

The advent of micro-finance structures installed in small local towns (sub divisions) with offices or agencies on the market square of the village facilitates banking operations through access to even modest credits.

Rice cultivation, providing substantial purchasing power to producers has increased business mobility, the visits of relatives of the countryside towards those of the city. It has thus introduced a less asymmetrical relation better still equal relationship between city and countryside.

In a context where we find income-generating activities in the countryside, young people migrate less to the city in search for work, but more for studies and the love of adventure outside the country. However, there have been cases of young people who are endowed with sufficient financial means to learn a trade or go abroad to explore new horizons by confining their business in the village to a parent who becomes then the manager.

Finally, we must recognize that with the growing of rice, farmers, who are mostly young people, have acquired reflexes, ways of seeing and perceiving different from those of the cultivators of traditional crops. They are more transparent to innovation, and more open to the world.

## 2 METHODOLOGY

- Criteria used for the selection of the area
  - The specific ecological conditions in the region that make possible the cultivation of rice in the area,
  - The attraction of this production area on the populations of villages, districts, sub divisions and surrounding areas
  - Production, marketing, systems that breaks with habits through the coaching of NGO-Afric Food and state agency.....
  - The growing importance of rice in terms of space, its consumption, demand and its role in economic development
  - A national policy schedule very favorable to the plant and mobility

- A traditional area of local mobility (between the mountain and the plain), regional (rural to rural, rural to urban), national (urban to rural) mobility.
  - The importance of the division of labor in the production process between the man and the woman and between men, women and children.
  - The importance of rice in the household incomes of producers and permanent and temporary workers.
- The construction of the sampling frame for survey
- The population at the base of the research is the households.
  - The data collection tool that is a survey by questionnaires was constructed based on 5 themes for identifying the main problems and opportunities available to the households.
    - ✓ General Information or data for the households,
    - ✓ Migration and mobility of economically active household members,
    - ✓ Agriculture and livestock,
    - ✓ Financial transactions and movements of goods,
    - ✓ Expenditure and savings.
  - The territory is that of rice production of Ndop-Ngoudoup.
  - Depending on the population, the sample size was 150 to 200 households. The final sample is composed of 100 household rice producers and 100 non producers equally distributed into Ngoudoup and Ndop.
  - In each site, a special crop was chosen based on certain criteria. Such as rice in the Noun,
  - The database of the site was composed through a random selection of 100 producer households and 100 non producers. That is 200 households equally selected from 3 villages. Because we are in polycultural system where every household produces all what it needs for market and for subsistence, it has been difficult to find non producer of rice, for potato or maize in different sites. Final in many cases we considered as non producers of the considered crop the household in with the crop contributes for less than 5% in the household revenue.
  - In the situation which apart school pupils, each household member has its plots and produces what he wants, we considered only the household member who

declared he produces rice. This is the reason why our total population is only 200 persons.

- Amendments have often been made on the questionnaires to suit the local context
- ✓ A specific questionnaire was developed for mobile phone
- ✓ Discretionary character questions were reformulated to avoid susceptibilities and refusal to answer

➤ **Number of respondents and number of non respondents**

It is difficult to generally know the number of respondents and for those who did not respond by refusing or simply because they had no answer to the question. The number of respondents varies; depending on the nature of the question and to whom it was addressed. The number of respondents can be known for a given question.

➤ Implementation of the survey, dates, when,

The composition of teams per site

- Our teams were composed of 8 to 12 Doctorate and Master I and II students. Two campaigns of one to two weeks were carried in the Noun plain and two in Ndop.
- The number of months and days that lasted the main phase of data collection is 2 months.
- Subsidiary surveys were made to control or to fill in some data.
  - ✓ A specific questionnaire relative to mobile phones was designed and implemented.

➤ **Data analysis methods.**

It was done in several phases:

- Training of student surveyors in SPSS,
- Construction of a tally database for the questionnaire sheets;
- Tallying and disposal of non-compliant or biased responses;
- Descriptive analysis:
  - Study of frequencies, tables and their corresponding graphs
  - Construction of crosstables,
- Correlations

➤ The limitations of the study

- They are mostly those related to the observation tools used i.e. survey by questionnaire, particularly the tendency to superficiality. To solve this gap, we often completed the questionnaire by a structured interview.

- Another specific limit was to make the Head of the household or his replacement the only interlocutor to provide information for all other household members. He rarely has all of the required information.
- The difficulty to have data on revenue and on production
- Data not available on proportion sold and proportion eaten and how sold

### **3 MAP OF THE RESEARCH SITE (INCLUDING TOPOGRAPHICAL CHARACTERISTICS)**

## **4 DESCRIPTION ACCOUNT OF RELEVANT CONTEXTUAL CHARACTERISTICS OF THE RESEARCH AREA**

### **4.1 Introduction to the study area**

#### **➤ Topography, hydrographic network and soils**

The plain of Noun is housed in a corner of the rift between cuirassed Fouban in the east and the Bamileke plateau vigorously raised and broken in the West. It covers from south to north imperceptibly 1100m around Foubot to 1150m-1200m in Ndop. It bristles with Strombolian cones and tectono- volcanic massif as Nkogam. She is characterized first of all by extensive wetlands that bloom north of the Bamendjing while in the south, it ramifies with branches along the tributaries of the Noun river such the Nchi up to Ngoudoup and then by ash which the Strombolian volcanoes and Vulcanians material sprayed in the area. First of all, the volcanic soils, the swamps covered with alluvium are the two natural factors that are the delight of the plain.

#### **➤ Climate**

The Western Bamileke block protects the plain of Noun and Bamoun plateau in southwestern flux, putting them in a shelter position. It therefore receives less precipitation than the Bamboutos stations. The Bamendjing station receives 1693 mm in a season whose mode is in October (196 mm). There is much warmth 29 °3 on an average.

The graph .....clearly shows the contrasts from the stations of Dschang (altitude 1300 m) and of Djuttitsa (1800m altitude) only 20 km apart. The climate is divided into two unequal seasons: a short

dry season (November to March) and a long rainy season (mid-March to mid-November) Dschang; a foothill station is warmer (20 °c average) and more rainy than Djuttitsa which is mild and less rainy.

## **Vegetation**

In terms of vegetation, not much remains of the original forest vegetation. Everywhere landscape has changed transformed by human activity. Savannah trees and bush remain at the skirt of the plain and on the surrounding plateaus. Everywhere, the primeval forest gives way to fields and fruit tree orchards. In the wetlands areas that are not yet constructed, the vegetation is adapted to the water- logging conditions.

## **4.2Agriculture**

The study zone is agricultural area par excellence and ranked among the largest granaries of Cameroon.

Agriculture is mostly rain feed, seasonal and is practiced in very small (0,5 ha) and middle size (10-20ha) peasant farms since the main cash crop i.e. coffee has lost its importance or has almost disappeared without an ample replacement.

There is the cultivation of a range of numerous subsistence food crops which by the decade 1980, became cash crops. Namely, maize, bean, vegetable, fruits, sweet potato and recently rice in wetlands. Peasants of the Noun valley are of two kinds: residents and people coming from highlands neighboring villages. From Bafoussam, Mbouda, Babadjou..., hundreds of public transportation cars, motorcycles, personal cars, “pour” thousands of self-employers and workers in the valley in commuting mobility.

The labour has been, up to the last decade, based on the number of the family members and the sociability. It is nowadays the main problem producers of a certain rank have to solve. The radius of the labour collecting (by trucks) is in constant increase. Some villages of the highland are specialized in the furnishing of manpower for short or for long distance labour (Batcham village in the Bamboutos division). Each village has number of “market labour” where producers in need may come and collect labour for a day or for a week.

The biggest problem is that of access to land. There are no longer large landowners (not even the village leaders and notables). Land segmentation has been pushed to the extreme and continues to be practiced. Access to land is complex and is becoming more and more accute and expensive. Access by inheritance and loans exist only in it pure forms. This is actually a form of purchase. Rental of plots is the rule. The proportion of social juniors or the young excluded from the land i.e. without land increases in a region where the economy is based on agriculture.

### **Land use**

Urban-rural dichotomy still marks the landscape despite the ongoing harmonization. There is a network of remote cities, one from each other with a 30 km average distance between them. They are district towns, divisional and cities regional towns. The villages found between the towns are



dispersed settlements with locally urban densities (500-1000 inhabitants). After the independence disorders, interconnected human concentrations were formed in each village around the chief palaces or market places with emerging city attributes and each polarizing, inside the village more or less great territories.

### **4.3 Relevant historical back ground of rice production in Cameroon**

Rice is currently one of the staple foods in rural and urban populations in Cameroon. In 2009, domestic demand was estimated at 300 000- 400 000 tons covered up to 300,000 tons of imports (ECAM 3, 2008). The national rice production was estimated at 100 000 tons of paddy grown on 44,000 ha (National Strategy for Rice Development in Cameroon: NRDS) mainly in irrigated areas of the North West provinces (Ndop) and the Far North (SEMRY). It occupies some 145,000 farmers.

A household survey in 2007 estimated that the average rice consumption per capita in Cameroon 11.180 FCFA for urban cities of over 50,000 inhabitants. The same survey indicates that about 138 billion FCFA were spent on the purchase of rice in the household food budget against CFAF 112 billion in 2001; an increase of about 4% per year

- In 1975, the country produced 80% of its rice almost ensuring his safety on this product. Since the crisis of 1980-1990, production has steadily declined. The State of Cameroon sees two reasons for this decline in local production:
- Cameroon imports annually 500,000 tons of rice from Asian countries, thereby stifling domestic production,
- Structural Adjustment Programs negotiated and approved by himself with the International Monetary Fund.
- However, the scarcity of local rice in the domestic market seems to invalidate the justification.
- Faced with this mess in the rice sector, the State has developed and implemented a National Strategy for Development of rice cultivation ( NRDS ) which envisages precautionary and remedial measures aimed at job creation and reversal of unemployment:
- Land reclamation and distribution of parcels to all those who want to produce rice in Cameroon;
- improving the quality and quantity of locally produced rice, productivity and competitiveness of local rice through the removal of constraints;

- Support for the acquisition of agricultural inputs;
- Summary of new irrigated land areas and the rehabilitation of infrastructure and agricultural equipment in major rice growing areas;
- Support for the structuring and professionalization of producers;
- Support for the processing and marketing of rice;
- Ultimately cancel the import by passing the national production of 65 000 tons in 2008 to 627,250 tons of milled rice in 2018 and in addition, to establish security stocks. The site that interests us, 'Rural Development Project of Mount Mbappit (PDRM), " started October 31, 2006 , has built and distributed 970 hectares of irrigated land (site Ngoudoup) in four districts (Foumbot , Malentouen , Koutaba and Bangourain) of the Noun division in the Western Region of Cameroon for rice production . 470 hectares have been built (construction of irrigation drains and wells) to Koutaba. It was expected in July 2013, a yield of 6 tons of rice per hectare , or 2,000 tons of rice to the total market CFAF 600 million of wealth that will return in households Noun "against 700 tons of rice (at startup) which are processed in the locality of Ndop in the Northwest neighboring region (Amadou Potouogbounkouo) ..

- 



In Ndop , in the Ngoketunjia division - Ndop sub division, rice cultivation began after independence with supervision, 13 producers villages, the " Noun Upper Valley Development

Authority ( UNVDA ) " State agency created in 1960 and employs 960 to 1,000 people , is in charge of or responsible for:

- The opening of farm-to-market roads to help check post-harvest losses, drop the cost of transporting crops from farms to markets, ensure that farmers are into profitable activities and above all, develop the neighborhoods;
- Plough with tractors and to till the soils for rice and maize cultivation;
- Train the farmer to make organic compost and be able to reduce their costs of fertilizers and increase their yields;

Agro industry also put into use 2,532 hectares of farms for irrigated cultivation of rice against 3,000 hectares of non irrigated farms

- UNVDA buy directly their product from the farmers to again sell in their own installations.

#### **4.4 The resolution of the issues of access to land**

In rice production area, no land conflict and land dispute was reported.

#### **4.5 Human Development Index**

- Level of Human Development relative to national average (e.g. HDI; poverty; deprivation; gini index; educational levels; life expectancy, *etcetera*)
- In the year 2013, the HDI in Cameroon was situated at 0.495 from 0.523 in 2009.
- Cameroon is characterized by a low gross domestic product (GDP) per capita, with 40 percent of the population living below the poverty line. This is especially more concentrated in rural areas where 56% of the population are situated below the poverty line (FAO, 2012).
- According to Jean Aristide 2011, the poverty rate calculated from ECAM 3 statistics situated the western regions at 0.4295 while the national rate stands at 0.4631. It is evident that the presence of fertile soils alone, cannot guarantee poverty reduction levels unless markets are restructured and output better managed through the creation of auxiliary facilities for its transformation.
- Education levels are relatively high in Cameroon, situated at 82.7%. Men are more educated than women with net education rates of 95.8% and 93.6% respectively coupled to the fact that the urban population is more educated than the rural population with 94.6% as opposed to 75.0%. This difference may be explained by the increased number of educational facilities and institutions found in the urban areas.

Also, with the increased poverty levels to be found in the rural milieu, financial means to effectively sponsor children in schools are limited than in the urban areas.

- Life expectancy at birth is situated around 59.0 years and the male population has shorter life spans than the female gender i.e. 56.7 and 61.3 years for the male and female gender respectively. This difference may be explained by the nature of work undertaken by the male gender and the huge amounts of alcohol intake. The infant mortality rate is 62 per thousand live births.

#### **4.6 General mobility patterns in the research area**

- Current migration flows take the form of a general movement from the countryside to small wards cities as Bangourain, Baïgom, Galim and to the 13 villages of rice production. The migration pattern is therefore from rural to rural, rural to small local cities. Large flux or flows occur during land preparation and harvesting periods.
- Migratory spectra is mostly composed of young people and to a lesser extent young girls. However, it is mostly the young women that constitute the highest effective of labour migration when it concerns circular migration.
- Migration is essentially labor migration. They are old and were either planned, forced whether spontaneous or voluntary. It was done at the local, national and international scale.
- Today they are inside the village, district, division and the region. They are controlled by the unequal distribution and availability of soils quality. The patterns of mobility are:
  - ✓ Towards the edges of the plateau or to the rice plains,
  - ✓ Towards the mountain area when labor needs fall in the plains,
  - ✓ From the countryside to the nearest towns for many reasons (acquisition of inputs; sale of output),
  - ✓ Inter-divisional and inter-regional mobility
- They are directed towards the urban coastal towns and to the Centre region that is to say towards Douala and Yaoundé and secondarily to regional capitals. They are either labor or school or business mobility.
- Intra-village mobility and intra-district mobility are essentially feminine. Beyond these limits, it deals primarily with men and young people of school age.

## 4.7 Settlement pattern

Settlements are mostly linear along roads in the Noun, divergent from local small cities as opposed to nucleated settlements in the littoral zone. Rural areas with an influence on the urban milieu were sampled and this influence principally includes the supply of agricultural products, labor and land for agricultural production especially market gardening.

Noun is a monarchy largely influenced by Islam. The Bamoun people are under the command of Sultan also called the King of Bamoun. The Sultanate is then divided into groups that are politico- religious entities including some of the areas over 100 km for populations exceeding 100,000. They correspond to the chiefdom of 1st degree cut into chiefdoms 2nd and 3rd degree , subdivided into villages each controlled by a deputy head. The sub-chiefdom includes a number of neighborhoods at whose head are the chiefs of districts. The tradition hierarchy made chiefs, sub- chiefs and notables, in principle, to the royal family and the succession is from father to son (male heirs). A traditional administration public power superimposed the district (including one or more groups) at the head of which is a sub-prefect..

Habitat structure is essentially linear type or size of hamlets varies depending on the level of polygamy householders. Until recently, the number of women per household could vary from tens of women both in the villages than in the Bamileke Bamoun. It declined drastically due to social changes and changes in mentality. Households 10 women are now an exception.

## 4.8 The road network

They are of a rare density. Communication channels are hierarchized, and classified by Presidential Decree of 21 March 1979 as:

National roads mainly, connecting the regional capitals of Bafoussam to the national capital Yaoundé which constitute the backbone of the network.

- *Regional road* link Bafoussam the regional headquarter to divisional capitals; (Dschang, Mbouda, Bangangte, Bafang and Foumban. They measure about 300 km, paved and very viable.
- *The divisional roads* connect, within a department, the districts with the divisional headquarters.
- *Rural roads* serve rural areas, plantations, linking production areas to local markets or marketing centers. They are particularly dense. They were built at the time of the

coffee boom by UCCAO and departmental cooperatives to open up plantations. (map .....)

Mountain areas are particularly disadvantaged even those with heavy market garden investments. The tracks become almost impassable ravines during the rainy seasons. The Moungo is traversed from end to end by the Douala-Bafoussam National Road. Cross tracks that serve the mountains are very narrow and barely passable. Only 4 \* 4 vehicles i.e. 4 wheel drive cars venture there.

## 4.9 Infrastructures

The most significant changes are those introduced in the countryside, certain infrastructures previously exclusive to the city. These are:

- Health infrastructure. Each group has its clinics, health care centers if not hospital. The missionaries, especially Catholics, have done much in this wise by the Ad Lucem hospital,
- Educational infrastructure. All levels of education, except university, are present in the villages, from laic private schools, church and public; colleges of general and technical education, colleges etc.
- Access to water and electricity from the village electrification programs
- Economic infrastructure: the markets

The markets in the region are periodic and markets in our local context represents more of a (geographical location) place of exchange rather a situation where buyers are put in contact with sellers. Every village has at least one large market held twice a week for an 8 day market week (small and main market day) at intervals of 2 and 4 days. This is a place of exchange par excellence. Its attendance and its reputation depend on the importance of agricultural production and animal husbandry in the village. Around some markets have been formed small villages that reduce dependence of the village vis-à-vis the town. Here, almost all food and basic services could be acquired. Electrification has made it possible to access the Internet, fueling stations, money transfer agencies, bank teller, a bus station, restaurants etc.

## 4.10 Access to basic facilities and services

*Access to education.* The great revolution of the 80s was the starting point in the countryside, of public education orders, private denominational and secular private schools. It is the result of the policies establishment by the State which implied that the State alone could no longer provide certain of charges thus inviting private sector and the elite participation in each locality.

Today, each village at least has one grammar or technical school, general or technical education colleges etc. This policy has significantly reduced school mobility to urban centers

*Access to health care* has benefited from the same political arrangements that have increased the number of public and private health centers, bringing patients nearer to health centers.

*Access to public services:* The creation of districts, divisions transformed the administrative landscape of the region. The density of decision centers such as sub-divisions is about a sub-division every 20 to 25 km, a division every 30 to 50 km. The goal is to better serve, to bring government closer to the administered, with an aim of reducing certain types of mobility.

#### **4.11 The place of traditional hierarchy**

The weight of the traditional hierarchy has remained very strong in the Noun and Bamileke land. Become the auxiliaries of the State, rewarded with a salary at the expenditure of the division, the village Head, be it 1st, 2nd or 3rd degree chief, has lost none of his authority. He remains a symbol for the village, the guarantor of ancestral practices, cults and of the land, the judge as tradition demands. Indeed, despite all the changes that affected and still affect the region, the society is still very attached to certain societal values and symbols like the family whose strength depends on relations and number i.e. to the number of its members and its ramifications. In such a context, polygamy (even in trouble because of the new ways that stand against it: its condemnation by religion), the number of children per household continue these social practices which are difficult to abandon.

#### **4.12 Ethnic groups: majority and minority**

The strength of the feeling of belonging to an ethnic group is one of persistence that mark the current political and social life. The notion of minority and majority group are bound. It dictates the socio-economic and political relation in the sites studied. All claims repose against it, all identity policies are justified by the fact that the dominant majority group chokes, oppresses and even exploits the minority group. The Bamileke highlands are, across the country, part of the so-called majority groups, the Bamoun in Noun and much more the Mbo's of the Mounjo are ranked among the minorities. Here, all decision making at all levels must incorporate this concept.

#### **4.13 Land conflicts**

A proverb, circulated by European settlers goes "in Western Cameroon, without women and their land disputes, the courts would close their doors." Thus the place of land disputes in the Bamileke land. They include:

- Border disputes between neighboring villages,
- Water usage, in the mountains between breeders for the appropriation of space for agriculture for some, and for cattle breeding for the others. Access to water by livestock remains a problem between farmers' and cattle breeders.
- The water management in the mountains by farmers, non-respect of the distribution schedule or diversion of rivers, overexploitation and the eventual drying by upstream users or operators. The conflict opposes upstream and downstream users.

- Family dissatisfaction in sharing land inheritance or the refusal to share, excludes certain individual right to land ownership.
- They lead to skirmishes between villages, destruction of property, assault and grievous bodily harm. (photo ..... ..)

#### **4.14 Associations and farmers' organizations**

National development policy is that of community development (Paul Biya). Association and community life is therefore well developed in our study area, in the form of rural development support. These support strategies reinforce state actions. They have been reinforced by a favorable legal and institutional framework.

Law n° 90/053 of 19 December 1990 on the liberty of association completes presidential decree n°77/89 of 1977 relative to development committees.

Law n° 92/006 of 14 August 1992 on the modalities of creating cooperatives and common initiative groups (CIG).

Law n° 93/105 of 22 December 1993 concern economic interest groups. It establishes the differences between non-lucrative community organizations and those with activities capable of generating financial gain.

Associative life is centered on the following structures:

- 1-** Development committees which are local organizations created through presidential decree no 77/89 of 24 March 1977, they are permanent dialogue and concertation organs with the principal task of examining developmental problems at the local level, definition of measures to solve these problems, identify specific areas support areas and the type of support to put in place (DSDSR).
- 2-** Peasant organizations and rural financial structures
  - Common initiative groups, this category saw the light with the creation of law n° 92/006 of 14 August 1992 followed by a presidential decree applied on the 23 of the same year concerning the creation of COOPIC
  - The union of common initiative groups
  - Associations, meeting groups
  - The establishment of micro financial institutions made up of community insurance (MC2) and agricultural cooperatives, credit and saving cooperatives. They have as aim to collect and secure funds.

#### **4.14 Transformations in the local and national economy**

Can we really talk about transformation of the local or national economy? There is in our study



zones an impression of refusal to innovate. Production techniques have hardly evolved, cropping systems have hardly changed, and crop types too. One may witness more of abandonment, due to crises such as the coffee crisis, compositions-decompositions such as farmers' organizations that are formed and disappear immediately or are farmers' organizations in name only.

At the level of production, the change is a consistent intensification of crops on the same ridge and on leased land, over-concentration of crops than those found on the ridges. Also, there is the development of marginal areas which is often inappropriate.

In the mountains the use of water by traditional methods permit two to three cropping seasons per year.

The support programs to farmers do not produce the expected results despite the heavy sums invested. Production support structures are steadily increasing in number, with an increase in financial and personal resources, this to mitigate results.

Slogans and concepts of development are developed and die, without leaving tangible results. Cameroon, for example, entered after an agro-pastoral show in Ebolowa, the era of the "second generation agriculture" without having clearly seen what the first generation was. The dimensions of the concept remain unclear.

In terms of marketing, the market is gradually losing its role as a bridge between the farm and the consumer. The collection and export of products are structured differently, especially at the level of large and medium size producers who directly supply a loyal clientele. Average size producers collect the production of smallholder farmers to supplement with theirs for exports.

#### **14.15 Importance of non-agricultural activities**

In a context where land issues are predominant and that the population of earth seekers increase, turning away from farm work to derive supplementary income from non-farm activities become a sought after solution by the rural people.

The building sector

It is a rapidly changing sector in the Bamboutos and the Noun area, the building industry is the main source of non-farm employment. Its actors combine this activity with relative ease to agriculture. It includes:

- The extraction and sale of stone for foundations, i.e. quarrying
- The manufacture of bricks for the elevation of the walls,
- Lumbering, the felling of large trees for wood work and carpentry
- Masonry (walls, plastering, floor covering,
- Electricity, plumbing
- Sheet metal works etc.
- Hired laborers etc.

#### **4.16 Trade**

Trade has always been an essential complement to agricultural activities. This concerns itinerant traders (on foot, bicycle, motorcycle or car) who peddle their market goods in the divisional, and

sometimes to neighboring divisions. They can be fixed on the market square, roadsides or at the entrance of his concession.

#### **4.17 Transportation**

The car has remained for a long time the preferred means of transport for commuting between the towns - countryside-town. For a decade now, the motorcycle has virtually taken over. It has added to urban-rural-urban, the urban-rural-rural transportation, disenclaving every corner of the country. The bike riders popularly known as Moto-taxi-men now represents a "trade" that seeks to impose itself by all means, its members are relatively young and educated with a large lobbying power of the rural population.

Construction, trade and transportation, if they do not really enrich, they generate excess revenues which permits the population involved to easily afford for their social expenses (education, health, access to decent housing) etc.

#### **4.18 Livestock and inland fishing**

In the Noun, there are two other important activities to those described above: cattle, sheep, goat rearing and fishing thanks to the existence of a retainment dam; the Bamendjing dam in the territory of Noun and that of Mapé in Adamawa. Fishing maintains trade mobility's dominated by women. If they do not like to talk about their income or even declare how much they earn, they admit, however, that it allows them to fulfill their duty as honorably women and sometimes, that of family Heads.

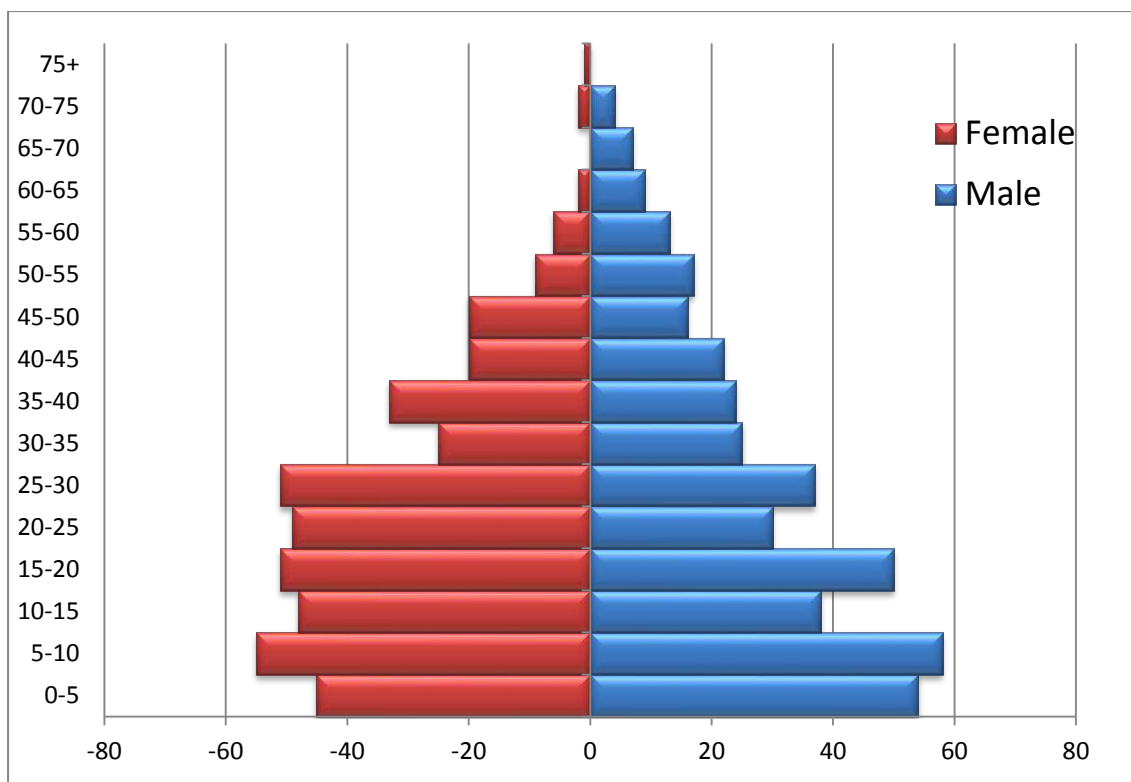
Cattle breeding are the affair of a few socially or politically powerful men; the Alhaji's who derive large incomes from this activity.

The urbanization of the countryside generates small trades such as mechanical repairs, telephone booths, gas station attendants in hydrocarbon stations, night watchmen, security guards to the country villas of the urban elite, maids or cleaning women in secondary schools, in clinics and hospitals etc.

These activities still bordering on "subsistence" are of a psychological size support for individuals and families because often, the key is to know that we are occupied and do something that is useful to society; whatever the income one derives.

## **5. POPULATION CHARACTERISTICS (FORM A-1 – HOUSEHOLD ROSTER)**

### **5.1 Population pyramid by age/gender as & of population in 5-year age classes.**



### 5.1.1. Gender of heads of households

Gender of household head					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	162	16.4	81.4	81.4
	Female	37	3.8	18.6	100.0
	Total	199	20.2	100.0	
Missing	System	787	79.8		
Total		986	100.0		

### 5.2 Average size of household

The Average size of the household is 4.93 persons/household. It was found by dividing the total of respondents 986 by the number of households 200.

### 5.3 Educational attainment levels (% by age and gender)

Education attainment levels * Gender Crosstabulation				
Count				
		Gender		
		Male	Female	Total
Education attainment levels	No formal education	37	29	66

	Primary school	130	166	296
	Secondary first cycle	226	259	485
	Secondary second cycle	62	48	110
	Bachelor degree	10	7	17
	Masters-Doctorate	9	3	12
Total		474	512	986

#### 5.4 Highest educational attainment level (categories) by age groups Crosstabulation

Education attainment levels * Active age groups Crosstabulation							
			Active age groups				
			Below 18 years	18-35 years	35-65 years	Above 65 years	Total
Education attainment levels	No formal education	Count	46	3	6	11	66
		% within Education attainment levels	69.7%	4.5%	9.1%	16.7%	100.0%
	Primary school	Count	168	58	63	7	296
		% within Education attainment levels	56.8%	19.6%	21.3%	2.4%	100.0%
	Secondary first cycle	Count	240	138	102	5	485
		% within Education attainment levels	49.5%	28.5%	21.0%	1.0%	100.0%
	Secondary second cycle	Count	47	48	15	0	110
		% within Education attainment levels	42.7%	43.6%	13.6%	.0%	100.0%
	Bachelor degree	Count	7	8	2	0	17
		% within Education attainment levels	41.2%	47.1%	11.8%	.0%	100.0%
	Masters-Doctorate	Count	4	5	3	0	12
		% within Education attainment levels	33.3%	41.7%	25.0%	.0%	100.0%
Total		Count	512	260	191	23	986

	% within Education attainment levels	51.9%	26.4%	19.4%	2.3%	100.0%
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### 5.5 % of households with one or more members categorized usually absent

	Frequency	Percentage	Valid percent	Cummulative percent
Resident	191	95.0	95.0	95.0
Usually absent	10	5.0	5.0	5.0
Total	201	100	100	100

### 5.6 % of population who live elsewhere and contribute to households livelihood

Resident					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Resident	798	80.9	81.8	81.8
	Usually absent	178	18.1	18.2	100.0
	Total	976	99.0	100.0	
Missing	Not applicable	10	1.0		
Total		986	100.0		

### % of households with head of household aged below 35 years, between 35-65 and above 65 years

		Household head aged below 35			Total
		Below 35 years	35-65 years	Above 65 years	
Relation to HH head 1	Count	77	112	12	201
	Percentage	38.3%	55.7%	6.0%	100.0%

### 5.11 Dependency ratio

Dependency ratio					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Active population	423	42.9	42.9	42.9
	Dependent population	563	57.1	57.1	100.0
	Total	986	100.0	100.0	

This ratio for our study site is about 1.33 and calculated from the number of the active population divided by the number of the inactive population.

### 5.12 Main activity (%; by age and gender)

Main activity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Income generating	122	12.4	14.1	14.1
	School	337	34.2	38.8	52.9
	Unemployed	40	4.1	4.6	57.5
	Retired	4	.4	.5	57.9
	Disabled	5	.5	.6	58.5
	Subsistence production	265	26.9	30.5	89.1
	Domestic work	28	2.8	3.2	92.3
	Other(specify)	59	6.0	6.8	99.1
	Formal employment	7	.7	.8	99.9
	Casual work	1	.1	.1	100.0
	Total	868	88.0	100.0	
Missing	No answer	67	6.8		
	99	51	5.2		
	Total	118	12.0		
Total		986	100.0		

### 5.13 Main activity by active age group and gender

Main activity * Active age groups Crosstabulation							
			Active age groups				Total
			Below 18 years	18-35 years	35-65 years	Above 65 years	
Main activity	Income generating	Count	29	49	41	3	122
		% within Main activity	23.8%	40.2%	33.6%	2.5%	100.0%
	School	Count	295	42	0	0	337
		% within Main activity	87.5%	12.5%	.0%	.0%	100.0%
	Unemployed	Count	22	16	2	0	40
		% within Main activity	55.0%	40.0%	5.0%	.0%	100.0%
	Retired	Count	1	0	3	0	4
		% within Main activity	25.0%	.0%	75.0%	.0%	100.0%
	Disabled	Count	2	1	2	0	5
		% within Main activity	40.0%	20.0%	40.0%	.0%	100.0%

	Subsistence production	Count	36	99	119	11	265
		% within Main activity	13.6%	37.4%	44.9%	4.2%	100.0%
	Domestic work	Count	9	14	5	0	28
		% within Main activity	32.1%	50.0%	17.9%	.0%	100.0%
	Other(specify)	Count	14	29	16	0	59
		% within Main activity	23.7%	49.2%	27.1%	.0%	100.0%
	Formal employment	Count	2	3	2	0	7
		% within Main activity	28.6%	42.9%	28.6%	.0%	100.0%
	Casual work	Count	1	0	0	0	1
		% within Main activity	100.0%	.0%	.0%	.0%	100.0%
Total		Count	411	253	190	14	868
		% within Main activity	47.4%	29.1%	21.9%	1.6%	100.0%

## Main activity by gender

Main activity \* Gender Crosstabulation

			Gender		Total
			Male	Female	
Main activity	Income generating	Count	61	61	122
		% within Main activity	50.0%	50.0%	100.0%
	School	Count	170	167	337
		% within Main activity	50.4%	49.6%	100.0%
	Unemployed	Count	16	24	40
		% within Main activity	40.0%	60.0%	100.0%
	Retired	Count	4	0	4
		% within Main activity	100.0%	.0%	100.0%
	Disabled	Count	3	2	5
		% within Main activity	60.0%	40.0%	100.0%
	Subsistence production	Count	109	156	265
		% within Main activity	41.1%	58.9%	100.0%
	Domestic work	Count	1	27	28
		% within Main activity	3.6%	96.4%	100.0%
	Other(specify)	Count	38	21	59
		% within Main activity	64.4%	35.6%	100.0%
	Formal employment	Count	6	1	7

	% within Main activity	85.7%	14.3%	100.0%
Casual work	Count	1	0	1
	% within Main activity	100.0%	.0%	100.0%
Total	Count	409	459	868
	% within Main activity	47.1%	52.9%	100.0%

### 5.13 % of Population born in same place/area and elsewhere

% of population born in the same division					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	4	.4	.4	.4
	Born in same district	925	93.8	93.8	94.2
	Born elsewhere	57	5.8	5.8	100.0
	Total	986	100.0	100.0	

### 5.14 For immigrants: top-3 main places/areas of previous residence

Main previous place of residence(division)		
Division	Frequency	Percentage
Djerem	23	2.3
Mfoundi	26	2.6
Kadey	10	1
Moungo	15	1.5
Wouri	62	6.3
Ngo-ketunjia	27	2.7
Haut-nkam	12	1.2
Mifi	17	1.7
Nde	11	1.1
Noun	637	64.6
Abroad	19	1.9
Other	65	6.6
Total	986	

### 5.15 Importance of subsistence production

Main activity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Income generating	122	12.4	14.1	14.1



	School	337	34.2	38.8	52.9
	Unemployed	40	4.1	4.6	57.5
	Retired	4	.4	.5	57.9
	Disabled	5	.5	.6	58.5
	Subsistence production	265	26.9	30.5	89.1
	Domestic work	28	2.8	3.2	92.3
	Other(specify)	59	6.0	6.8	99.1
	Formal employment	7	.7	.8	99.9
	Casual work	1	.1	.1	100.0
	Total	868	88.0	100.0	
Missing	No answer	67	6.8		
	99	51	5.2		
	Total	118	12.0		
Total		986	100.0		

## 6. LIVELIHOOD CHARACTERISTICS (FORM A-3)

### 6.1 Economically active population as % of total population (female and male)

Dependency ratio * Gender Crosstabulation					
			Gender		Total
			Male	Female	
Dependency ratio	Active population	Count	187	236	423
		% within Dependency ratio	44.2%	55.8%	100.0%
	Dependent population	Count	287	276	563
		% within Dependency ratio	51.0%	49.0%	100.0%
Total		Count	474	512	986
		% within Dependency ratio	48.1%	51.9%	100.0%

### 6.2 Economically active population: % distribution over occupational groups; Total; Male; Female

Main activity * Gender Crosstabulation					
			Gender		
			Male	Female	Total
Main activity	No answer	Count	34	33	67
		% within Main activity	50.7%	49.3%	100.0%
	Income generating	Count	61	61	122

	% within Main activity	50.0%	50.0%	100.0%
School	Count	170	167	337
	% within Main activity	50.4%	49.6%	100.0%
Unemployed	Count	16	24	40
	% within Main activity	40.0%	60.0%	100.0%
Retired	Count	4	0	4
	% within Main activity	100.0%	.0%	100.0%
Disabled	Count	3	2	5
	% within Main activity	60.0%	40.0%	100.0%
Subsistence production	Count	109	156	265
	% within Main activity	41.1%	58.9%	100.0%
Domestic work	Count	1	27	28
	% within Main activity	3.6%	96.4%	100.0%
Other(specify)	Count	38	21	59
	% within Main activity	64.4%	35.6%	100.0%
Formal employment	Count	6	1	7
	% within Main activity	85.7%	14.3%	100.0%
Casual work	Count	1	0	1
	% within Main activity	100.0%	.0%	100.0%
Not applicable	Count	31	20	51
	% within Main activity	60.8%	39.2%	100.0%
Total	Count	474	512	986
	% within Main activity	48.1%	51.9%	100.0%

### 6.3 Labour position in main occupation (Var. 38) (Male/Female)

Labour position					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Self-employed	286	29.0	75.9	75.9
	Employer	40	4.1	10.6	86.5
	Permanent wage labour	28	2.8	7.4	93.9
	Long term contract(one year and above)	19	1.9	5.0	98.9
	Family workers without pay	4	.4	1.1	100.0



		% within Main income generating activity	66.7%	33.3%	100.0%
Building industryAgricultural Engineering	Count		10	2	12
	% within Main income generating activity		83.3%	16.7%	100.0%
Bank/trade/computer	Count		10	20	30
	% within Main income generating activity		33.3%	66.7%	100.0%
Armed forces and Police	Count		2	0	2
	% within Main income generating activity		100.0%	.0%	100.0%
Education	Count		4	3	7
	% within Main income generating activity		57.1%	42.9%	100.0%
Religion	Count		4	20	24
	% within Main income generating activity		16.7%	83.3%	100.0%
Agriculture	Count		38	49	87
	% within Main income generating activity		43.7%	56.3%	100.0%
Elevage	Count		3	0	3
	% within Main income generating activity		100.0%	.0%	100.0%
Fishing	Count		20	2	22
	% within Main income generating activity		90.9%	9.1%	100.0%
Retired/pension	Count		3	0	3
	% within Main income generating activity		100.0%	.0%	100.0%
clothing business	Count		0	1	1
	% within Main income generating activity		.0%	100.0%	100.0%
Aesthetic	Count		5	2	7
	% within Main income generating activity		71.4%	28.6%	100.0%
Wood craft	Count		1	0	1
	% within Main income generating activity		100.0%	.0%	100.0%
Vehicle repare/engineering	Count		25	15	40
	% within Main income generating activity		62.5%	37.5%	100.0%
Justice	Count		1	1	2
	% within Main income generating activity		50.0%	50.0%	100.0%
Pisciculture	Count		3	2	5
	% within Main income generating activity		60.0%	40.0%	100.0%
Total	Count		214	203	417
	% within Main income generating activity		51.3%	48.7%	100.0%

## 6.6 Crosstab: Var 24 (education) by Var 38 (Labour position) (Male/Female)

Education attainment levels * Labour position Crosstabulation								
			Labour position					
			Self-employed	Employer	Permanent wage labour	Long term contract(one year and above)	Family workers without pay	Total
Education attainment levels	No formal education	Count	13	0	0	0	0	13
		% within Education attainment levels	100.0%	.0%	.0%	.0%	.0%	100.0%
	Primary school	Count	99	9	5	2	1	116
		% within Education attainment levels	85.3%	7.8%	4.3%	1.7%	.9%	100.0%
	Secondary first cycle	Count	142	27	16	15	2	202
		% within Education attainment levels	70.3%	13.4%	7.9%	7.4%	1.0%	100.0%
	Secondary second cycle	Count	24	2	5	2	1	34
		% within Education attainment levels	70.6%	5.9%	14.7%	5.9%	2.9%	100.0%
	Bachelor degree	Count	4	1	1	0	0	6
		% within Education attainment levels	66.7%	16.7%	16.7%	.0%	.0%	100.0%
	Masters-Doctorate	Count	4	1	1	0	0	6
		% within Education attainment levels	66.7%	16.7%	16.7%	.0%	.0%	100.0%
Total		Count	286	40	28	19	4	377
		% within Education attainment levels	75.9%	10.6%	7.4%	5.0%	1.1%	100.0%

## 6.7 Non-agriculturally employed: distance to work (in time and/or kms)

Place of non-agricultural activity \* Time(hrs) Crosstabulation

Count 

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		Place of non-agricultural activity (name of place)		
		Town	Village	Total
Time	0.003	1	0	1
	0.08	0	1	1
	0.25	0	6	6
	0.3	0	1	1
	0.33	0	3	3
	0.4	1	0	1
	0.5	4	14	18
	0.75	1	0	1
	0.83	0	1	1
	1	0	8	8
	2	1	1	2
	5	0	2	2
Total		8	37	45

**Place of non-agricultural activity \* Km Crosstabulation**

Count				
		Place of non-agricultural activity (name of place)		
		Town	Village	Total
Km	0.1	0	1	1
	0.5	1	1	2
	1	1	5	6
	1.5	0	5	5
	2	1	4	5
	3	0	1	1
	4	0	3	3
	5	0	2	2
	7	1	0	1
	8	1	0	1
	15	1	1	2
	18	1	0	1
	19	1	0	1

60	0	1	1
80	0	1	1
Total	8	25	33

## 6.8 Number of (different) income generating activities per household

Main income generating activity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Domestic service	67	33.3	33.5	33.5
	Public health	2	1.0	1.0	34.5
	Transport	16	8.0	8.0	42.5
	Food-processing	4	2.0	2.0	44.5
	Building industry/ Engineering	5	2.5	2.5	47.0
	Bank/trade/computer	7	3.5	3.5	50.5
	Education	3	1.5	1.5	52.0
	Religion	3	1.5	1.5	53.5
	Agriculture	38	18.9	19.0	72.5
	Rearing	2	1.0	1.0	73.5
	Fishing	20	10.0	10.0	83.5
	Retired/pension	3	1.5	1.5	85.0
	Aesthetic	6	3.0	3.0	88.0
	Wood craft	1	.5	.5	88.5
	Vehicle repairing/engineering	18	9.0	9.0	97.5
	Justice	1	.5	.5	98.0
	Pisciculture	4	2.0	2.0	100.0
	Total	200	99.5	100.0	

## 6.9 Average number of economically active household members per household

Our study area has a total of about 423 active members from 200 households randomly selected. To know the average number of active household members per household, the total number of active household members is divided by the total number of households. This gives us an average of 2.115 active persons per household.

## 6.10 Importance of non-farming income relative to total household income

# 7. LIVELIHOOD DIVERSIFICATION AND TRANSFORMATION (FORM A-4)

7.1 Describe relevant changes in activity/income (What changes + why to what effect for purchasing power)

Change in main income activity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	67	33,5	33,5	33,5
	Changed	51	25,5	25,5	59,0
	Same	81	40,5	40,5	99,5
	Not applicable	1,5	,5	,5	100,0
	Total	200	100,0	100,0	

Income change					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Deteriorated	54	27,0	27,3	27,3
	Same	71	35,5	35,9	63,1
	Improved	73	36,5	36,9	100,0
	Total	198	99,0	100,0	
Missing	No answer	1,5			
	Not applicable	1,5			
	Total	2	1,0		
Total		200	100,0		

Purchasing power					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less goods	58	29,0	29,1	29,1
	Same goods	70	35,0	35,2	64,3
	More goods	71	35,5	35,7	100,0



	Total	199	99,5	100,0	
Missing	99	1	,5		
Total		200	100,0		

Reasons for change in main income activity <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	3	3,7	8,6	8,6
	Increase in prices of agricultural inputs	3	3,7	8,6	17,1
	Family burden/Death/Marraige ceremonies	4	4,9	11,4	28,6
	Multi-activity	6	7,4	17,1	45,7
	Poor soils/soil degradation/fall in production	3	3,7	8,6	54,3
	Periodicity of the activity	3	3,7	8,6	62,9
	High production /a better technic of agriculture	11	13,6	31,4	94,3
	Old age/retirement	1	1,2	2,9	97,1
	Multiforme aid	1	1,2	2,9	100,0
	Total	35	43,2	100,0	
Missing	System	46	56,8		
Total		81	100,0		
a. Change in main income activity = Same					

Reasons for change in main income activity <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	3	5,9	5,9	5,9
	Increase in prices of agricultural inputs	1	2,0	2,0	7,8
	Family burden/Death/Marraige ceremonies	2	3,9	3,9	11,8
	Poor soils/soil degradation/fall in production	1	2,0	2,0	13,7
	Periodicity of the activity	4	7,8	7,8	21,6
	Old age/retirement	3	5,9	5,9	27,5
	Multiforme aid	1	2,0	2,0	29,4
	Not applicable	36	70,6	70,6	100,0
	Total	51	100,0	100,0	
a. Change in main income activity = Changed					

Why(explain) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	3	5,6	5,6	5,6
	Increase in the price of agricultural inputs	12	22,2	22,2	27,8
	Family charges/death/marriage	2	3,7	3,7	31,5
	Multi-activite/association of producers/rearers	1	1,9	1,9	33,3
	Poor soilss/soil degradation/Fall in production	13	24,1	24,1	57,4
	Periodic activity	13	24,1	24,1	81,5
	Increase in production/amelioration of agricultural activities	2	3,7	3,7	85,2
	Old age/retirement	2	3,7	3,7	88,9
	Multiforme aid	2	3,7	3,7	92,6
	Change in employment	1	1,9	1,9	94,4
	Other(Plant diseases)	3	5,6	5,6	100,0
	Total	54	100,0	100,0	
a. Income change = Deteriorated					

Why(explain) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	20	28,2	29,4	29,4
	Increase in the price of agricultural inputs	12	16,9	17,6	47,1
	Family charges/death/marriage	14	19,7	20,6	67,6
	Poor soilss/soil degradation/Fall in production	4	5,6	5,9	73,5
	Periodic activity	1	1,4	1,5	75,0
	Increase in production/amelioration of agricultural activities	2	2,8	2,9	77,9
	Old age/retirement	1	1,4	1,5	79,4
	Change in employment	6	8,5	8,8	88,2
	Drop in the cultivated surface	2	2,8	2,9	91,2
	Other(Plant diseases)	4	5,6	5,9	97,1
	Not applicable	2	2,8	2,9	100,0
	Total	68	95,8	100,0	
Missing	System	3	4,2		
Total		71	100,0		

Why(explain) <sup>a</sup>					
		Frequenc y	Percent	Valid Percent	Cumulative Percent
Valid	No answer	20	28,2	29,4	29,4
	Increase in the price of agricultural inputs	12	16,9	17,6	47,1
	Family charges/death/marriage	14	19,7	20,6	67,6
	Poor soilss/soil degradation/Fall in production	4	5,6	5,9	73,5
	Periodic activity	1	1,4	1,5	75,0
	Increase in production/amelioration of agricultural activities	2	2,8	2,9	77,9
	Old age/retirement	1	1,4	1,5	79,4
	Change in employment	6	8,5	8,8	88,2
	Drop in the cultivated surface	2	2,8	2,9	91,2
	Other(Plant diseases)	4	5,6	5,9	97,1
	Not applicable	2	2,8	2,9	100,0
	Total	68	95,8	100,0	
Missing	System	3	4,2		
a. Income change = Same					

Why(explain) <sup>a</sup>					
		Frequenc y	Percent	Valid Percent	Cumulative Percent
Valid	Increase in the price of agricultural inputs	6	8,2	8,3	8,3
	Family charges/death/marriage	5	6,8	6,9	15,3
	Multi-activite/association of producers/rearers	12	16,4	16,7	31,9
	Increase in production/amelioration of agricultural activities	36	49,3	50,0	81,9
	Old age/retirement	4	5,5	5,6	87,5
	Multiforme aid	4	5,5	5,6	93,1
	Drop in the cultivated surface	1	1,4	1,4	94,4
	Other(Plant diseases)	4	5,5	5,6	100,0
	Total	72	98,6	100,0	
Missing	System	1	1,4		
Total		73	100,0		
a. Income change = Improved					

## 7.2 Cross-tabulation, change in income\*change in purchasing power

Income change * Change in main income activity Crosstabulation						
			Change in main income activity			Total
			No answer	Changed	Same	
Income change	Deteriorated	Count	29	10	15	54
		% of Total	14,6%	5,1%	7,6%	27,3%
	Same	Count	24	19	28	71
		% of Total	12,1%	9,6%	14,1%	35,9%
	Improved	Count	14	22	37	73
		% of Total	7,1%	11,1%	18,7%	36,9%
Total		Count	67	51	80	198
		% of Total	33,8%	25,8%	40,4%	100,0%

Income change * Purchasing power Crosstabulation						
			Purchasing power			Total
			Less goods	Same goods	More goods	
Income change	Deteriorated	Count	51	3	0	54
		% of Total	25,8%	1,5%	,0%	27,3%
	Same	Count	6	63	2	71
		% of Total	3,0%	31,8%	1,0%	35,9%
	Improved	Count	0	4	69	73
		% of Total	,0%	2,0%	34,8%	36,9%
Total		Count	57	70	71	198
		% of Total	28,8%	35,4%	35,9%	100,0%

**7.2 If there have been shifts in income generating activities during the past 10 years; is it predominantly changes from farming to non-agricultural employment? Or is non-farming activity mainly to be considered as additional occupation?**

**7.3 Connect changing land ownership (C-2) to livelihood diversification and diversification from farming. Is there a relationship between decreasing or increasing land ownership and changes in occupation/additional activities?**

Owned by the household * Income change Crosstabulation						
			Income change			
			Deteriorated	Same	Improved	Total
Owned by the household	Decreased	Count	6	2	3	11
		% of Total	4,6%	1,5%	2,3%	8,4%

	Same	Count	17	40	37	94
		% of Total	13,0%	30,5%	28,2%	71,8%
	Increased	Count	4	5	17	26
		% of Total	3,1%	3,8%	13,0%	19,8%
Total		Count	27	47	57	131
		% of Total	20,6%	35,9%	43,5%	100,0%

#### 7.4 Connect entrepreneurship (having small or bigger business/shop) with land ownership (number of plots and size of land)

We don't have any question concerning the type or the size (small or bigger) of the shop of the interviewed population. So, it is not possible to connect this element with the number of plots.

#### 7.5 Changes over time in labour position? Eg. a change from self-employed to wage-labour?

There is not a question concerning this aspect in the questionnaire.

#### 7.6 What is the difference in livelihood diversification between female headed households (or single parent households) and male headed households? (eg; does being/becoming a single parent household demand the parent to look for multiple activities next to their main activity?)

##### Household head

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	179	89,5	89,5	89,5
	Female	21	10,5	10,5	100,0
	Total	200	100,0	100,0	

livelihood diversification of male headed households <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	One activity	66	36,9	36,9	36,9
	Multiple activities	113	63,1	63,1	100,0
	Total	179	100,0	100,0	
a. Household head = Male					

livelihood diversification of female headed households <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	One activity	9	42,9	42,9	42,9

	Multiple activities	12	57,1	57,1	100,0
	Total	21	100,0	100,0	
a. Household head = Female					

## 8. MULTI-LOCALITY AND MOBILITY

**8.1 Difference between the type of occupation (Hm\_main\_occ) for households members resident and household members "usually absent" (implying: differences between the occupation locally and occupation in other locations)**

Main income generating activity <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Domestic service	5	2,8	6,7	6,7
	Public health	1	,6	1,3	8,0
	Transport	19	10,7	25,3	33,3
	Building industry/Engineering	6	3,4	8,0	41,3
	Bank/trade/computer	10	5,6	13,3	54,7
	Armed forces and Police	1	,6	1,3	56,0
	Education	2	1,1	2,7	58,7
	Religion	4	2,2	5,3	64,0
	Agriculture	5	2,8	6,7	70,7
	Livestock rearing	1	,6	1,3	72,0
	Fishing	2	1,1	2,7	74,7
	clothing business	1	,6	1,3	76,0
	Vehicle repairing/engineering	16	9,0	21,3	97,3
	Pisciculture	2	1,1	2,7	100,0
	Total	75	42,1	100,0	
Missing	No answer	6	3,4		
	Not applicable	61	34,3		
	System	36	20,2		
	Total	103	57,9		
Total		178	100,0		
a. Resident = Usually absent					

<b>Main income generating activity</b>
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		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Domestic service	119	14,9	34,8	34,8
	Public health	7	,9	2,0	36,8
	Traditional health	1	,1	,3	37,1
	Transport	13	1,6	3,8	40,9
	Food-processing	6	,8	1,8	42,7
	Building industry/civil Engineering	6	,8	1,8	44,4
	Bank/trade/computer	20	2,5	5,8	50,3
	Armed forces and Police	1	,1	,3	50,6
	Education	5	,6	1,5	52,0
	Religion	20	2,5	5,8	57,9
	Agriculture	82	10,3	24,0	81,9
	Livestock rearing	2	,3	,6	82,5
	Fishing	20	2,5	5,8	88,3
	Retired/pension	3	,4	,9	89,2
	Aesthetic	7	,9	2,0	91,2
	Wood craft	1	,1	,3	91,5
	Vehicle repairing/engineering	24	3,0	7,0	98,5
	Justice	2	,3	,6	99,1
	Pisciculture	3	,4	,9	100,0
	Total	342	42,9	100,0	
Missing	No answer	11	1,4		
	Not applicable	312	39,1		
	System	133	16,7		
	Total	456	57,1		
Total		798	100,0		
a. Resident = Resident					

## 8.2 Importance of household members who are "usually absent", that is, medium- or long term migrants?

### 8.3 Who are these medium- and long-term migrants? Why have they left? How much time since they left? Where have they gone to? Frequency and reasons for these migrants to visit their rural household?

#### 8.3.1 Who are these medium- and long-term migrants

Relation to HH head					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Head	12	6,4	6,4	6,4
	Spouse	10	5,3	5,3	11,8
	Child	160	85,6	85,6	97,3
	Father/mother	1,5	,5		97,9
	Brother/sister	3	1,6	1,6	99,5
	Grandparent	1,5	,5		100,0
	Total	187	100,0	100,0	
a. Resident = Usually absent					

#### 8.3.2 Why have they left?

Reasons for leaving					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	1	,1	,5	,5
	Education	52	5,3	27,8	28,3
	Travail	83	8,4	44,4	72,7
	Family assistance	15	1,5	8,0	80,7
	Marriage	36	3,7	19,3	100,0
	Total	187	19,0	100,0	
Missing	99	468	47,5		
	System	331	33,6		
	Total	799	81,0		
Total		986	100,0		

#### 8.3.3 How much time since they left?

Duration since leaving/years					
		Frequency	Percent	Valid Percent	Cumulative Percent



Valid	0	32	3,2	17,1	17,1
	1	22	2,2	11,8	28,9
	2	26	2,6	13,9	42,8
	3	24	2,4	12,8	55,6
	4	19	1,9	10,2	65,8
	5	19	1,9	10,2	75,9
	6	5,5		2,7	78,6
	7	4,4		2,1	80,7
	8	3,3		1,6	82,4
	10	9,9		4,8	87,2
	11	3,3		1,6	88,8
	12	2,2		1,1	89,8
	14	2,2		1,1	90,9
	15	2,2		1,1	92,0
	16	1,1	,5		92,5
	17	1,1	,5		93,0
	18	1,1	,5		93,6
	20	5,5		2,7	96,3
	21	2,2		1,1	97,3
	25	1,1	,5		97,9
	30	1,1	,5		98,4
	35	2,2		1,1	99,5
	40	1,1	,5		100,0
	Total	187	19,0	100,0	
Missing	99	468	47,5		
	System	331	33,6		
	Total	799	81,0		
Total		986	100,0		

#### 8.3.4 Where have they gone to?

Current location					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	11	1,1	5,9	5,9
	Nearby village	19	1,9	10,2	16,0

	Village in same district	31	3,1	16,6	32,6
	Town/city	109	11,1	58,3	90,9
	Abroad	17	1,7	9,1	100,0
	Total	187	19,0	100,0	
Missing	99	468	47,5		
	System	331	33,6		
	Total	799	81,0		
Total		986	100,0		

Specify code of place					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	13	1,3	7,0	7,0
	Mfoundi	28	2,8	15,0	21,9
	Boumba-et-ngoko	1,1	,5		22,5
	Diamare	3,3		1,6	24,1
	Wouri	24	2,4	12,8	36,9
	Haut-nkam	1,1	,5		37,4
	Mifi	2,2		1,1	38,5
	Koung-khi	1,1	,5		39,0
	Noun	89	9,0	47,6	86,6
	Dja-et-lobo	1,1	,5		87,2
	Mvila	3,3		1,6	88,8
	Vallee du ntem	1,1	,5		89,3
	Abroad	20	2,0	10,7	100,0
	Total	187	19,0	100,0	
Missing	99	468	47,5		
	System	331	33,6		
	Total	799	81,0		
Total		986	100,0		

### 8.3.5 Frequency and reasons for these migrants to visit their rural household?

How many times do they visite this HH					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	57	5,8	30,5	30,5

	1	34	3,4	18,2	48,7
	2	12	1,2	6,4	55,1
	3	27	2,7	14,4	69,5
	4	12	1,2	6,4	75,9
	5	2,2		1,1	77,0
	6	4,4		2,1	79,1
	8	4,4		2,1	81,3
	10	4,4		2,1	83,4
	12	8,8		4,3	87,7
	18	1,1	,5		88,2
	20	8,8		4,3	92,5
	24	2,2		1,1	93,6
	30	3,3		1,6	95,2
	33	2,2		1,1	96,3
	34	1,1	,5		96,8
	35	1,1	,5		97,3
	40	1,1	,5		97,9
	48	3,3		1,6	99,5
	100	1,1	,5		100,0
	Total	187	19,0	100,0	
Missing	99	468	47,5		
	System	331	33,6		
	Total	799	81,0		
Total		986	100,0		

For what reasons do they visit this HH					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	16	1,6	8,6	8,6
	Feast	19	1,9	10,2	18,7
	Holidays	9,9		4,8	23,5
	Death ceremonies	3,3		1,6	25,1
	Replenish food items/agricultural activities/work	12	1,2	6,4	31,6

	Family meeting or visits	127	12,9	67,9	99,5
	Other	1	,1	,5	100,0
	Total	187	19,0	100,0	
Missing	99	468	47,5		
	System	331	33,6		
	Total	799	81,0		
Total		986	100,0		

**8.4 Who are the temporary migrants (form B)? Where do they go? How often? What means of transport? For what purpose?**

#### 8.4.1 Who are the temporary migrants (form B)?

Those who are the temporary migrants					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Head	120	10,8	63,2	63,2
	Spouse	53	4,8	27,9	91,1
	Child	15	1,4	7,9	98,9
	Father/mother	1	,1	,5	99,5
	Other non-family member	1	,1	,5	100,0
	Total	190	17,1	100,0	
Missing	System	921	82,9		
Total		1111	100,0		

#### 8.4.2 Where do they go?

Destination of work related migration					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	9,0	52,6	52,6
	Vina	1	,1	,5	53,2
	Mfoundi	8	,7	4,2	57,4
	Mefou-et-kele	5	,5	2,6	60,0
	Boumba-et-ngoko	1	,1	,5	60,5
	Logone-et-chari	1	,1	,5	61,1
	Wouri	5	,5	2,6	63,7
	Momo	4	,4	2,1	65,8
	Mifi	3	,3	1,6	67,4

	Nde	1,1	,5	67,9
	Noun	58	5,2	98,4
	Abroad	3,3	1,6	100,0
	Total	190	17,1	100,0
Missing	Not applicable	505	45,5	
	System	416	37,4	
	Total	921	82,9	
Total		1111	100,0	

Specify if urban or rural destination					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	92	8,3	48,4	48,4
	Rural	30	2,7	15,8	64,2
	Urban	68	6,1	35,8	100,0
	Total	190	17,1	100,0	
Missing	Not applicable	504	45,4		
	System	417	37,5		
	Total	921	82,9		
Total		1111	100,0		

#### 8.4.3 How often?

Frequency of these trips					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	74	6,7	38,9	38,9
	Daily commuting	40	3,6	21,1	60,0
	Every week	25	2,3	13,2	73,2
	Every month	10,9		5,3	78,4
	A few times a year	10,9		5,3	83,7
	Seasonally	16	1,4	8,4	92,1
	Occasionally	15	1,4	7,9	100,0
	Total	190	17,1	100,0	
Missing	Not applicable	506	45,5		
	System	415	37,4		

	Total	921	82,9		
Total		1111	100,0		

#### 8.4.4 What means of transport?

Most used means of transport					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	72	6,5	37,9	37,9
	Bus	31	2,8	16,3	54,2
	Car	43	3,9	22,6	76,8
	Motorbike	30	2,7	15,8	92,6
	Foot	12	1,1	6,3	98,9
	Air plane	2,2		1,1	100,0
	Total	190	17,1	100,0	
Missing	Not applicable	505	45,5		
	System	416	37,4		
	Total	921	82,9		
Total		1111	100,0		

#### 8.4.5 For what purpose?

Main purpose of these trips					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	86	7,7	45,3	45,3
	Commerce/business	42	3,8	22,1	67,4
	Work/Agriculture/Fishing /Rearing	60	5,4	31,6	98,9
	Buy agricultural input	2,2		1,1	100,0
	Total	190	17,1	100,0	
Missing	Not applicable	505	45,5		
	System	416	37,4		
	Total	921	82,9		
Total		1111	100,0		

### 8.5 How much time do mobile/migrant household members spend in urban and/or other rural areas?

time spend in rural area in %					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	65	3,5	34,2	34,2
	Less than 10 %	3	,2	1,6	35,8
	10-20	4	,2	2,1	37,9
	20-30	2	,1	1,1	38,9
	30-40	1	,1	,5	39,5
	40-50	11	,6	5,8	45,3
	50-60	8	,4	4,2	49,5
	60-70	4	,2	2,1	51,6
	70-80	23	1,2	12,1	63,7
	80-90	23	1,2	12,1	75,8
	90-100	46	2,5	24,2	100,0
	Total	190	10,2	100,0	
Missing	System	1674	89,8		
Total		1864	100,0		

time spend in urban area in %					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	90	4,8	47,4	47,4
	Less than 10 %	31	1,7	16,3	63,7
	10-20	31	1,7	16,3	80,0
	20-30	5	,3	2,6	82,6
	30-40	10	,5	5,3	87,9
	40-50	10	,5	5,3	93,2
	50-60	1	,1	,5	93,7
	60-70	2	,1	1,1	94,7
	70-80	5	,3	2,6	97,4
	80-90	1	,1	,5	97,9
	90-100	4	,2	2,1	100,0
	Total	190	10,2	100,0	
Missing	System	1674	89,8		

time spend in urban area in %					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	90	4,8	47,4	47,4
	Less than 10 %	31	1,7	16,3	63,7
	10-20	31	1,7	16,3	80,0
	20-30	5,3		2,6	82,6
	30-40	10,5		5,3	87,9
	40-50	10,5		5,3	93,2
	50-60	1,1	,5		93,7
	60-70	2,1		1,1	94,7
	70-80	5,3		2,6	97,4
	80-90	1,1	,5		97,9
	90-100	4,2		2,1	100,0
	Total	190	10,2	100,0	
Missing	System	1674	89,8		
Total		1864	100,0		

**8.6 What is the difference (if any) in household member mobility between female-headed households (or single parent households) and male-headed households?**

**8.7 What is the difference (if any) in household member mobility between households with a head of household aged under 35 years and those with a head of household aged 35 years and above?**

**8.8 Compare frequency and purpose of mobility to urban areas with frequency and purpose to other rural areas**

time spend in rural area in % * Frequency of these trips Crosstabulation										
			Frequency of these trips							
			No answer	Daily commuting	Every week	Every month	A few times a year	Seasonally	Occasionally	
time spend in rural area in %	No answer	Count	59	2	1	2	0	0	0	64
		% of Total	33,3%	1,1%,6%		1,1%,0%	,0%	,0%	,0%	36,2%
	Less than 10 %	Count	0	0	0	0	1	0	0	1
		% of Total	,0%	,0%	,0%	,0%	,6%	,0%	,0%	,6%
	10-20	Count	0	0	0	0	2	1	0	3



		% of Total	,0%	,0%	,0%	,0%	1,1%	,6%	,0%	1,7%
	20-30	Count	0	0	0	1	0	1	0	2
		% of Total	,0%	,0%	,0%	,6%	,0%	,6%	,0%	1,1%
	30-40	Count	0	1	0	0	0	0	0	1
		% of Total	,0%	,6%	,0%	,0%	,0%	,0%	,0%	,6%
	40-50	Count	0	1	5	1	1	1	2	11
		% of Total	,0%	,6%	2,8%	,6%	,6%	,6%	1,1%	6,2%
	50-60	Count	0	0	4	2	1	0	1	8
		% of Total	,0%	,0%	2,3%	1,1%	,6%	,0%	,6%	4,5%
	60-70	Count	0	2	1	0	1	0	0	4
		% of Total	,0%	1,1%	,6%	,0%	,6%	,0%	,0%	2,3%
	70-80	Count	1	4	2	3	3	2	5	20
		% of Total	,6%	2,3%	1,1%	1,7%	1,7%	1,1%	2,8%	11,3%
	80-90	Count	1	9	3	1	1	2	5	22
		% of Total	,6%	5,1%	1,7%	,6%	,6%	1,1%	2,8%	12,4%
	90-100	Count	1	21	8	0	0	9	2	41
		% of Total	,6%	11,9%	4,5%	,0%	,0%	5,1%	1,1%	23,2%
Total		Count	62	40	24	10	10	16	15	177
		% of Total	35,0%	22,6%	13,6%	5,6%	5,6%	9,0%	8,5%	100,0%

time spend in urban area in % * Frequency of these trips Crosstabulation										
			Frequency of these trips							
			No answer	Daily commuting	Every week	Every month	A few times a year	Seasonally	Occasionally	Total
time spend in urban	No answer	Count	71	6	1	2	0	2	0	82
		% of Total	42,0%	3,6%	,6%	1,2%	,0%	1,2%	,0%	48,5%

area in %	Less than 10 %	Count	2	9	4	0	0	5	5	25
		% of Total	1,2%	5,3%	2,4%	,0%	,0%	3,0%	3,0%	14,8%
	10-20	Count	1	8	3	4	3	3	6	28
		% of Total	,6%	4,7%	1,8%	2,4%	1,8%	1,8%	3,6%	16,6%
	20-30	Count	0	2	1	0	0	1	1	5
		% of Total	,0%	1,2%	,6%	,0%	,0%	,6%	,6%	3,0%
	30-40	Count	0	1	4	2	2	0	1	10
		% of Total	,0%	,6%	2,4%	1,2%	1,2%	,0%	,6%	5,9%
	40-50	Count	0	1	5	1	1	0	2	10
		% of Total	,0%	,6%	3,0%	,6%	,6%	,0%	1,2%	5,9%
	50-60	Count	0	0	0	0	0	1	0	1
		% of Total	,0%	,0%	,0%	,0%	,0%	,6%	,0%	,6%
	60-70	Count	0	1	0	1	0	0	0	2
		% of Total	,0%	,6%	,0%	,6%	,0%	,0%	,0%	1,2%
	70-80	Count	0	0	0	0	3	2	0	5
		% of Total	,0%	,0%	,0%	,0%	1,8%	1,2%	,0%	3,0%
	90-100	Count	0	0	0	0	1	0	0	1
		% of Total	,0%	,0%	,0%	,0%	,6%	,0%	,0%	,6%
Total		Count	74	28	18	10	10	14	15	169
		% of Total	43,8%	16,6%	10,7%	5,9%	5,9%	8,3%	8,9%	100,0%

## 8.9 Compose two maps...

**8.10 In what respect and for what reasons has mobility changed during the past 10 years? (form B). Are more households members than before moving away or commuting to other places? Or less? Why?**

Change in mobility

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	71	3,8	10,4	10,4
	Increased	27	1,4	4,0	14,4
	Same	24	1,3	3,5	17,9
	Decreased	40	2,1	5,9	23,8
	Not applicable	520	27,9	76,2	100,0
	Total	682	36,6	100,0	
Missing	System	1182	63,4		
Total		1864	100,0		

Explanation of mobility change					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	78	4,2	11,4	11,4
	Climatic instability	1	,1	,1	11,6
	Use of mobile phones	1	,1	,1	11,7
	Limited financial means	10	,5	1,5	13,2
	Regular work/increased work/insufficient time/need the money	25	1,3	3,7	16,9
	Old age/ill health/fatigue	6	,3	,9	17,7
	Increase in charges/increase in responsibilities/marriage	31	1,7	4,5	22,3
	Reduction of activities/Competition	5	,3	,7	23,0
	Search for arable land	1	,1	,1	23,2
	Development road infrastructure	4	,2	,6	23,8
	Limited opportunities	2	,1	,3	24,0
	Not applicable	518	27,8	76,0	100,0
	Total	682	36,6	100,0	
Missing	System	1182	63,4		
Total		1864	100,0		

## 9. TYPOLOGY OF MOBILITY

Nota bene We used the following two tables to build the table named “spatial pattern and time dimension”

Frequency of these trips * Specify if urban or rural destination * Main purpose of these trips							
Crosstabulation							
Main purpose of these trips				Specify if urban or rural destination			Total
				No answer	Rural	Urban	
No answer	Frequency of these trips	No answer	Count	73	0	0	73
			% of Total	84,9%	,0%	,0%	84,9%
		Every week	Count	0	1	1	2
			% of Total	,0%	1,2%	1,2%	2,3%
		Every month	Count	0	1	0	1
			% of Total	,0%	1,2%	,0%	1,2%
		A few times a year	Count	1	2	2	5
			% of Total	1,2%	2,3%	2,3%	5,8%
		Seasonally	Count	0	1	0	1
			% of Total	,0%	1,2%	,0%	1,2%
		Occasionally	Count	0	0	4	4
			% of Total	,0%	,0%	4,7%	4,7%
	Total	Count	74	5	7	86	
		% of Total	86,0%	5,8%	8,1%	100,0%	
Commerce/bus iness	Frequency of these trips	No answer	Count	1	0	0	1
			% of Total	2,5%	,0%	,0%	2,5%
		Daily commuting	Count	1	1	9	11
			% of Total	2,5%	2,5%	22,5%	27,5%
		Every week	Count	2	3	7	12
			% of Total	5,0%	7,5%	17,5%	30,0%
		Every month	Count	0	0	4	4
			% of Total	,0%	,0%	10,0%	10,0%
		A few times a year	Count	0	1	1	2
			% of Total	,0%	2,5%	2,5%	5,0%
		Seasonally	Count	3	1	2	6
			% of Total	7,5%	2,5%	5,0%	15,0%

		Occasionally	Count	0	1	3	4
			% of Total	,0%	2,5%	7,5%	10,0%
		Total	Count	7	7	26	40
			% of Total	17,5%	17,5%	65,0%	100,0%
Work/Agriculture/Fishing/Rearing	Frequency of these trips	Daily commuting	Count	8	9	11	28
			% of Total	13,6%	15,3%	18,6%	47,5%
		Every week	Count	2	1	7	10
			% of Total	3,4%	1,7%	11,9%	16,9%
		Every month	Count	0	1	3	4
			% of Total	,0%	1,7%	5,1%	6,8%
		A few times a year	Count	0	2	1	3
			% of Total	,0%	3,4%	1,7%	5,1%
		Seasonally	Count	1	2	4	7
			% of Total	1,7%	3,4%	6,8%	11,9%
		Occasionally	Count	0	2	5	7
			% of Total	,0%	3,4%	8,5%	11,9%
		Total	Count	11	17	31	59
			% of Total	18,6%	28,8%	52,5%	100,0%
Buy agricultural input	Frequency of these trips	Every month	Count			1	1
			% of Total			50,0%	50,0%
		Seasonally	Count			1	1
			% of Total			50,0%	50,0%
	Total		Count			2	2
			% of Total			100,0%	100,0%

Reasons for leaving * duration since leaving * Current location Crosstabulation										
				duration since leaving						
				No answer	Moins de 5 ans	5-10	10-15	15-20	20-100	
Current location				No answer	Moins de 5 ans	5-10	10-15	15-20	20-100	Total
No answer	Reasons for leaving	Education	Count	1	0			0		1
			% of Total	9,1%	,0%			,0%		9,1%
		Travail	Count	2	1			0		3
			% of Total	18,2%	9,1%			,0%		27,3%
		Assistance familiale	Count	1	0			0		1
			% of Total	9,1%	,0%			,0%		9,1%

		Marriage	Count	4	1			1		6
			% of Total	36,4%	9,1%			9,1%		54,5%
		Total	Count	8	2			1		11
			% of Total	72,7%	18,2%			9,1%		100,0%
Nearby village	Reasons for leaving	No answer	Count	0	1		0		0	1
			% of Total	,0%	5,3%		,0%		,0%	5,3%
		Education	Count	0	5		2		1	8
			% of Total	,0%	26,3%		10,5%		5,3%	42,1%
		Travail	Count	1	4		0		1	6
			% of Total	5,3%	21,1%		,0%		5,3%	31,6%
		Assistance familiale	Count	0	2		0		0	2
			% of Total	,0%	10,5%		,0%		,0%	10,5%
		Marriage	Count	0	2		0		0	2
			% of Total	,0%	10,5%		,0%		,0%	10,5%
		Total	Count	1	14		2		2	19
			% of Total	5,3%	73,7%		10,5%		10,5%	100,0%
Village in same district	Reasons for leaving	Education	Count	3	7	0	0	0		10
			% of Total	9,7%	22,6%	,0%	,0%	,0%		32,3%
		Travail	Count	2	2	0	0	0		4
			% of Total	6,5%	6,5%	,0%	,0%	,0%		12,9%
		Assistance familiale	Count	0	5	0	0	0		5
			% of Total	,0%	16,1%	,0%	,0%	,0%		16,1%
		Marriage	Count	0	7	1	2	2		12
			% of Total	,0%	22,6%	3,2%	6,5%	6,5%		38,7%
		Total	Count	5	21	1	2	2		31
			% of Total	16,1%	67,7%	3,2%	6,5%	6,5%		100,0%
Town/city	Reasons for leaving	Education	Count	2	25	5	0	1	0	33
			% of Total	1,8%	22,9%	4,6%	,0%	,9%	,0%	30,3%
		Travail	Count	11	27	11	1	3	2	55
			% of Total	10,1%	24,8%	10,1%	,9%	2,8%	1,8%	50,5%
		Assistance familiale	Count	0	3	1	0	1	1	6
			% of Total	,0%	2,8%	,9%	,0%	,9%	,9%	5,5%
		Marriage	Count	2	9	1	2	0	1	15
			% of Total	1,8%	8,3%	,9%	1,8%	,0%	,9%	13,8%
		Total	Count	15	64	18	3	5	4	109

			% of Total	13,8%	58,7%	16,5%	2,8%	4,6%	3,7%	100,0%
Abroad	Reasons for leaving	Travail	Count	3	7	2	2		1	15
			% of Total	17,6%	41,2%	11,8%	11,8%		5,9%	88,2%
		Assistance familiale	Count	0	1	0	0		0	1
			% of Total	,0%	5,9%	,0%	,0%		,0%	5,9%
		Marriage	Count	0	1	0	0		0	1
			% of Total	,0%	5,9%	,0%	,0%		,0%	5,9%
	Total		Count	3	9	2	2		1	17
			% of Total	17,6%	52,9%	11,8%	11,8%		5,9%	100,0%

Time dimension	Spatial pattern					
	Rural-rural	%	Rural-urban	%	Urban-rural	Urban-urban
Commuting	Commerce/ business	2,5	Commerce/ business	22,5	Work	
	Work/agriculture	13,6	Work	18,6		
	To buy inputs		To buy inputs			
	Education	48,9	Education	22,9		
Periodic /short term	Commerce/ business	15	Commerce/ business	35	Agriculture	
	Work/agriculture	13,6	Work/agriculture	33,9		
	To buy inputs	0,0	To buy inputs	100		
Long term	Education	27,6	Education	62,6	Agriculture Education	
	Work	44,5	Work	63,4		
	Marriages	49,2	Marriages	19,7	Domestic Services	
	Social assistance	19,6	Social assistance	11,4	Bank/Trade/co	

					computer	
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## 10. PLOTS

### 10.1 What is the average size of landholdings per household (indicate max and min size)?

#### Statistics<sup>a</sup>

Estimated area/ha

N		Mean	Minimum	Maximum	Sum
Valid	Missing				
128	227	1,0195	,01	5,00	130,49

a. Respondent group = Rice producers

#### Statistics<sup>a</sup>

Estimated area/ha

N		Mean	Minimum	Maximum	Sum
Valid	Missing				
174	457	1,2316	,01	9,00	214,30

a. Respondent group = Non-producers

### 10.2. Make a frequency diagram or a table of total estimated land (acres) per household divided in 0<1, 1<2, 2<3,.....9<10, 10<15, 15<20, 20<25, 25<30,.....

estimated area new <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than1 ha	34	9,6	54,8	54,8
	1-2	21	5,9	33,9	88,7
	2-3	5	1,4	8,1	96,8
	3-4	1,3		1,6	98,4
	8-9	1,3		1,6	100,0
	Total	62	17,5	100,0	
Missing	System	293	82,5		
Total		355	100,0		
a. Respondent group = Rice producers					



estimated area new <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than1 ha	79	12,5	56,8	56,8
	1-2	54	8,6	38,8	95,7
	2-3	1	,2	,7	96,4
	3-4	2	,3	1,4	97,8
	4-5	2	,3	1,4	99,3
	7-8	1	,2	,7	100,0
	Total	139	22,0	100,0	
Missing	System	492	78,0		
Total		631	100,0		
a. Respondent group = Non-producers					

### 10.3 What is the average number of plots (indicate max and min number)?

#### Statistics<sup>a</sup>

Number of plots per household

N		Mean	Minimum	Maximum	Sum
Valid	Missing				
98	257	2,9592	,00	6,00	290,00

a. Respondent group = Rice producers

#### Statistics<sup>a</sup>

Number of plots per household

N		Mean	Minimum	Maximum	Sum
Valid	Missing				
103	528	1,7476	,00	4,00	180,00

a. Respondent group = Non-producers

### 10.4 What is the average size and share of cultivated land in total land use?

#### Statistics<sup>a</sup>

Estimated area/ha

N		Mean	Minimum	Maximum	Sum
Valid	Missing				
128	227	1,0195	,01	5,00	130,49

a. Respondent group = Rice producers

#### Statistics<sup>a</sup>

Estimated area/ha

N		Mean	Minimum	Maximum	Sum
Valid	Missing				
174	457	1,2316	,01	9,00	214,30

a. Respondent group = Non-producers

### 10.5 Describe in your own words the data on the perceived distance to plots

### 10.6 What is the dominant form of land tenure (calculate the shares on aggregate level and list notable 'outliers' at household level)?

Land use <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	4	1,1	1,2	1,2
	Cultivated	135	38,0	40,8	42,0
	Pasture	1,3	,3		42,3
	Not applicable	191	53,8	57,7	100,0
	Total	331	93,2	100,0	
Missing	System	24	6,8		
Total		355	100,0		
a. Respondent group = Rice producers					

Land use <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	1,2	,2	,2	,2
	Cultivated	183	29,0	43,6	43,8
	Fallow	2,3	,5		44,3
	Other(specify)	1,2	,2		44,5
	Not applicable	233	36,9	55,5	100,0

	Total	420	66,6	100,0	
Missing	System	211	33,4		
Total		631	100,0		
a. Respondent group = Non-producers					

**10.7 Which inputs are used on plots with the specific (emerging/booming) crop and other major crops (select what is most relevant). Check for all inputs.**

**Respondent group = Rice producers**

Statistics <sup>a</sup>							
		Inputs Bought seeds	Inputs Inorganic fertilizer	Inputs Organic fertilizer	Inputs Pest/herbicides	Inputs Irrigation	Inputs Other(specify)
N	Valid	114	120	113	88	69	4
	Missing	241	235	242	267	286	351
a. Respondent group = Rice producers							

#### Frequency Table

Inputs Bought seeds <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	75	21,1	65,8	65,8
	Inorganic fertilizer	39	11,0	34,2	100,0
	Total	114	32,1	100,0	
Missing	0	34	9,6		
	99	207	58,3		
	Total	241	67,9		
Total		355	100,0		
a. Respondent group = Rice producers					

Inputs Inorganic fertilizer <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	8	2,3	6,7	6,7
	Inorganic fertilizer	112	31,5	93,3	100,0
	Total	120	33,8	100,0	
Missing	0	34	9,6		
	99	201	56,6		
	Total	235	66,2		
Total		355	100,0		
a. Respondent group = Rice producers					
Inputs Organic fertilizer <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	62	17,5	54,9	54,9
	Inorganic fertilizer	1,3	,9		55,8
	Organic fertilizer	50	14,1	44,2	100,0
	Total	113	31,8	100,0	
Missing	0	33	9,3		
	99	209	58,9		
	Total	242	68,2		
Total		355	100,0		

a. Respondent group = Rice producers

Inputs Pest/herbicides <sup>a</sup>
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		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	52	14,6	59,1	59,1
	Inorganic fertilizer	9	2,5	10,2	69,3
	Pesticide/herbicide	27	7,6	30,7	100,0
	Total	88	24,8	100,0	
Missing	0	34	9,6		
	99	233	65,6		
	Total	267	75,2		
Total		355	100,0		
a. Respondent group = Rice producers					

Inputs Irrigation <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	63	17,7	91,3	91,3
	Irrigation	6	1,7	8,7	100,0
	Total	69	19,4	100,0	
Missing	0	40	11,3		
	99	246	69,3		
	Total	286	80,6		
Total		355	100,0		
a. Respondent group = Rice producers					

Inputs Other(specify) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other(specify)	4	1,1	100,0	100,0
Missing	0	103	29,0		
	99	248	69,9		
	Total	351	98,9		
Total		355	100,0		
a. Respondent group = Rice producers					

**Respondent group = Non-producers**

Statistics <sup>a</sup>							
		Inputs Bought seeds	Inputs Inorganic fertilizer	Inputs Organic fertilizer	Inputs Pest/herbicides	Inputs Irrigation	Inputs Other(specify)
N	Valid	125	129	152	54	6	1
	Missing	506	502	479	577	625	630
a. Respondent group = Non-producers							

Inputs Bought seeds <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	125	19,8	100,0	100,0
Missing	0	245	38,8		
	99	261	41,4		

	Total	506	80,2		
Total		631	100,0		
a. Respondent group = Non-producers					

Inputs Inorganic fertilizer <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Inorganic fertilizer	129	20,4	100,0	100,0
Missing	0	245	38,8		
	99	257	40,7		
	Total	502	79,6		
Total		631	100,0		
a. Respondent group = Non-producers					

Inputs Organic fertilizer <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	1,2	,7	,7	
	Organic fertilizer	151	23,9	99,3	100,0
	Total	152	24,1	100,0	
Missing	0	224	35,5		
	99	255	40,4		
	Total	479	75,9		
Total		631	100,0		

Inputs Organic fertilizer <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	1	,2	,7	,7
	Organic fertilizer	151	23,9	99,3	100,0
	Total	152	24,1	100,0	
Missing	0	224	35,5		
	99	255	40,4		
	Total	479	75,9		
a. Respondent group = Non-producers					

Inputs Pest/herbicides <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bought seeds	2	,3	3,7	3,7
	Pesticide/herbicide	52	8,2	96,3	100,0
	Total	54	8,6	100,0	
Missing	0	266	42,2		
	99	311	49,3		
	Total	577	91,4		
Total		631	100,0		
a. Respondent group = Non-producers					

Inputs Irrigation <sup>a</sup>
--------------------------------



		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Irrigation	6	1,0	100,0	100,0
Missing	0	305	48,3		
	99	320	50,7		
	Total	625	99,0		
Total		631	100,0		
a. Respondent group = Non-producers					

Inputs Other(specify) <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other(specify)	1,2		100,0	100,0
Missing	0	307	48,7		
	99	323	51,2		
	Total	630	99,8		
Total		631	100,0		
a. Respondent group = Non-producers					

#### 10.7 What is the share of households that use these inputs?

share of households that use inputs <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	3	3,0	3,0	3,0
	Use inputs	97	97,0	97,0	100,0
	Total	100	100,0	100,0	
a. Respondent group = Rice producers					

share of households that use inputs <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	1	1,0	1,0	1,0
	Use inputs	99	99,0	99,0	100,0
	Total	100	100,0	100,0	
a. Respondent group = Non-producers					

**10.8 What is the proportion of plots with only family labour? Is there any connection between use of cultivated plot and use of only family labour?**

**10.8.1 What is the proportion of plots with only family labour?**

Types of labour <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	6	1,7	1,8	1,8
	Family labour	16	4,5	4,9	6,7
	Other	112	31,5	34,1	40,9
	99	194	54,6	59,1	100,0
	Total	328	92,4	100,0	
Missing	System	27	7,6		
Total		355	100,0		

a. Respondent group = Rice producers

Types of labour <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	6	1,7	1,8	1,8
	Family labour	16	4,5	4,9	6,7
	Other	112	31,5	34,1	40,9
	99	194	54,6	59,1	100,0
	Total	328	92,4	100,0	
Missing	System	27	7,6		
Total		355	100,0		

a. Respondent group = Rice producers

### 10.8.2 Is there any connection between use of cultivated plot and use of only family labour?

**Chi-Square Tests<sup>b</sup>**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	464,054 <sup>a</sup>	9	,000
Likelihood Ratio	389,024	9	,000
Linear-by-Linear Association	291,188	1	,000
N of Valid Cases	328		

a. 10 cells (62,5%) have expected count less than 5. The minimum expected count is ,02.

b. Respondent group = Rice producers

**Symmetric Measures<sup>d</sup>**

	Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Nominal by Nominal Phi	1,189			,000
Cramer's V	,687			,000
Interval by Interval Pearson's R	,944	,018	51,485	,000 <sup>c</sup>
Ordinal by Ordinal Spearman Correlation	,928	,018	44,859	,000 <sup>c</sup>
N of Valid Cases	328			

a. Not assuming the null hypothesis.

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

c. Based on normal approximation.

d. Respondent group = Rice producers

**Chi-Square Tests<sup>b</sup>**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	568,122 <sup>a</sup>	12	,000
Likelihood Ratio	469,132	12	,000
Linear-by-Linear Association	357,528	1	,000
N of Valid Cases	419		

a. 16 cells (80,0%) have expected count less than 5. The minimum expected count is ,00.

**Chi-Square Tests<sup>b</sup>**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	568,122 <sup>a</sup>	12	,000
Likelihood Ratio	469,132	12	,000
Linear-by-Linear Association	357,528	1	,000
N of Valid Cases	419		

a. 16 cells (80,0%) have expected count less than 5. The minimum expected count is ,00.

b. Respondent group = Non-producers

**Symmetric Measures<sup>d</sup>**

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Nominal by Nominal	Phi	1,164			,000
	Cramer's V	,672			,000
Interval by Interval	Pearson's R	,925	,018	49,653	,000 <sup>c</sup>
Ordinal by Ordinal	Spearman Correlation	,922	,017	48,530	,000 <sup>c</sup>
N of Valid Cases		419			
a. Not assuming the null hypothesis.					
b. Using the asymptotic standard error assuming the null hypothesis.					
c. Based on normal approximation.					
d. Respondent group = Non-producers					

## 11. LIVESTOCK

**11.1 What is the average number of different types of livestock per household (indicate max and min number)?**

**Respondent group = Rice producers**

**Statistics<sup>a</sup>**

	Number of cattle	Number of pigs	Number of sheep	Number of goats	Number of chicken	Number of other	Number of rabbits	Number of guinea pig	Number of domestic pets
--	------------------	----------------	-----------------	-----------------	-------------------	-----------------	-------------------	----------------------	-------------------------

N	Valid	100	100	100	100	100	100	100	100	100
	Missi ng	0	0	0	0	0	0	0	0	0

a. Respondent group = Rice  
producers

Number of cattle <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	92	92,0	92,0	92,0
	1	3	3,0	3,0	95,0
	2	1	1,0	1,0	96,0
	3	1	1,0	1,0	97,0
	4	2	2,0	2,0	99,0
	12	1	1,0	1,0	100,0
	Total	100	100,0	100,0	
a. Respondent group = Rice producers					

Number of pigs <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	98	98,0	98,0	98,0
	2	1	1,0	1,0	99,0
	3	1	1,0	1,0	100,0
	Total	100	100,0	100,0	
a. Respondent group = Rice producers					

Number of sheep <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	93	93,0	93,0	93,0
	2	1	1,0	1,0	94,0
	3	3	3,0	3,0	97,0
	4	1	1,0	1,0	98,0
	6	2	2,0	2,0	100,0
	Total	100	100,0	100,0	
a. Respondent group = Rice producers					

Number of goats <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	94	94,0	94,0	94,0
	3	3	3,0	3,0	97,0
	4	1	1,0	1,0	98,0
	6	1	1,0	1,0	99,0
	12	1	1,0	1,0	100,0
	Total	100	100,0	100,0	
a. Respondent group = Rice producers					

Number of chicken <sup>a</sup>
--------------------------------

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	87	87,0	87,0	87,0
	3	1	1,0	1,0	88,0
	5	2	2,0	2,0	90,0
	6	1	1,0	1,0	91,0
	15	2	2,0	2,0	93,0
	18	1	1,0	1,0	94,0
	20	3	3,0	3,0	97,0
	23	1	1,0	1,0	98,0
	30	1	1,0	1,0	99,0
	50	1	1,0	1,0	100,0
	Total	100	100,0	100,0	
a. Respondent group = Rice producers					

**Number of other<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Rice producers

Number of rabbits <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0
a. Respondent group = Rice producers					

**Number of guinea pig<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Rice producers

**Number of domestic pets<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Rice producers

**Respondant group = Non-producers**

<b>Number of cattle<sup>a</sup></b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	95	95,0	95,0	95,0
	2	1	1,0	1,0	96,0
	6	1	1,0	1,0	97,0
	7	1	1,0	1,0	98,0
	22	1	1,0	1,0	99,0
	43	1	1,0	1,0	100,0
	Total	100	100,0	100,0	
a. Respondent group = Non-producers					

**Number of pigs<sup>a</sup>**



		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	95	95,0	95,0	95,0
	1	1	1,0	1,0	96,0
	6	1	1,0	1,0	97,0
	9	1	1,0	1,0	98,0
	10	1	1,0	1,0	99,0
	25	1	1,0	1,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Non-producers

#### Number of sheep<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	90	90,0	90,0	90,0
	2	1	1,0	1,0	91,0
	4	1	1,0	1,0	92,0
	5	2	2,0	2,0	94,0
	6	1	1,0	1,0	95,0
	7	1	1,0	1,0	96,0
	10	1	1,0	1,0	97,0
	12	1	1,0	1,0	98,0
	15	2	2,0	2,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Non-producers

Number of goats <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	82	82,0	82,0	82,0
	1	1	1,0	1,0	83,0
	2	3	3,0	3,0	86,0
	3	4	4,0	4,0	90,0
	4	1	1,0	1,0	91,0
	5	4	4,0	4,0	95,0
	6	1	1,0	1,0	96,0
	8	1	1,0	1,0	97,0
	10	1	1,0	1,0	98,0
	12	1	1,0	1,0	99,0
	25	1	1,0	1,0	100,0
	Total	100	100,0	100,0	
a. Respondent group = Non-producers					

**Number of chicken<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	73	73,0	73,0	73,0
	1	2	2,0	2,0	75,0
	2	4	4,0	4,0	79,0
	5	2	2,0	2,0	81,0
	6	2	2,0	2,0	83,0

7	1	1,0	1,0	84,0
8	1	1,0	1,0	85,0
9	1	1,0	1,0	86,0
10	4	4,0	4,0	90,0
12	1	1,0	1,0	91,0
15	1	1,0	1,0	92,0
16	2	2,0	2,0	94,0
20	1	1,0	1,0	95,0
30	1	1,0	1,0	96,0
35	1	1,0	1,0	97,0
36	1	1,0	1,0	98,0
38	1	1,0	1,0	99,0
2500	1	1,0	1,0	100,0
Total	100	100,0	100,0	

a. Respondent group = Non-producers

**Number of other<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	97	97,0	97,0	97,0
	1	2	2,0	2,0	99,0
	6	1	1,0	1,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Non-producers

### Number of rabbits<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	99	99,0	99,0	99,0
	20	1	1,0	1,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Non-producers

### Number of guinea pig<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Non-producers

### Number of domestic pets<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	99	99,0	99,0	99,0
	20	1	1,0	1,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Non-producers

**11.2 How is the use of animal products distributed per type of livestock (give narrative interpretation of the importance of subsistence relative to market production)?**

**Respondent group = Rice producers**

### Statistics<sup>a</sup>

		Use of cattle products	Use of pig products	Use of sheep products	Use of goat products	Use of chicken products	Use of other products	Use of rabbit products	use of guinea pig products	Use of domestic pet products
N	Valid	100	100	100	100	100	100	100	100	100
	Missi ng	0	0	0	0	0	0	0	0	0

a. Respondent group = Rice  
producers

#### Use of cattle products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	99	99,0	99,0	99,0
	Both	1	1,0	1,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Rice producers

#### Use of pig products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	99	99,0	99,0	99,0
	Sale	1	1,0	1,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Rice producers

#### Use of sheep products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
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Valid	No answer	99	99,0	99,0	99,0
	Subsistence	1	1,0	1,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Rice producers

#### Use of goat products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Rice producers

#### Use of chicken products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	98	98,0	98,0	98,0
	Subsistence	2	2,0	2,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Rice producers

#### Use of other products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Rice producers

#### Use of rabbit products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
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Valid	No answer	100	100,0	100,0	100,0
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a. Respondent group = Rice producers

#### use of guinea pig products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Rice producers

#### Use of domestic pet products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Rice producers

**Respondent group = Non-producers**

#### Statistics<sup>a</sup>

		Use of cattle products	Use of pig products	Use of sheep products	Use of goat products	Use of chicken products	Use of other products	Use of rabbit products	use of guinea pig products	Use of domestic pet products
N	Valid	100	100	100	100	100	100	100	100	100
	Missing	0	0	0	0	0	0	0	0	0

a. Respondent group = Non-producers

#### Use of cattle products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
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Valid	No answer	98	98,0	98,0	98,0
	Subsistence	1	1,0	1,0	99,0
	Both	1	1,0	1,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Non-producers

#### Use of pig products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	95	95,0	95,0	95,0
	Both	5	5,0	5,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Non-producers

#### Use of sheep products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	98	98,0	98,0	98,0
	Both	2	2,0	2,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Non-producers

#### Use of goat products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	91	91,0	91,0	91,0
	Subsistence	2	2,0	2,0	93,0



Sale	1	1,0	1,0	94,0
Both	6	6,0	6,0	100,0
Total	100	100,0	100,0	

a. Respondent group = Non-producers

#### Use of chicken products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	85	85,0	85,0	85,0
	Subsistence	6	6,0	6,0	91,0
	Sale	1	1,0	1,0	92,0
	Both	8	8,0	8,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Non-producers

#### Use of other products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	98	98,0	98,0	98,0
	Subsistence	2	2,0	2,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Non-producers

#### Use of rabbit products<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

**Statistics<sup>a</sup>**

		Use of cattle products	Use of pig products	Use of sheep products	Use of goat products	Use of chicken products	Use of other products	Use of rabbit products	use of guinea pig products	Use of domestic pet products
N	Valid	100	100	100	100	100	100	100	100	100
	Missing	0	0	0	0	0	0	0	0	0

a. Respondent group = Non-producers

**use of guinea pig products<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Non-producers

**Use of domestic pet products<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Non-producers

**12. CHANGES IN SIZE AND TENURE OF LAND (FORM C-2)**

**12.1 & 12.2 What is the proportion of households that have experienced overall increase/decrease in the size of their landholdings**

**Frequency Table**

**Frequency Table**

**Land tenure(Owned by HH)change<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	63	63,0	63,0	63,0
	Decreased	2	2,0	2,0	65,0
	Same	25	25,0	25,0	90,0
	Increased	10	10,0	10,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Rice producers

**Land tenure(Rented)change<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	97	97,0	97,0	97,0
	Decreased	1	1,0	1,0	98,0
	Same	2	2,0	2,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Rice producers

**Land tenure(Borrowed) change<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Rice producers

**Land tenure(Community land)change<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Rice producers

**Land tenure(State land)change<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Rice producers

**Land tenure (other) change<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Rice producers

**Respondent group = Non-producers**

**Land tenure(Owned by HH)change<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	12	12,0	12,0	12,0
	Decreased	7	7,0	7,0	19,0
	Same	69	69,0	69,0	88,0
	Increased	12	12,0	12,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Non-producers

**Land tenure(Rented)change<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	90	90,0	90,0	90,0
	Decreased	2	2,0	2,0	92,0
	Same	6	6,0	6,0	98,0
	Increased	2	2,0	2,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Non-producers

**Land tenure(Borrowed) change<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Non-producers

**Land tenure(Community land)change<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Non-producers

**Land tenure(State land)change<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Non-producers

**Land tenure (other) change<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Non-producers

**12.3 & 12.4 what is the average size of the increase (list notable outliers) and what is the average size of the decrease (list notable outliers)?**

In the field, we didn't ask this question. It is why we could not give real answer.

**12.5 Give a narrative account of the distribution of the increase and decrease per type of tenure. Are there any general reasons for either increases or decreases of landholdings under different types of tenure? Or is it highly individualized? Give examples.**

**Frequency Table**

Land tenure(Owned by HH)change Why? <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	65	65,0	65,0	65,0
	Limited means/insufficient means/limited possibility/limited support	14	14,0	14,0	79,0
	Increase in production/increase in revenue	5	5,0	5,0	84,0
	Increase in farm size/bought a new farm	2	2,0	2,0	86,0
	Old age/ill health/insufficient force	1	1,0	1,0	87,0
	Limited space	7	7,0	7,0	94,0
	Family good/heritage/fragmentation	1	1,0	1,0	95,0
	Family charges	2	2,0	2,0	97,0
	No need to add/satisfied with production	2	2,0	2,0	99,0
	Other	1	1,0	1,0	100,0

Land tenure(Owned by HH)change Why? <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	65	65,0	65,0	65,0
	Limited means/insufficient means/limited possibility/limited support	14	14,0	14,0	79,0
	Increase in production/increase in revenue	5	5,0	5,0	84,0
	Increase in farm size/bought a new farm	2	2,0	2,0	86,0
	Old age/ill health/insufficient force	1	1,0	1,0	87,0
	Limited space	7	7,0	7,0	94,0
	Family good/heritage/fragmentation	1	1,0	1,0	95,0
	Family charges	2	2,0	2,0	97,0
	No need to add/satisfied with production	2	2,0	2,0	99,0
	Other	1	1,0	1,0	100,0
	Total	100	100,0	100,0	
a. Respondent group = Rice producers					

Land tenure(Rented)change Why? <sup>a</sup>				
		Frequency	Percent	Cumulative Percent
Valid	No answer	99	99,0	99,0
	Limited means/insufficient means/limited possibility/limited support	1	1,0	100,0

**Land tenure(Rented)change Why?<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	99	99,0	99,0	99,0
	Limited means/insufficient means/limited possibility/limited support	1	1,0	1,0	100,0
	Total	100	100,0	100,0	

a. Respondent group = Rice producers

**Land tenure(Borrowed) change Why?<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Rice producers

**Land tenure(Community land)change Why?<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Rice producers

**Land tenure(State land)change Why?<sup>a</sup>**



		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Rice producers

#### Land tenure (other) change Why?<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Rice producers

**Respondent group = Non-producers**

#### Statistics<sup>a</sup>

		Land tenure(Owned by HH)change Why?	Land tenure(Rented)change Why?	Land tenure(Borrowed) change Why?	Land tenure(Community land)change Why?	Land tenure(State land)change Why?	Land tenure (other) change Why?
N	Valid	100	100	100	100	100	100
	Missing	0	0	0	0	0	0

a. Respondent group = Non-producers

#### Frequency Table

Land tenure(Owned by HH)change Why? <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	17	17,0	17,0	17,0
	Limited time	2	2,0	2,0	19,0
	Limited means/insufficient means/limited possibility/limited support	29	29,0	29,0	48,0
	Increase in production/increase in revenue	6	6,0	6,0	54,0
	Increase in farm size/bought a new farm	4	4,0	4,0	58,0
	Old age/ill health/insufficient force	1	1,0	1,0	59,0
	Limited space	22	22,0	22,0	81,0
	Family good/heritage/fragmentation	6	6,0	6,0	87,0
	Family charges	2	2,0	2,0	89,0
	Theft	1	1,0	1,0	90,0
	Limited labour force/departure of children	2	2,0	2,0	92,0
	No need to add/satisfied with production	4	4,0	4,0	96,0
	Sickness	1	1,0	1,0	97,0
	Other	3	3,0	3,0	100,0
	Total	100	100,0	100,0	
a. Respondent group = Non-producers					
Land tenure(Rented)change Why? <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	90	90,0	90,0	90,0
	Limited time	1	1,0	1,0	91,0

	Limited means/insufficient means/limited possibility/limited support	4	4,0	4,0	95,0
	Regular work	1	1,0	1,0	96,0
	Increase in production/increase in revenue	1	1,0	1,0	97,0
	Limited space	1	1,0	1,0	98,0
	No need to add/satisfied with production	1	1,0	1,0	99,0
	Other	1	1,0	1,0	100,0
	Total	100	100,0	100,0	
a. Respondent group = Non-producers					

**Land tenure(Borrowed) change Why?<sup>a</sup>**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No answer	99	99,0	99,0	99,0
Limited space	1	1,0	1,0	100,0
Total	100	100,0	100,0	

a. Respondent group = Non-producers

**Land tenure(Community land)change Why?<sup>a</sup>**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No answer	100	100,0	100,0	100,0

**Land tenure(Community land)change Why?<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Non-producers

**Land tenure(State land)change Why?<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Non-producers

**Land tenure (other) change Why?<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	100	100,0	100,0	100,0

a. Respondent group = Non-producers

**13. CROP OUTPUT**

**13.1 What is the average size of planted area (household level) of the main crops (list also min and max size)**

**Statistics**

	N		Mean	Minimum	Maximum	Sum
	Valid	Missing				

Size of other crops planted	250	1614,9193	,00	9,00	229,82
Size of rise planted	95	1769,9242	,12	5,00	87,80

**13.2 How much varies the productivity between households and what is the average productivity for each of the major crops (combine data for area planted and production per year)?**

**Statistics<sup>a</sup>**

Total production per year

N		Mean	Minimum	Maximum	Sum
Valid	Missing				
61	294	3,4822	,08	32,90	212,41

a. Respondent group = Rice producers

**Statistics<sup>a</sup>**

Total production per year

N		Mean	Minimum	Maximum	Sum
Valid	Missing				
92	539	1,5267	,01	20,62	140,45

a. Respondent group = Non-producers

**13.3 Give a narrative account of the differences (per crop) in the importance of subsistence production and production for the market. Does the data allow for a sensible quantitative statement of the importance?**

**13.4 What is the average price (listed per crop) and what are the averages of the lowest and highest prices? Does the span between highest and lowest price differ among respondents?**

Statistics						
	N		Mean	Minimum	Maximum	Sum
	Valid	Missing				
Crop lowest price (maize)	85	32	176967,5294	4000,00	2038040,00	15042240,00
Crop lowest price (Bean)	56	61	369277,7857	12000,00	728000,00	20679556,00
Crop lowest price (plantain)	5	112	60300,0000	1500,00	150000,00	301500,00
Crop lowest price (cassava)	24	93	261889,8333	36400,00	1456000,00	6285356,00

Crop lowest price (potato)	6	111	327600,0000	36400,00	728000,00	1965600,00
Crop lowest price (rice)	96	21	126564,5833	80000,00	655200,00	12150200,00
Crop lowest price (others)	20	97	165238,0000	1500,00	436800,00	3304760,00
Crop lowest price (green bean)	10	107	191600,0000	15000,00	500000,00	1916000,00
Crop lowest price (tomato)	13	104	120669,2308	18200,00	364000,00	1568700,00

#### Statistics

	N		Mean	Minimum	Maximum	Sum
	Valid	Missing				
Crop highest price (maize)	85	32	274879,6706	4000,00	655200,00	23364772,00
Crop highest price (Bean)	55	62	605833,3818	12000,00	1019200,00	33320836,00
Crop highest price (plantain)	5	112	166000,0000	5000,00	300000,00	830000,00
Crop highest price (cassava)	24	93	304785,4167	4000,00	1545454,00	7314850,00
Crop highest price (potato)	6	111	184500,0000	72800,00	582400,00	1107000,00
Crop highest price (rice)	96	21	177895,8333	100000,00	728000,00	17078000,00
Crop highest price (green vegetable)	20	97	336437,5000	50000,00	500000,00	6728750,00
Crop highest price (others)	20	97	618300,6000	3500,00	5811400,00	12366012,00
Crop highest price (green bean)	10	107	274000,0000	100000,00	700000,00	2740000,00
Crop highest price (tomato)	13	104	260200,0000	114200,00	728000,00	3382600,00

**13.5 Is the use of hired labour prevalent in the production of the different major crops? If so, is there a particular type (migrant/local) who dominates? And is labour only hired for specific tasks?**

**Use of local labour<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	2	,4	,4	,4
	Yes	555	99,6	99,6	100,0
	Total	557	100,0	100,0	

a. Respondent group = Rice producers

#### Use of local labour<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	3	,2	,2	,2
	Yes	1297	99,8	99,8	100,0
	Total	1300	100,0	100,0	

a. Respondent group = Non-producers

**13.6 For the specific (booming) crop: is there an identifiable pattern in the 'location' of the crop purchase?**

13.7 For the specific (booming) crop: is there an identifiable pattern in the buyer type?

#### Farm gate<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other farmer/villager	13	3,7	21,3	21,3
	Local trader	48	13,5	78,7	100,0
	Total	61	17,2	100,0	
Missing	99	144	40,6		
	System	150	42,3		
	Total	294	82,8		

**Farm gate<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other farmer/villager	13	3,7	21,3	21,3
	Local trader	48	13,5	78,7	100,0
	Total	61	17,2	100,0	
Missing	99	144	40,6		
	System	150	42,3		
	Total	294	82,8		
Total		355	100,0		

a. Respondent group = Rice producers

**Market<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other farmer/villager	30	8,5	60,0	60,0
	Local trader	20	5,6	40,0	100,0
	Total	50	14,1	100,0	
Missing	0	1,3			
	99	150	42,3		
	System	154	43,4		
	Total	305	85,9		
Total		355	100,0		

a. Respondent group = Rice producers



**Company gate<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other farmer/villager	4	1,1	10,5	10,5
	Farmer organisation	23	6,5	60,5	71,1
	Cooperative	3	,8	7,9	78,9
	Local trader	8	2,3	21,1	100,0
	Total	38	10,7	100,0	
Missing	99	144	40,6		
	System	173	48,7		
	Total	317	89,3		
Total		355	100,0		

a. Respondent group = Rice producers

**Farmer organisation<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other farmer/villager	8	2,3	33,3	33,3
	Farmer organization	11	3,1	45,8	79,2
	Cooperative	1	,3	4,2	83,3
	Local trader	4	1,1	16,7	100,0
	Total	24	6,8	100,0	
Missing	99	154	43,4		

System	177	49,9		
Total	331	93,2		
Total	355	100,0		

a. Respondent group = Rice producers

**Respondent group = Non-producers**

**Statistics<sup>a</sup>**

	Farm gate	Market	Company gate	Farmer organisation
N Valid	83	156	52	13
Missing	548	475	579	618
Mean	3,1446	3,4103	4,6731	1,1538
Minimum	1,00	1,00	2,00	1,00
Maximum	4,00	5,00	6,00	3,00
Sum	261,00	532,00	243,00	15,00

a. Respondent group = Non-producers

**Farm gate<sup>a</sup>**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Other farmer/villager	23	3,6	27,7	27,7
Farmer organization	1,2		1,2	28,9
Local trader	59	9,4	71,1	100,0
Total	83	13,2	100,0	

Missing	99	63	10,0		
	System	485	76,9		
	Total	548	86,8		
Total		631	100,0		

a. Respondent group = Non-producers

#### Market<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other farmer/villager	14	2,2	9,0	9,0
	Farmer organization	31	4,9	19,9	28,8
	Cooperative	2	,3	1,3	30,1
	Local trader	95	15,1	60,9	91,0
	Company	14	2,2	9,0	100,0
	Total	156	24,7	100,0	
Missing	System	475	75,3		
Total		631	100,0		

a. Respondent group = Non-producers

#### Company gate<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Farmer organization	5	,8	9,6	9,6

	Cooperative	2,3		3,8	13,5
	Company	43	6,8	82,7	96,2
	Other	2,3		3,8	100,0
	Total	52	8,2	100,0	
Missing	99	14	2,2		
	System	565	89,5		
	Total	579	91,8		
Total		631	100,0		

a. Respondent group = Non-producers

**Farmer organisation<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other farmer/villager	12	1,9	92,3	92,3
	Cooperative	1,2		7,7	100,0
	Total	13	2,1	100,0	
Missing	99	63	10,0		
	System	555	88,0		
	Total	618	97,9		
Total		631	100,0		

a. Respondent group = Non-producers

#### 14. CHANGES IN CROPS (FORM C-4)

14.1 Et 14.2 What is the proportion of households that have experienced overall increase in the land allocated for each of the main crops and What is the proportion of households that have experienced overall decrease in the land allocated for each of the main crops?

Land allocated<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	8	1,4	5,6	5,6
	Less	1,2	,7		6,3
	Same	109	19,6	76,2	82,5
	More	25	4,5	17,5	100,0
	Total	143	25,7	100,0	
Missing	99	414	74,3		
Total		557	100,0		

a. Respondent group = Rice producers

Land allocated<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	5,4		1,3	1,3
	Less	51	3,9	13,4	14,7
	Same	258	19,8	67,7	82,4
	More	67	5,2	17,6	100,0
	Total	381	29,3	100,0	
Missing	99	371	28,5		
	System	548	42,2		
	Total	919	70,7		
Total		1300	100,0		

a. Respondent group = Non-producers

14.3 For each crop, what is the share of households who now have higher (or lower) expenditures on labour? Same question for non-labour inputs.

**Use of inputs(labour)<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	7	1,3	4,8	4,8
	Less	7	1,3	4,8	9,5
	Same	74	13,3	50,3	59,9
	More	59	10,6	40,1	100,0
	Total	147	26,4	100,0	
Missing	99	410	73,6		
Total		557	100,0		

a. Respondent group = Rice producers

**Use of inputs(labour)<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	7,5		2,0	2,0
	Less	63	4,8	17,6	19,6
	Same	179	13,8	50,0	69,6
	More	109	8,4	30,4	100,0
	Total	358	27,5	100,0	
Missing	99	372	28,6		
	System	570	43,8		
	Total	942	72,5		
Total		1300	100,0		

a. Respondent group = Non-producers

**14.4Has subsistence production (own consumption) increased or decreased (list share of households)? Same question for production for sale.**

**14.4.1Has subsistence production (own consumption) increased or decreased (list share of households)?**

**Crop output consumption<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	49	8,8	36,0	36,0
	Same	30	5,4	22,1	58,1
	More	57	10,2	41,9	100,0
	Total	136	24,4	100,0	
Missing	0	8	1,4		
	99	413	74,1		
	Total	421	75,6		
Total		557	100,0		

a. Respondent group = Rice producers

Crop output consumption <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	87	6,7	23,0	23,0
	Same	118	9,1	31,1	54,1
	More	174	13,4	45,9	100,0
	Total	379	29,2	100,0	
Missing	0	3	,2		
	99	374	28,8		
	System	544	41,8		
	Total	921	70,8		
Total		1300	100,0		
a. Respondent group = Non-producers					

#### 14.4.2 Same question for production for sale.

Crop output sale <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	43	7,7	32,6	32,6
	Same	25	4,5	18,9	51,5
	More	64	11,5	48,5	100,0

	Total	132	23,7	100,0	
Missing	0	7	1,3		
	99	418	75,0		
	Total	425	76,3		
Total		557	100,0		
a. Respondent group = Rice producers					

Crop output sale <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less	116	8,9	31,3	31,3
	Same	119	9,2	32,1	63,3
	More	136	10,5	36,7	100,0
	Total	371	28,5	100,0	
Missing	0	3	,2		
	99	376	28,9		
	System	550	42,3		
	Total	929	71,5		
Total		1300	100,0		
a. Respondent group = Non-producers					

#### 14.5 What is the pattern of buyers – has it changed over the period?

Buyer <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Same	42	7,5	32,6	32,6
	Changed	87	15,6	67,4	100,0
	Total	129	23,2	100,0	
Missing	0	6	1,1		
	99	422	75,8		
	Total	428	76,8		
Total		557	100,0		
a. Respondent group = Rice producers					



Buyer <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Same	126	9,7	55,3	55,3
	Changed	102	7,8	44,7	100,0
	Total	228	17,5	100,0	
Missing	0	6,5			
	99	377	29,0		
	System	689	53,0		
	Total	1072	82,5		
Total		1300	100,0		
a. Respondent group = Non-producers					

**14.6 Give a narrative account on the general trends for main changes in crops, inputs and outputs?**

**What are the main reasons for these changes?**

**14.7 Is there a general trend concerning the crops that have been abandoned over the period, i.e.**

**have many households skipped a particular crop? If so, what are the main reasons?**

**14.7.1 Is there a general trend concerning the crops that have been abandoned over the period,**

**i.e. have many households skipped a particular crop?**

**14.7.2 If so, what are the main reasons?**

Reasons for abandon <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disease of plant	2	,4	9,5	9,5
	Low yield/infertility of the soil	6	1,1	28,6	38,1

	High investment/high prices of input /lack of money	3,5	14,3	52,4
	Lack of expertise	1,2	4,8	57,1
	Variation of prices on the market	2,4	9,5	66,7
	Climate variability	1,2	4,8	71,4
	Lack of seed	1,2	4,8	76,2
	Need more time and more physical effort	5,9	23,8	100,0
	Total	21	3,8	100,0
Missing	0	2,4		
	99	534	95,9	
	Total	536	96,2	
Total		557	100,0	
a. Respondent group = Rice producers				

Reasons for abandon <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disease of plant	1,1		2,1	2,1
	Low yield/infertility of the soil	22	1,7	45,8	47,9
	High investment/high prices of input /lack of money	10,8		20,8	68,8
	Lack of expertise	1,1		2,1	70,8
	Variation of prices on the market	7,5		14,6	85,4
	Fire	1,1		2,1	87,5
	Problem of conservation	1,1		2,1	89,6
	Need more time and more physical effort	4,3		8,3	97,9
	Lack of space	1,1		2,1	100,0
	Total	48	3,7	100,0	
Missing	0	65	5,0		

	99	467	35,9		
	System	720	55,4		
	Total	1252	96,3		
Total		1300	100,0		
a. Respondent group = Non-producers					

**14.8 Is it possible to identify a pattern in the composition of livestock on the household level over the period? If so, what are the main reasons?**

**14.8 Pattern in the composition of livestock on the household level over the period**

Have there been changes in the composition and size of livestock <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diminution of the size	8	1,4	36,4	36,4
	Increase of the size	13	2,3	59,1	95,5
	Change of the type of animal	1	,2	4,5	100,0
	Total	22	3,9	100,0	
Missing	0	4	,7		
	99	531	95,3		
	Total	535	96,1		
Total		557	100,0		
a. Respondent group = Rice producers					

Have there been changes in the composition and size of livestock <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diminution of the size	13	1,0	43,3	43,3
	Stagnation of the size	1	,1	3,3	46,7
	Increase of the size	15	1,2	50,0	96,7
	Change of the type of animal	1	,1	3,3	100,0
	Total	30	2,3	100,0	
Missing	0	63	4,8		

	99	460	35,4		
	System	747	57,5		
	Total	1270	97,7		
Total		1300	100,0		
a. Respondent group = Non-producers					

#### 14.8 main reasons the composition of livestock on the household level over the period

Reasons for changes in composition and size of livestock <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diseases	1	,2	5,0	5,0
	Reproduction/natural Increase	8	1,4	40,0	45,0
	Good market/regular market	6	1,1	30,0	75,0
	Deception	2	,4	10,0	85,0
	Lack of money	1	,2	5,0	90,0
	Lack of time	1	,2	5,0	95,0
	Sale	1	,2	5,0	100,0
	Total	20	3,6	100,0	
Missing	0	6	1,1		
	99	531	95,3		
	Total	537	96,4		
Total		557	100,0		
a. Respondent group = Rice producers					

Reasons for changes in composition and size of livestock <sup>a</sup>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diseases	5	,4	16,7	16,7
	Reproduction/natural Increase	14	1,1	46,7	63,3
	Good market/regular market	2	,2	6,7	70,0

	Deception	1,1	3,3	73,3
	Lack of money	2,2	6,7	80,0
	Natural attack of predator	2,2	6,7	86,7
	Sale	2,2	6,7	93,3
	Vole	2,2	6,7	100,0
	Total	30	2,3	100,0
Missing	0	63	4,8	
	99	462	35,5	
	System	745	57,3	
	Total	1270	97,7	
Total		1300	100,0	
a. Respondent group = Non-producers				

## 16. COMMON POOL RESOURCES (FORM C-6)

### 16.1 What is the share of households who have access to some kind of common pool of resources?

#### Does the HH have access to communal land<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	14	2,5	38,9	38,9
	No	22	3,9	61,1	100,0
	Total	36	6,5	100,0	
Missing	99	521	93,5		
Total		557	100,0		

a. Respondent group = Rice producers

#### Does the HH have access to communal land<sup>a</sup>

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	88	6,8	57,5	57,5
	No	65	5,0	42,5	100,0
	Total	153	11,8	100,0	
Missing	99	452	34,8		
	System	695	53,5		

Total	1147	88,2		
Total	1300	100,0		

a. Respondent group = Non-producers

**16.2 What kind of common pool resources do the households have access to? List numbers of 'yes' for each type of resource.**

**If yes, what do you use this land for<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agriculture	9	1,6	100,0	100,0
Missing	0	3,5			
	99	545	97,8		
	Total	548	98,4		
Total		557	100,0		

a. Respondent group = Rice producers

**If yes, what do you use this land for<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agriculture	78	6,0	90,7	90,7
	Other	2,2		2,3	93,0
	Fishing	6,5		7,0	100,0
	Total	86	6,6	100,0	
Missing	99	475	36,5		
	System	739	56,8		
	Total	1214	93,4		
Total		1300	100,0		

a. Respondent group = Non-producers

**16.3 How do the households consider the importance of having access to common pool resources (list shares of each category)?**

**How important is access to this land for your HH<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very important	10	1,8	83,3	83,3
	Important	2	,4	16,7	100,0
	Total	12	2,2	100,0	
Missing	0	2	,4		
	99	543	97,5		
	Total	545	97,8		
Total		557	100,0		

a. Respondent group = Rice producers

**How important is access to this land for your HH<sup>a</sup>**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very important	21	1,6	24,1	24,1
	Important	66	5,1	75,9	100,0
	Total	87	6,7	100,0	
Missing	99	477	36,7		
	System	736	56,6		
	Total	1213	93,3		
Total		1300	100,0		

a. Respondent group = Non-producers

## 17. USE OF CREDIT AND LOANS

### 17.1 % of households making use of credits or loans

households making use of credits or loans					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	57	28,5	28,5	28,5
	households making use of credits or loans	91	45,5	45,5	74,0

	households who does not making use of credits or loans	52	26,0	26,0	100,0
	Total	200	100,0	100,0	

**17.2 Main types of sources of credit and loans by the household (eg: family, cooperative, microfinance institution, commercial bank)?**

From whom/which institution					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bank	10	5,0	11,0	11,0
	Micro-finance	22	11,0	24,2	35,2
	Tontine/reunion/association	43	21,5	47,3	82,4
	Particular person	6	3,0	6,6	89,0
	CIG	10	5,0	11,0	100,0
	Total	91	45,5	100,0	
Missing	0	5	2,5		
	99	52	26,0		
	System	52	26,0		
	Total	109	54,5		
Total		200	100,0		

**17.3 Main uses (purposes) of credits and loans by the household (%)**

Purpose of credit or loan					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agriculture/fertilizer	77	38,5	90,6	90,6
	Health	1,5		1,2	91,8
	Construction of a house	1,5		1,2	92,9
	Eventual problems	2	1,0	2,4	95,3
	Ceremonies	1,5		1,2	96,5
	Investment	3	1,5	3,5	100,0



	Total	85	42,5	100,0	
Missing	0	7	3,5		
	99	52	26,0		
	System	56	28,0		
	Total	115	57,5		
Total		200	100,0		

#### 17.4 % Households making use of "mobile money" facilities

Make use of mobile phone for banking/saving					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	7	3,5	10,9	10,9
	No	57	28,5	89,1	100,0
	Total	64	32,0	100,0	
Missing	0	62	31,0		
	99	74	37,0		
	Total	136	68,0		
Total		200	100,0		

#### 17.5 Purposes for use of "mobile money" facilities (%)

If yes(explain purpose)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Business	6	3,0	85,7	85,7
	Other	1,5		14,3	100,0
	Total	7	3,5	100,0	
Missing	0	62	31,0		
	99	131	65,5		
	Total	193	96,5		
Total		200	100,0		

### 18. COMPOSITION OF HOUSEHOLD INCOME (FORM D-2)

#### 18.1 Total amount of income per year

Statistics

#### Income

N		Mean	Minimum	Maximum	Sum
Valid	Missing				
200	0	619568,0250,00		31800000,00	123913605,00

### 18.2 Relative distribution of all income-generating categories for the entire sample of households (frequency distribution in %)

#### 18.3 % of households in which Agricultural production is main source of income

##### Statistics

Amount of total HH earnings from agricultural production

N		Mean	Minimum	Maximum	Sum
Valid	Missing				
109	91	812252,2936	10000,00	30000000,00	88535500,00

#### 18.4 % of households in which Livestock is main source of income

##### Statistics

Amount of total HH earnings from livestock

N		Mean	Minimum	Maximum	Sum
Valid	Missing				
36	164	353002,9167	5,00	1800000,00	12708105,00

#### 18.5 % of households in which Self-employed work is main source of income

Statistics					
Amount of total HH earnings from self employed work					
N		Mean	Minimum	Maximum	Sum
Valid	Missing				
33	167	478909,0909	40000,00	2000000,00	15804000,00

### 18.6% of households in which Casual wage work is main source of income

Statistics					
Amount of total HH earnings from casual wage work					
N		Mean	Minimum	Maximum	Sum
Valid	Missing				
9	191	105555,5556	10000,00	300000,00	950000,00

### 18.7% of households in which Pensions are main source of income

Statistics					
Amount of total HH earnings from pension					
N		Mean	Minimum	Maximum	Sum
Valid	Missing				
3	197	770000,0000	170000,00	1740000,00	2310000,00

### 18.8% of households in which Remittances are main source of income

Statistics					
Amount of total HH earnings from remittances					
N		Mean	Minimum	Maximum	Sum
Valid	Missing				
62	138	164307,5968	1,00	1500000,00	10187071,00

### 18.9% of households that receive remittances

% of households that receive remittances					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	5	2,5	2,5	2,5
	Households that receive remittances	132	66,0	66,0	68,5
	Households who doesn't receive remittances	63	31,5	31,5	100,0
	Total	200	100,0	100,0	

## 19. Remittances (Form D-3)

### 19.1 National remittances as % of total remittances

Amount					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2000	1	,5	1,6	1,6
	5000	2	1,0	3,1	4,7
	10000	6	3,0	9,4	14,1
	15000	3	1,5	4,7	18,8
	20000	8	4,0	12,5	31,2
	22000	1	,5	1,6	32,8
	30000	3	1,5	4,7	37,5
	31000	1	,5	1,6	39,1
	40000	2	1,0	3,1	42,2
	50000	7	3,5	10,9	53,1
	60000	3	1,5	4,7	57,8
	70000	2	1,0	3,1	60,9
	80000	1	,5	1,6	62,5
	100000	5	2,5	7,8	70,3
	120000	1	,5	1,6	71,9
	150000	7	3,5	10,9	82,8
	160000	1	,5	1,6	84,4
	180000	1	,5	1,6	85,9
	200000	5	2,5	7,8	93,8
	300000	1	,5	1,6	95,3
	500000	1	,5	1,6	96,9
	800000	1	,5	1,6	98,4
	1500000	1	,5	1,6	100,0
	Total	64	32,0	100,0	
Missing	0	23	11,5		
	99	113	56,5		
	Total	136	68,0		
Total		200	100,0		

### 19.2 International remittances as % of total remittances

Amount(international remittances)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10000	1	5	3,1	3,1
	15000	4	2,0	12,5	15,6
	20000	7	3,5	21,9	37,5
	30000	2	1,0	6,2	43,8
	50000	3	1,5	9,4	53,1
	60000	1	5	3,1	56,2
	70000	1	5	3,1	59,4
	100000	2	1,0	6,2	65,6
	200000	3	1,5	9,4	75,0
	250000	1	5	3,1	78,1
	300000	2	1,0	6,2	84,4
	360000	1	5	3,1	87,5
	500000	1	5	3,1	90,6
	600000	1	5	3,1	93,8
	1500000	1	5	3,1	96,9
	4000000	1	5	3,1	100,0
	Total	32	16,0	100,0	
Missing	0	69	34,5		
	99	99	49,5		
	Total	168	84,0		
Total		200	100,0		

### 19.3 How regularly do households receive national remittances (on average)

How often					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	31	15,5	41,3	41,3
	Once a year	12	6,0	16,0	57,3
	Regularly	32	16,0	42,7	100,0
	Total	75	37,5	100,0	
Missing	0	1	5		
	99	41	20,5		

	System	83	41,5		
	Total	125	62,5		
Total		200	100,0		

#### 19.4 How regularly do households receive international remittances (on average)

How often					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	10	5,0	32,3	32,3
	Once a year	6	3,0	19,4	51,6
	Regularly	15	7,5	48,4	100,0
	Total	31	15,5	100,0	
Missing	0	63	31,5		
	99	62	31,0		
	System	44	22,0		
	Total	169	84,5		
Total		200	100,0		

#### 19.5 Distinction between remittances in cash and remittances in kind. Which type is the most common ? Both?

Distinction between remittances in cash and remittances in kind (National)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	9	4,5	7,7	7,7
	Cash	54	27,0	46,2	53,8
	Kind	38	19,0	32,5	86,3
	Both	16	8,0	13,7	100,0
	Total	117	58,5	100,0	
Missing	99	83	41,5		
Total		200	100,0		

#### Distinction between remittances in cash and remittances in kind (International)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cash	35	17,5	100,0	100,0
Missing	99	165	82,5		
Total		200	100,0		

#### 19.6 Main channels for receiving national remittances (informal, formal, mobile)

How recieved(national remittances)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Informal channel(by hand)	18	1,0	24,7	24,7
	Formal channel	50	2,7	68,5	93,2
	1and2	3	,2	4,1	97,3
	1and3	2	,1	2,7	100,0
	Total	73	3,9	100,0	
Missing	0	1	,1		
	99	1009	54,1		
	System	781	41,9		
	Total	1791	96,1		
Total		1864	100,0		

#### 19.7 Main channels for receiving international remittances (informal, formal mobile)

How recieved					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Informal channel(by hand)	7	,4	20,0	20,0
	Formal channel	28	1,5	80,0	100,0
	Total	35	1,9	100,0	
Missing	0	64	3,4		
	99	1021	54,8		
	System	744	39,9		
	Total	1829	98,1		

How recieved					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Informal channel(by hand)	7	,4	20,0	20,0
	Formal channel	28	1,5	80,0	100,0
	Total	35	1,9	100,0	
Missing	0	64	3,4		
	99	1021	54,8		
	System	744	39,9		
	Total	1829	98,1		
Total		1864	100,0		

#### 19.8 For what purpose do households mainly use remittances

Use of remittances					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Household upkeep/daily needs/nutrition	63	3,4	47,7	47,7
	Agriculture	36	1,9	27,3	75,0
	Business	7	,4	5,3	80,3
	Education/Health	9	,5	6,8	87,1
	Family problems	5	,3	3,8	90,9
	Construction of a house	6	,3	4,5	95,5
	Buy agric/fishing material	6	,3	4,5	100,0
	Total	132	7,1	100,0	
Missing	0	5	,3		
	99	979	52,5		
	System	748	40,1		
	Total	1732	92,9		
Total		1864	100,0		



## 20. REVERSE FLOWS OF MONEY AND GOODS (FORM D-4)

### 20.1 % of households that send money and/or goods

#### households that send money and/or goods

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	4	2,0	3,1	3,1
	yes	114	57,0	89,1	92,2
	No	10	5,0	7,8	100,0
	Total	128	64,0	100,0	
Missing	System	72	36,0		
Total		200	100,0		

### 20.2 Average amount of money send per household

#### Statistics

Amount

N	Valid	64
	Missing	136
Mean		115000,0000
Minimum		2000,00
Maximum		1500000,00
Sum		7360000,00

### 20.3 Type of goods sent by household

#### Goods(specify)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Alimentary	31	15,5	96,9	96,9
	Non-alimentary	1,5		3,1	100,0
	Total	32	16,0	100,0	
Missing	99	168	84,0		
Total		200	100,0		

## 20.4 How regularly do households send money and or goods (on average)?

How often		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	3	1,5	2,4	2,4
	Sometimes	34	17,0	26,8	29,1
	Once a year	20	10,0	15,7	44,9
	Regularly	58	29,0	45,7	90,6
	99	12	6,0	9,4	100,0
	Total	127	63,5	100,0	
Missing	System	73	36,5		
Total		200	100,0		

## 20.5 Main channels for sending money (informal, formal, mobile)

How sent		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	,5	,8	,8
	Informal channel(by hand)	52	26,0	40,6	41,4
	Formal channel	45	22,5	35,2	76,6
	1and2	17	8,5	13,3	89,8
	1and3	2	1,0	1,6	91,4
	99	11	5,5	8,6	100,0
	Total	128	64,0	100,0	
Missing	System	72	36,0		
Total		200	100,0		

## 21. Housing

### 21.1 Average size of houses (floor space)

The average size of houses is 104,51m<sup>2</sup> this is to audited total sizes of houses and divided by total household

### Size of main house

N	Valid	188
	Missing	12
Mean		104,5160
Minimum		8,00
Maximum		600,00
Sum		19649,00

### 21.2 Housing tenure status type (%)

#### Tenure status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	,5	,5	,5
	Owned(with registered title)	48	24,0	24,1	24,6
	Owned(without registered title)	126	63,0	63,3	87,9
	Rented	15	7,5	7,5	95,5
	Rent-free use	9	4,5	4,5	100,0
	Total	199	99,5	100,0	
Missing	System	1	,5		
Total		200	100,0		

### 21.3 Construction materials used for floors (%)

#### Floor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	,5	,5	,5
	Concrete	4	2,0	2,0	2,5
	Cement	129	64,5	64,5	67,0
	Tile	4	2,0	2,0	69,0
	Wood	2	1,0	1,0	70,0
	Mud	45	22,5	22,5	92,5

Bare earth	15	7,5	7,5	100,0
Total	200	100,0	100,0	

#### 21.4 Construction materials used for external walls (%)

External walls		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Concrete blocks	52	26,0	26,1	26,1
	Burnt bricks	65	32,5	32,7	58,8
	Mud bricks	82	41,0	41,2	100,0
	Total	199	99,5	100,0	
Missing	0	1,5			
Total		200	100,0		

#### 21.5 Construction materials used for roofs (%)

Roofing materials		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1,5	,5	,5	,5
	Tiles	3	1,5	1,5	2,0
	Corrugated iron sheets	179	89,5	89,5	91,5
	Tins or metals other than corrugated iron sheets	16	8,0	8,0	99,5
	Thatch	1,5	,5	,5	100,0
	Total	200	100,0	100,0	

#### 21.6 Number of rooms (%)

Number of rooms		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1,5	,5	,5	,5
	1	6	3,0	3,0	3,5

2	13	6,5	6,5	10,0
3	66	33,0	33,0	43,0
4	54	27,0	27,0	70,0
5	28	14,0	14,0	84,0
6	15	7,5	7,5	91,5
7	8	4,0	4,0	95,5
8	2	1,0	1,0	96,5
9	2	1,0	1,0	97,5
10	4	2,0	2,0	99,5
13	1,5	,5		100,0
Total	200	100,0	100,0	

## 21.7 Kitchen types (%)

Kitchen					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1,5	,5	,5	
	Inside house	45	22,5	22,5	23,0
	Outside house	71	35,5	35,5	58,5
	Other(specify)	83	41,5	41,5	100,0
	Total	200	100,0	100,0	

## 22. PUBLIC SERVICES

### 22.1 Electricity (%)

#### HH access to electricity

Electricity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1,5	,5	,5	,5
	No electricity	25	12,5	12,5	13,0
	Generator	2	1,0	1,0	14,0

Electricity	171	85,5	85,5	99,5
Other(specify)	1,5	,5		100,0
Total	200	100,0	100,0	

## 22.2 Drinking water connection (%)

### HH access to drinking water connection

#### Drinking water source

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	5	2,5	2,5	2,5
Public network	78	39,0	39,0	41,5
Borehole or protected well	63	31,5	31,5	73,0
Unprotected well	41	20,5	20,5	93,5
Other(specify)	12	6,0	6,0	99,5
99	1,5	,5		100,0
Total	200	100,0	100,0	

## 22.4 Sanitation (%)

### HH access to sanitation

#### Sanitation

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	1,5	,5	,5	,5
Flush toilet to a septic tank or sewer	9	4,5	4,5	5,0
Private latrine wit a slab or plateform made from cement or wood with a squatting hohe or seat	153	76,5	76,5	81,5

Private latrine without a slab or platform, just a mud floor with a hole in the ground	36	18,0	18,0	99,5
Public or shared latrine	1,5	,5		100,0
Total	200	100,0	100,0	

## 23. Means of communication and transportation

### 23.1 Ownership of mobile phones, radio, television (%)

HH assets, number of mobile phones owned

Number of mobile phones owned

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No answer	22	11,0	11,0	11,0
1	65	32,5	32,5	43,5
2	54	27,0	27,0	70,5
3	30	15,0	15,0	85,5
4	9	4,5	4,5	90,0
5	8	4,0	4,0	94,0
6	3	1,5	1,5	95,5
7	3	1,5	1,5	97,0
9	1,5	,5		97,5
10	2	1,0	1,0	98,5
13	3	1,5	1,5	100,0
Total	200	100,0	100,0	

Number of radios owned

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No answer	73	36,5	36,5	36,5
1	113	56,5	56,5	93,0
2	7	3,5	3,5	96,5

3	5	2,5	2,5	99,0
5	1,5	,5		99,5
7	1,5	,5		100,0
Total	200	100,0	100,0	

#### Number televisions owned

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No answer	69	34,5	34,5	34,5
1	117	58,5	58,5	93,0
2	6	3,0	3,0	96,0
3	4	2,0	2,0	98,0
4	2	1,0	1,0	99,0
5	2	1,0	1,0	100,0
Total	200	100,0	100,0	

#### Number of motorcycles owned

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No answer	127	63,5	63,5	63,5
1	64	32,0	32,0	95,5
2	5	2,5	2,5	98,0
3	2	1,0	1,0	99,0
5	1,5	,5		99,5
6	1,5	,5		100,0
Total	200	100,0	100,0	

### 23.3 In case of no ownership, do households in any way have access to these means? How?

#### From whom(transportation)

	Frequency	Percent	Valid Percent	Cumulative Percent
--	-----------	---------	---------------	--------------------



Valid	No answer	191	95,5	95,5	95,5
	Public transport	2	1,0	1,0	96,5
	Family member	3	1,5	1,5	98,0
	Particular/individuals	4	2,0	2,0	100,0
	Total	200	100,0	100,0	

## 24. EXPENDITURE AND SAVING

### 24.1 Total amounts of consumer expenditure per year

Consumer amount per year

N	Valid	121
	Missing	79
Mean		390961,1570
Minimum		15000,00
Maximum		4000000,00

### 24.2 Total amount of productive expenditure per year

Productive amount per year

N	Valid	74
	Missing	126
Mean		147885,1351
Minimum		9000,00
Maximum		3120000,00

### 24.3 total annual amounts of expenditure

#### Statistics

Total annual expenditure

N	Valid	174
	Missing	26
Mean		1213524,7471
Minimum		198,00

Maximum	14799000,00
Sum	211153306,00

#### 24.4 Three main types of consumer expenditure (%)

Statistics					
	N		Mean	Minimum	Maximum
	Valid	Missing			
Expenditure on food	171	29	358979,7193	120,00	4000000,00
Expenditure on drinks	71	129	79922,8169	20,00	600000,00
Expenditure on clothes	115	85	109636,52174	200,000	960000,000
Expenditure on utilities	140	60	58348,9071	1,00	1080000,00
Expenditure on rents	18	182	73166,6667	18000,00	288000,00
Expenditure on transport	86	114	130185,5814	24,00	1440000,00
Expenditure on medicine	103	97	133512,1359	50,00	1000000,00
Expenditure on schooling	141	59	191327,2340	1,00	2000000,00
Expenditure on social	103	97	118369,4175	50,00	800000,00
Expenditure on others	10	190	669910,0000	150000,00	1585600,00
Total consumer expenditure	0	200			

#### 24.5 Three main types of productive expenditure (%)

Statistics					
	N		Mean	Minimum	Maximum
	Valid	Missing			
Expenditure on hired labour	115	85	118529,0435	40,00	3120000,00
Expenditure on hired equipments	61	139	31939,3443	700,00	300000,00
Expenditure on transport	74	126	47066,2162	2000,00	842400,00
Expenditure on membership fee	28	172	120903,5714	100,00	600000,00
Expenditure on seeda	81	119	32498,2716	500,00	300000,00

Expenditure on fertilizer	149	51	71911,4362	30,00	1000000,00
Expenditure on water/irrigation	3	197	34000,0000	1000,00	88000,00
Expenditure on other	0	200			
Total productive expenditure	0	200			

#### 24.6 Main person of household to decide on expenditure

##### Who in your HH decides on expenditure?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Head	142	71,0	72,4	72,4
	Spouse	40	20,0	20,4	92,9
	Child	1,5	,5		93,4
	Father/mother	13	6,5	6,6	100,0
	Total	196	98,0	100,0	
Missing	0	2	1,0		
	99	2	1,0		
	Total	4	2,0		
Total		200	100,0		

#### 24.7 Average amount of savings per year

##### Statistics

If yes, how much

N	Valid	91
	Missing	109
Mean		181789,0110
Minimum		1000,00
Maximum		1000000,00
Sum		16542800,00

## **25. Conclusion - Final Reflections:**

- **Main findings**

### **25.1 The socio-political situation and stakes of rice production in Cameroon**

Rice has been labeled a strategic crop (**National Strategy for Rice Development**) since 2009. Its labelling as a strategic crop is due to the high level of its consumption and importation trends which increases by 4.8% each year. It is the principal bread provider for a lot of rural families in production zones. The 2008 hunger crisis which shook most African countries did not spare Cameroon due to an increase in the prices of basic necessities like rice.

This eventually led to an increase in government subsidies to rice producing corporations thus the revamping of the UNVDA. Rice production under the industrialized system has been awakened and the most significant development in this sector has been the innovation or introduction of high yielding varieties (NERICA), increased use of irrigation and land development projects, increase in the use of machines (increase in the number of tractors from **2 in 2009 to 16 by 2014**), chemicals and fertilizers.

In the year 2008, the per-capita rice consumption in Cameroon were 37.3kg in urban areas and 19.4 in rural areas thus, an average 25.7kg per year for the entire country (**Ondoa 2006**), compared to only 11.5kg in 1984 (**Goufo 2008**) from surveys carried out by the Ministry of Agriculture. Imports of rice alone in 2007 stood at 429864 tons, according to statistics from the INS (**National Statistics Institute**), and represented imports spending worth 72 billion FCFA. These imports increase by about 4.8% a year with 600000 tons imported by 2013. As said above, rice consumption has known a rapid increase in urban and rural areas in Cameroon due to rapid population growth rates and change in urban food habits.

### **The primordial role of the State, Para public corporations, and private individuals in the rice production dynamics**

It should be noted that rice is not a crop native to Cameroon. It was introduced by the colonial masters and after independence, promoted by the various agricultural policies put in place by the state from the five year development plans of 1970 to the second generation agriculture of 2011. The implication of the state in rice production activities has as principal objective a change of production from 65 000 T in 2008 to 627 250 T in 2018.

Within the framework of the emergency plan of revival of the agricultural and food production the State proposed, to facilitate the access of the producers to the agricultural inputs, to support at 100% quality production and planting material for strategic crops like rice, to support for a total value of 25 to 50% the price of fertilizers and pesticides, to facilitate the access to mechanization by the price subsidy of various services and that of the prices of acquisition of small farm equipment, to facilitate the access to credit by reduction of interest rates and the creation of micro-finance institutions in the rural areas, to facilitate the access to the markets through the support in the development of infrastructures of disenclavement of the production zones and provision of storage and transformation facilities.

Apart from the governments' direct action in policy making and through parapublic corporations, associative groups play a great role in regrouping farmers and in sharing new production methods and techniques, seeds just to name a few. Apart from the above mentioned actors, other stakeholders include;

*Researchers who* employ themselves in the generation of knowledge and technologies and their experimentation, the training of the actors of development, the development of teaching supports and the production of pre-base seeds.

*Seed multipliers active in a contractual way around the* perimeters of development corporations, and engaged in the multiplication and sale of highbred and pest resistant seeds at subsidized prices.

*Suppliers of agricultural equipment's*, generally local craftsmen with enough average logistics to satisfy the local requests. Also, certain producers prefer to resort to service providers for the operations of ploughing, harvesting and hulling.

The rice growers around the perimeters of corporations have access to land through the payment of a royalty and fertilizers to tradesmen. Some are obliged to contract appropriations of inputs which they pay back in kind at a rate of 3 to 4 bags of paddy for a bag of fertilizer

The majority of the producers in these perimeters exploit parcels of an average size of a half to a quarter of hectare

Rice production concerns both the men as well as the women because it requires much labour.

The retail sale of the milled rice is ensured by women in the rural and urban markets whereas the sale of paddy out of bags is carried by the men who are heads of households.

### **Reflections on rural-urban linkages**

Urban development and change in urban feeding habits coupled with an algorithmic increase in the demand for rice has pushed the rural areas to respond by a transformation of the rural milieu to meet the ever increasing demand of food and cash crops. These changes include

- The development of irrigated rice fields to increase supply of rice,
- Develop rain-fed and upland rice production
- But most importantly the creation of employment in the rural zone.

An increase in the demand for rice and its surplus consumption in the urban centers have resulted to an increase in government investment and support to certain rural areas especially areas where potential rice production could be maximized.

Consequently, it becomes a necessity for the urban areas to create strong links and integrate the rural world through the construction of infrastructural facilities which facilitates the disenclavement of rural areas, distribute the role of each stateholder (investments and markets as the urban share while production is left in the hands of the rural population.

In certain contexts, the rural areas are fast developing into little townships with appropriate urban equipment's and facilities.

## **Answers to research questions:**

### **What are the general characteristics of the site in terms of land use,**

Most of the agriculture land is used for arable farming under intensive cultivation and the swampland used for rice production. Due to the expensive nature of developing and colonizing these swampy areas, large portions are used by herdsmen as pasture grounds during the dry season. The state on one hand also develops the marshes, hands it over to a created committee charged with its distribution and management. Farm sizes are usually small, about 0.2ha and ownership of a parcel is maintained and even transferred from one person to another as long as royalties and a development fee of 1000f CFA each is paid yearly after the harvest period. Farm owners are also expected to attend community work projects or sessions, organised by the main body of the committee to maintain irrigation structures.

### **Market integration?**

The legalized structures put into place to regularize rice production are charged with a number of roles; one among them being the construction and maintenance of rural infrastructures to facilitate the evacuation of rice products from production zones to urban markets. Though great efforts are being made to popularize locally produced rice, this product is still a mystery to certain markets and remains rare in the urban centers.

### **Is it possible to identify any significant changes in the agrarian structure like an increasing commercialization?**

Local rice output has been increasing over the years though insufficient to meet consumption or rival imported rice from China, Thailand or Vietnamese rice in our local markets. This rice remains scarce in urban market and where found, they are too expensive for the common man and this is because the little that is produced is exported illegally and commercialized in the neighbouring states.

Since 2014, a new marketing strategy has been adopted with an aim to popularize the various labels and brands of local rice through fairs and expositions, agro-pastoral shows. The 23 of October has even been labeled the National rice day all this to promote locally produced rice. In Dschang for example, the ministry of commerce has instituted a periodic market for the promotion of agro-pastoral and agro-industrial products. On these markets are found rice from the major production zones of Cameroon like Santchou rice, Ndop, Baïgom (Ngoudoup), and Bangourain rice. Retail quantities are also sold for family consumption.

### **Diversification of crops**

Contrary to other crops such as Irish potato and maize, rice is cultivated as a single crop (monoculture) irrespective of the cultural system used (irrigated or rain-fed systems. Though certain farmers rotate this crop with other crops like maize, Irish potato and beans during the off-season period, and on the bunds which serves as a water regulator and footpaths to and from the farms, other farmers grow cocoyam and even plantain. Certain swarms used for rice production are permanently flooded during the rainy season and this limits the practice of other agricultural activities. In such cases, producers cultivate food-crops on other farmlands away from the marshes.

### **New labour hiring and deployment practices**

<b>Labour<sup>a</sup></b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4	4.0	4.0	4.0
	Hired labour	16	16.2	16.2	20.2
	Family	12	12.1	12.1	32.3
	Combination of both	66	66.7	66.7	99.0
	99	1	1.0	1.0	100.0
	Total	99	100.0	100.0	
a. Respondent group = Rice producers					

Though labour for rice production has always come from the surrounding plains and from the local population especially the local youths, the amount of hired labour and the price for its services have changed in the last 5 years. The UNVDA and AFRIFOOD has introduced a lot of machines e.g. from about 2 tractors in the year 2000, the UNVDA now has at least 14 tractors with their accessories. This increase in the number of tractors has led to a reduction in hired labour demand because producers have turned to mechanization where these heavy engines could be used. Where these machines could not be accessed by farmers due to insufficient infrastructure and bureaucratic bottlenecks, labour suppliers have decided to increase the price of their services by 50% though certain producers argued the increase in price is due to the increase in the price of rice and its by-products.

The proportion of rice producers using hired labour as principal source of labour is relatively higher than the proportion of non-producer households i.e. 16.2% as against 03%. Due to the fact that rice production is very demanding in labour use, most families combine family labour with hired labour. Even children as young as 07 years of age are to be found in the rice fields and their services used either as hired or as family labour. 66% of producers use a combination of family and hired labour.

### **Major large-scale schemes (private, state or JVs)**

The government through the various parapublic corporations has been increasing rice-based projects especially an increase in the surface area cultivated, credit acquisition, seed multiplication and rice transformation projects with an aim of eradicating rice imports by the year 2018.

Private individuals have also been increasing investments into the rice sector due to the gains to be reaped. Private sector investments are seen in the form of land preparation machines, seed multipliers, transformation and commercialization enterprises.

Individual farmers have also learned to regroup themselves into cooperatives, peasant organizations and common initiative groups to further develop virgin land into rice fields,

search for investment and credit facilities and above all, search for better markets for their output.

### **Shift in commercial channels (new types of buyers)**

Before 1994, the UNVDA was the sole market for rice products in the Ndop plain area. Rice production was still a dream project in the Ngoundoup zone. This corporation at that time bought a KG of paddy rice for about 40f CFA. During the economic crisis which seriously crippled the corporation, farmers found themselves with the totality of their products without markets because the UNVDA could no longer absorb their production or pay on time, rice supplied to them by the farmers. This led to the emergence of a new class of actors in the rice industry; local transformers and commercial agents who opportunity left after the wake of the economic crisis. Nigerian markets easily absorbed the locally produced rice and changing feeding habits sky-rocketed local demand, increasing the local transformation and commercial sectors in responds to increasing demand.

At the market level, 2% is absorbed by other farmers, 19.2% by farmer organizations, 24.2% by cooperatives or the UNVDA and finally, local traders almost monopolize the markets with 29.3%. The rest is auto consumption and gifts to family members.

### **Restrictions in access to production assets and common pool resources**

The first aspect of restriction observed in our study zone is the natural environment. Certain areas are too swampy and muddy to permit the action of any heavy machinery. Specialists complained that when the area is too muddy, the tractors are immobilised thus limiting their activity. The second sets of restriction in the use of productive assets are technical in nature. Certain farms lack adequate infrastructure, making access to machines impossible.

As has been mentioned before, bureaucratic bottlenecks might sometimes restrict producers access to certain productive equipment's such as access to para-public tractors. Certain producers in the Ngoundoup production zone blamed the influence of certain local authorities in the manipulation of who gets to use these machines.

Though, the most obvious restriction in the utilisation of production assets is economic in nature. To till a hectare of swampy land for rice production cost about 40000f CFA. Given the economic situation of producers in the rural milieu makes it difficult for them to afford this sum just for a single activity.

As far as common pool resources are concerned, access is almost free for any interested individual with enough zeal for production. After a royalty and a development fee has been paid to the local authorities in charge of the zone after harvest, access to swamp land is free to all though the cost of preparing virgin land for paddy production is difficult and costly.

### **WHAT ARE THE CONSEQUENCES OF MIGRATION AND MOBILITY FOR THE 'SENDING'**

Studies conducted on female mobility in the western highland region by Dr. Samuel Kélodjoué (2009) concluded that, the consequences of migration and mobility of work is « the modification of family roles ». She is an equilibrium factor but also a source of conflicts. On one hand, a cooperative husband might become jealous bearing the impression that his wife has abandoned him or is being bullied though in other cases, the woman remains humble or respectful despite her new purchasing



power or becomes arrogant because she no longer assumes her social obligation. In a specific manner, financial autonomy of women and to a certain extent of the children, their increasing participation in the functioning of households and decision making, the following is observed:

### **A redistribution of responsibilities within the household**

In acquiring an economic and monetary power though it remains relative, the rural woman acquires her financial autonomy and increases her financial participation to the obligations of the household. In fact, when the husband discovers that the woman has money, he pretends bankruptcy and decides to abandoned some of his responsibilities to the woman » This entails the beginning of a transposition of the household heads role in this society that for a long time has been considered unchangeable and which strongly affects the women. (Adjamagbo,1993).

The repeated absences of certain important household members from their homes have serious repercussions on children supervision and on fertility or reproductive calendar. For the woman, the role of Mother-Educator and Nurs cannot be totally accomplished. The security and reassuring presence of a male creates a void which is difficult to fill. The children most often are victims because they are abandoned by themselves, to their seniors or grandparents and are oblige to learn how to take care of themselves or indulge in practices which exposes them to delinquency. Hence, we can see children of about 10 years who are in charge of the preparation of meals and take care of their juniors while waiting for the return of their parents. It creates in the household tension which is not always address by the financial gains that the migrants usually bring from their agricultural expedition.

### **Transformation of structures and family roles**

Labour Mobility can also be understood as a reinterpretation of household members, nursing–woman and the children especially their role at the household level. In fact, the constant absence of actors (four to six months per year) modifies the family structure: A fast adaptation to ensure the daily management of the home

It has consequences on the renegotiation of gender relations but also on phenomenon such as (adolescence night activity) early marriages, early pregnancy of unmarried girls, birth spacing or fertility.

### **Who decides at household level whether a member migrates?**

With exceptions made on most people of school age, the decision to migrate depends on the parents and also on the members of the destination household who assures the reception and lodging of the migrant, the decision to migrate is taken by the future migrant who informs the other members of the household. Order is given when the necessary conditions are favorable for a departure (reception, and lodging most especially). Hence, individuals in their respective ways can contribute to the preparation of travel and departure. The parents can express their wishes but the final decision comes from the future migrant.

### **Does migration/mobility mitigate poverty?**

Migration and fight against poverty is a slogan whose pertinence depends on certain number of factors:

- ✓ The fastness and degree of the migrants success in his adventure ( that is the fastness to find work),
- ✓ The length of the transition period during which, the migrant solely depends on the household for assistance, (impoverishment factor),
- ✓ The migrants' capacity to integrate in his new environment and his capacity to save money,
- ✓ Type of migration. Agricultural migration is an exception in that work is available and most often migrants have the problem of choice. Most agricultural migrants are interested to cover much work so as to make maximum income during the agricultural season in order to address his personal needs in his departing household and her society,

Finally, the importance or absence of sending money depends on the type of relations that the migrants have with his relatives and his level of responsibility.

### **Does it lead to an improvement of the livelihoods of 'sending' households?**

Most mobility and migrations have an economic motivation. People migrate either in search of better living or working conditions and to better the living conditions and the economic situation of the people they leave behind. In cases where the migrant send money home or engages a project like building a house or opens up a business in his departure zone, it leads to an improvement in the livelihoods of the sending households but on the contrary, if there is no engaged project, the household loses an important workforce. All depends on the attitude and responsible nature of the migrant in relation to where he comes from.

### **How does migration/mobility influence the family relations in terms of gender and generation?**

Traditional norms in most societies in Cameroon mandate that rural women fulfil the reproductive roles of child bearing, home management and food provision for the family. Thus, these women are unable to exercise any influential economic role and hardly earn income. Cash agriculture like rice production provides a possible outlet for the empowerment of these women in rice producing areas.

In almost every area in Cameroon, migration is viewed in a positive standpoint because it;

Reinforces social cohesion and solidarity, creates a sense of mutuality, complementarity within the family and group.

Reinforces or enhances the division of work between gender and power within the family,

Unfortunately, it is also a source of incomprehension and of certain immoral behaviors i.e. , source of instability within the household which could leads to divorce. (See equally what is said above on the consequences on migration/mobility)

### **What is the effect of migration/mobility on the social status of the migrant?**

The success or failure of a migrant's economic project is at the base of the status and respect given to migration. It conditions his inscription into an honor list if he is successful or his precipitated return to the village if things do not work out for him. The migrant's capacity to integrate himself into the destination enhances cordial relations within the two areas, and an opportunity to share a migrant's social status. These migrants sometimes adopt new families and habits in the reception zone while some start families and only return to their areas of origin for family unions or death celebrations.

### **Under what conditions does it lead to marginalisation?**

The mobility patterns from one place to another (rural-rural or urban-rural) depend on the type of good neighborhood relations existing between the communities and also on the size and function of the destination. (Towns and cities are easily integrated than rural areas). If not the migrant is not welcome or he is marginalized. In Cameroon, certain migrants who are not welcomed in the reception zones are called "invaders", or "come no go". The failure of most organized colonization projects for mass labour migration from the western highlands towards the coastal is due to the fact that, the promoter of such enterprise did not study the history of reception and arriving groups. In this case, the migrant status, despite the existing laws, can only be precarious and the two communities hardly come to a compromise.

# RURBAN AFRICA

## AGRICULTURE AND RURAL LIVELIHOOD SURVEY

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A DRAFT REPORT ON RUBBER OUT GROWERS  
VERSUS NON-OUTGROWERS IN THE AHANTA WEST  
DISTRICT, GHANA



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## 1. INTRODUCTION

The contribution of agriculture to the economy of Ghana over the years has been widely acknowledged. Though the share of agriculture in GDP has been declining in recent years, the sector remains the mainstay of the economy (especially the rural economy), currently employing more than 40 percent of the country's work force. Thus, agriculture cannot be discounted in its role in the livelihood of many Ghanaians. For this reason, the sector remains a major target for governmental and non-governmental initiatives targeted at improving incomes and livelihoods of the less privileged in the country. Over the years, key government initiatives have focused on making the sector more attractive to improve the food security situation in the country. It is therefore not surprising that Ghana has been identified as one of the few countries in the Sub-Saharan African region on the way to achieve the first Millennium Development Goal (MDG1) which aims at significantly reducing extreme poverty and hunger by 2015. However, in spite of the introduction of many initiatives by the government and non-governmental organisations in the agricultural sector, poverty levels, for instance, are still high in the country, especially in the rural areas and its farmer households (Ghana Statistical Service, 2014).

It is in this context that the Rurban Africa Research Project is conducting a cross-section survey in Ghana and three other Sub-Saharan African countries (Cameroun, Rwanda and Tanzania), entitled "agriculture and rural livelihood survey". The main goal of the survey is to investigate whether farm households have had a change in their livelihood in areas such as crop production, farm assets, livestock, household asset, income, expenditure and savings, and the extent of rural agricultural transformation and rural-urban interactions and mobility. The reference period for comparing the change in farm households their livelihood is 2014 as compared to the last ten years (2004). This research project is a collaborative research involving four African universities – University of Dschang (Cameroon), University of Ghana, University of Rwanda, Sokoine University of Agriculture (Tanzania) – and five of their European counterparts –University of Copenhagen (Denmark), Loughborough University (United Kingdom), International Institute for Environment and Development (United Kingdom), Université Toulouse II Le Mirail (France), and the Utrecht University (Netherlands). This report discusses the results from the survey of rubber outgrowers (treatment group) and non-outgrowers (control group) in the Ahanta West District in the Western Region of Ghana. The report covers the out growers who have registered their farms and they are either self-financed or financed by the Ghana Rubber Estate Limited (GREL) as well as the non-outgrower farmers who mainly produce food crops such as cassava, maize and plantain. The survey covered crop output, use of inputs, livestock, farm assets, mobility and remittances.

The report is structured as follows. In Section 2, we discuss the sampling and survey methodology. Section 3, discusses the population characteristics of the households, Section 4 analyses Livelihood diversification and transformation. Section 5 focuses on Migration. Section 6 discusses Agriculture. Section 7 discusses sources and use of credit. Section 8 analyses Housing and Public services and Sanitation characteristics while section 9 discusses expenditure and saving of households. Section 10 deals remittances while section 11 deals with summary, conclusion and recommendation.

### **1.1 Country background**

Ghana has a land mass of 238,535 km<sup>2</sup> and is bordered by the Ivory Coast in the west, Burkina Faso in the north, Togo in the east and the Gulf of Guinea in the south. The country's population in 2010 was over 24 million (Ghana Statistical Service 2014). It has a relatively diverse and rich natural resource base. Minerals-principally gold, diamonds, manganese ore, and bauxite are produced and exported. A major oil discovery off the coast of Ghana in 2007 has led to it becoming an oil exporter.

In recent years, agriculture share in GDP has declined reaching about 30 percent of GDP in 2013 (Government of Ghana, 2014). However, the sector still remains a major contributor to employment. The Census Report shows that the agriculture forestry and fishing sector employs about 41 percent of the active labour force (Ghana Statistical Service, 2012; p-10). Ghana's primary cash crop is cocoa, which provided about 21 percent of all export revenues in 2012. Other agriculture products exported include timber, coconuts and other palm products, sheanuts and coffee.

Ghana's industrial base is relatively advanced compared to many other African countries. However, additional scope exists for value-added processing of agricultural products. Industries include textiles, apparel, steel (using scrap), tires, flour milling, cocoa processing, beverages, tobacco, simple consumer goods, and car, truck, and bus assembly. Industry, including mining, manufacturing, construction and electricity, accounts for about 21 percent of GDP.

### **1.2 Description of Survey site**

Rubber in the Western region has a very long history which goes as far back to the early 20 century (Dickson 1971). However, the involvement of smallholder farmers in the direct production of rubber started in 1995 with the Phase I of the out grower programme of Ghana Rubber Estates Limited (GREL). By the end of the third phase of the out grower programme, GREL had assisted about 1300 out growers in the Western Region to plant about 5887 hectares of rubber. In addition, some 2000 hectares had been planted in the Central Region. Unsurprisingly, GREL in 2011 won the award for being the best company in the agriculture and agri-business sector. The company has a processing factory situated in the Discove area of the Western Region and with a capacity of about 3 metric tonnes per hour. This in addition to the out grower schemes mean that GREL has an impact on the economy of the area.

The start of oil production in 2009 in the area means that there will be changing demographics in the area. It can be argued that younger people are likely to move out of the area in search of jobs in the oil sector as well as the spill off sectors from oil production. This will also have implications for the value chain dynamics.



### **1.1 Objectives of the outcome survey**

The main purpose of the survey is to investigate how the livelihood of rural households in the Ahanta West District (Western Region) of Ghana has changed compared to the last ten years. To achieve this goal, two groups of farmers have been considered, namely, Rubber out-growers (treated group) and non-out-growers (controlled group). Specifically, the study's objectives are as follows:

- i. To identify the key changes in agricultural production among rural households in the region in terms of crop output, input usage, land allocation to crops as well as livestock ownership.
- ii. To identify sources and use of credit among rural households.
- iii. To investigate the extent of migration among rural households in terms of frequency, purpose of trip as well as main mode of transport.
- iv. To analyse the role of remittance to Ghanaian rural households in terms of type and use.
- v. To compare rural livelihood in terms of average annual income, expenditure and savings.

### **1.2 Implementation of the survey**

Data collection for the agriculture and rural livelihood survey for Ahanta West District covered the period, 2<sup>nd</sup> and 15 September. Enumerators spent thirteen (13) days in the District including two travelling days and a rest day. The minimum educational qualification of the enumerators used for this survey was a first degree. In addition, all the enumerators have had experience in previous related surveys.

### **1.3 Local Adaptations to the Questionnaire**

Few areas of the generic questionnaire for the WP1 and 2 for the Rurban Africa Project did not directly apply to the local conditions of Ghana; namely, ward/cell, size of floors in metres squared and GPS coordinates were not taken. Consequently, the questionnaire was slightly modified by creating a new variable called 'type of dwelling' which information was easier to be obtained from respondents in Ghanaian context than the size of floor in metres squared. Again, we created a variable to capture the mobile phone numbers of respondents. Furthermore, at the remittances section, the question on the 'amount of remittances' was separated from 'type of remittances' – these questions were originally captured as a single variable. Finally, in Ghana, districts and regions are different hence this has been taken into account on the questionnaire we administered.

### **1.4 Methods of Data Analysis**

Data collected for the survey was analysed using stata.. Relevant tables were generated based on the data sets obtained in Ghana following the outline provided for the report. These tables were described using simple percentages and frequencies. Some of the tables were further converted into graphs which give clearer visual impressions.

### **1.5 Limitations of the survey**

One key limitation identified in this survey was the difficulty in locating the out-growers which were randomly selected from a register obtained from the managers of their programme. This is because the register from which we sampled did not contain the phone number of the farmers. This posed challenge to enumerators to just use names of the farmers to locate them hence they relied on other farmers to help locate their colleagues farmers on the list.

Another challenge for this survey was the difficulty in measuring some of the variables used in the questionnaire such as ward/cell and size of the main house in metres squared. Thus, it was difficult rationalize these variables in the context of Ghana.



Finally, the survey covered just two districts in two regions of Ghana. However, there are ten (10) administrative regions and over 270 districts in Ghana presently. Therefore, the outcome of the survey cannot be generalised in for the entire country.

## 1.6 Survey methodology

### 1.6.1 Sample Size Determination

A practical sampling strategy was developed that allowed each of the survey population (outgrowers and non-outgrowers) to be covered. Indeed, to ascertain the needed change in the livelihood of farm households, we focused on Rubber outgrowers and non-outgrowers. The outgrowers were randomly sampled from a register obtained from the managers of the schemes. Once we had sampled the outgrowers, the sample for the non-outgrowers followed their footprints. In other words, we matched up the non-outgrowers with the outgrowers in each selected community.

### 1.6.2 Sample size

A statistically acceptable sample size of 200 farm households was used for this enumeration area. This is made up of 100 outgrowers and 100 non-outgrowers. This was based on the following assumptions:

### 1.6.3 Sampling strategy

The sampling procedure used for the purpose of the Agriculture and Rural Livelihood Survey was a simple random technique described as follows:

Agricultural households constitute the focus of the Agricultural and Rural Livelihood Survey Four communities (Agyambra, Abura, Morrison Junction and Tumentu) were selected from a list of outgrower communities obtained from the Programme Manager of Ghana Rubber Estates Limited (GREL). We then randomly selected 150 out-growers from these selected communities. It must be noted that even though the actual sample size needed was 100 but the added 50 was meant to cater for replacement of outgrowers who may be absent at the time of the survey.

The sample distribution across communities was however, disproportional as it was based on the representation of outgrowers in a particular community.

We used random-walk sampling approach to select a statistically acceptable sample size for the non-rubber outgrowers. In this sampling technique, each of the randomly selected communities was further blocked into four as represented by the cardinal points, namely, North, South, East and West. Each of the four field officers took one of these block and randomly selected non-rubber outgrowers from every 5<sup>th</sup> structure to match up the same sampling frame as used for the out-growers sample. Table 1 presents information on the sample frame used.

**Table 1-1: Sample frame for the Western Region**

Community	Out growers	Non Out growers	Total
Agyambra	46	46	92
Abura	20	20	40
Morrison Junction	18	18	36
Tumentu	16	16	32
Total	100	100	200

## 1.7 Demographic Characteristics

The Agriculture and Rural Livelihood Survey comprises for the Ahanta West District of the Western Region comprises 200 households made up of 1,277 individuals. Like other countries in the world, the population of Ghana possesses certain key features. This section of the Agriculture and Rural Livelihood Report presents information on the distribution of age, gender, ethnicity and education of household members.

### 1.7.1 Household Composition

The concept of household has been clearly defined in the context of the Agriculture and Rural Livelihood Survey as it uses the concept of a “stretched” household. By the survey’s definition, a “stretched” household consists of members who live in a house/compound (resident households) plus members who live elsewhere but contributes either in cash or in kind to the livelihood of the household (usually absent) members.

**Table 1: Type of household member**

Type of household member	Male	Female	Total
Resident	91.9	89.0	90.5
Usually Absent	8.1	11.0	9.5
Total	100.0	100.0	100.0

Field survey, 2014

Table 1 provides information on these categories of household members. The results obviously show that “resident” household members dominate (90.5%) while the “usually absent” household members accounted for less than 10 percent for in the region. There was a little gender disparity observed in the distribution of household member type. In terms of resident household members, the proportion of males was relatively higher (91.9%) than females (88.1%). However, for non-resident household members, the proportion of females was higher (11.0%) than males (8.1%).

**Table 2: Usually absent household members’ visitation reasons**

Visitation Reason	Outgrower	Non-outgrower	Total
See family	49.1	57.5	52.6
Funeral	1.8	-	1.1
Financial	7.3	20.0	12.6
Vacation	12.7	15.0	13.7
Other	29.1	7.5	20.0
Total	100.0	100.0	100.0

Field survey, 2014

Table 2 shows the major visitation reasons by absent household members in both regions. Most non-resident household members do pay visit to their respective households for various reasons. The data shows that majority of these individuals in the region on the average pay visit to see to their family welfare, to attend funeral, for financial reasons and for vacation. Most of the non-resident household members outlined family related issues as their main visitation reason accounting for about 53% for the region. Other reasons (such as working in household farm) accounted for about 20% of non-resident household members’ visitation. Financial motivated reason obtained 12.6 percent. It is realised that financial reason was highly cited among those who belong to non-out

grower households for their visitation (20.0%) while this represented only 7.3 percent for the non-out grower household. This can be explained by the fact that the non-outgrower households are poorer hence they may tend to depend on other household members who visit them for to address their financial needs.

### 1.7.1 Household Size

The mean household size reported in the survey was 7 which exceeded the national household size of 4 in the 2012/2013 Ghana Living Standards Survey (Ghana Statistical Service, 2014). The larger household size recorded in this survey can be attributed to the definition of a household which comprises both residents and usually absent household members as noted earlier. The household with the largest size was 17.

Individuals in the survey belong to households of various sizes as shown in Table 0-2. Individuals who belong to a three-member household recorded the highest share, 17.3% which is followed by those who belong to six-member households (16.9%). It must be noted that the proportion of single member households recorded in the survey accounted for only 2.0 percent. However, a relatively higher proportion of non outgrower households had single membership (2.9%) while this represents 1.2 percent for the out growers.

Table 0-2: **Proportion of individuals belonging to various household sizes**

HH sizes	Outgrower	Non outgrower	Total
1	1.2	2.9	2.0
2	10.2	16.2	13.2
3	17.2	17.6	17.3
4	15.3	12.3	13.9
5	14.1	6.6	10.4
6	12.1	21.9	16.9
7	10.7	11.8	11.3
8	8.9	5.6	7.3
9	1.7	0.0	0.9
10	1.7	1.9	1.8
11	2.3	0.0	1.2
12	2.0	0.0	1.0
13	2.6	0.0	1.3
20	0.0	3.2	1.6
Total	100.0	100.0	100.0

Field survey, 2014

### 1.7.2 Age Distribution

Table 3 provides information on the age distribution of individuals for the Agriculture and Rural Livelihood Survey. The active labour force (15-64 years) dominates the distribution of the sample (64.0%). However, the youth together with the aged population represent only 36.0%.

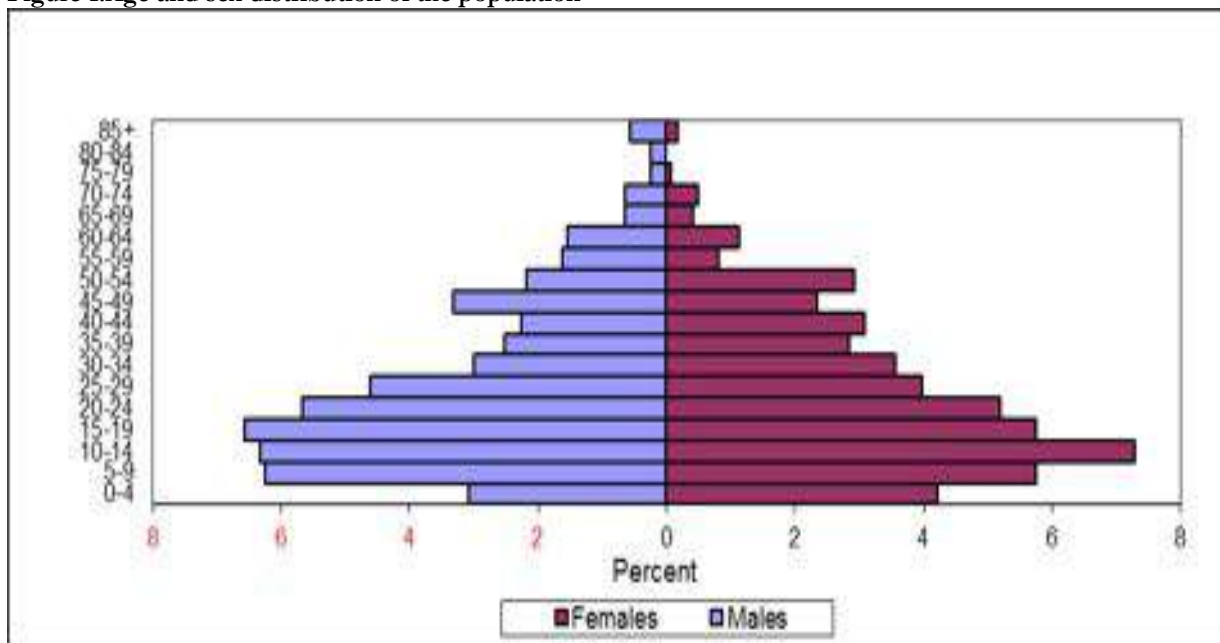
**Table 3: Age Distribution**

Age group	Frequency	Percent
0-5	127	10.0

6- 14	285	22.5
15-64	810	64.0
65+	43	3.4
Total	1,265	100.0

Field survey, 2014

**Figure 1:Age and sex distribution of the population**



Field survey, 2014

The 5-year age grouping population pyramid of the survey region as shown in Figure 1 reflects that of a typical developing country. This is because it is broader at the base but narrow at the tip. This means that majority of the population are within the youthful age (0-14) but relatively lower number of the people falls within the working class (15-64) while the aged population (65+) accounted for the least for both males and female. This nature of the population suggests higher dependency burden which is the proportion of the working class to the non-working class. The implications of higher dependency ratio on rural livelihood include; low savings, low standard of living among others. A closer observation of the figure further shows higher a pyramid for males compared to their female counterparts for the various age classes.

**Table 4: Average age by farmer type**

Farmer type	Average Age
Outgrower	26.6
Non-outgrower	25.5
Total	26.1

Field survey, 2014

Table 4 reports the average age of the individuals in the agriculture and rural livelihood survey. It is observed that on average, individuals in the sample were 26.1 years old. However, outgrower households were relatively older (26.6%) than non-outgrower households (25.5%).

**Table 0-3: Proportion of household head within various age groups**

Head age	Outgrower	Non outgrower	Total
Less than 35	12.2	21.9	17.2
35-64	81.3	63.2	72.0
65+	6.5	14.9	10.9
Total	100.0	100.0	100.0

Field survey, 2014

Household heads belong to various age categories as realised in the Agriculture and Rural Livelihood survey as represented in Table 0-3. A significant proportion of non-outgrower household heads (81.3%) were within 35-64 age cohorts while this represents only 63.2 percent for their non outgrower colleagues heads. For household heads less than 35 years old, the result shows that the proportion was higher for the non-outgrower households (21.9%) relative to the outgrowers (12.1%). In total most of the household heads were found to be young with majority having their age within 35-64 (72.0%) while the aged group accounted for only 10.9 percent.

**Table 0-4: Economically active population as a proportion of total population**

	Outgrower	Non-outgrower	Total
Total Population			1154
Economic Active (15+yrs)	39.0	35.8	74.8
Male	20.3	17.9	38.1
Female	18.4	16.5	34.8

Field survey, 2014

The result in Table 0-4 indicates that the economically active population accounted for 74.8 percent of the total population in the survey. We notice that a relatively higher proportion of outgrower households (39.0%) compared to 35.8 percent for the outgrower households. In terms of the gender distribution of the economically active population, there were relatively higher males (38.1%) than females (34.8%) who were economically active.

#### 1.7.4 Gender Composition

In term of gender distribution of the individuals as shown in Table 5, males accounted for about half (50.6%) while females represent 49.4%. Thus, there are relatively more males than females recorded in the survey.

**Table 4: Gender Distribution**

Gender	Frequency	Percent
Male	633	50.6
Female	617	49.4
Total	1,250	100.0

There was little gender variations observed in the gender distribution of the individuals as reported in Table 5. For instance, for the active age group, males accounted for 64.9 percent which was relatively higher than their female colleagues, 63.2 percent. Again, there were relatively more aged males (4.6%) than females (2.3%). However, in terms of the youth population, the proportion of females was relatively higher in each category than the case for males.

**Table 5: Age group by gender (%)**

Age group (yrs)	Sex		
	Male	Female	Total
0-5	8.9	11.5	10.2
6-14	21.6	23.0	22.3
15-64	64.9	63.2	64.1
65+	4.6	2.3	3.4
Total	100.0	100.0	100.0

Field survey, 2014

### 1.7.5 Ethnicity

Ethnicity as used in the Agriculture and Rural Livelihood Survey instrument is applicable to Ghana as it is part of the story in narrating social lives of people. Various ethnic backgrounds were reported by the individuals in the Agriculture and Rural Livelihood Survey. Table 6 shows that almost all the individuals in the (97.1 %) belong to Akan ethnic group while Ewe, Northern tribes and other tribes together accounted for just 3 percent. For instance, outgrower households who belong to the Akan ethnic group accounted for 98 percent which even exceed the average for the total (97.1%) while non-outgrowers accounted for 95.9 percent.

**Table 6: Ethnicity by farmer type**

Ethnicity	Outgrower	Non-outgrower	Total
Akan	95.9	98.4	97.1
Ewe	-	1.6	0.8
Northern Tribes	2.3	-	1.2
Other tribes	1.8	-	1.0
Total	100.0	100.0	100.0

Field survey, 2014

### 1.7.6 Education

The level of education among household members is presented in Table 7. Most of the household members for the Agriculture and Rural Livelihood Survey are Junior High School leavers (36.0 %). This followed by those with Lower Primary (25.9%) while Tertiary Education obtained just 3.2 percent. However, the education distribution for out growers and non out grower households presents a very interesting results. Thus, a closer look at the results shows that at lower levels of education, including those without any education up to Upper primary, the proportion of non out growers is higher than out grower. However, when it comes to higher levels of education starting from Junior High School up to Tertiary Education, the proportion of out growers was higher relative to non-out growers. This is not surprising because the out-growers are generally wealthier and have the capacity to invest in higher education of their wards as compared to their non-out grower colleagues.

**Table 7: Education distribution by farmer type**

Education	Outgrower	Non-outgrower	Total
No education	14.5	18.0	16.2
Lower primary	24.1	27.9	25.9
Upper primary	8.5	8.9	8.7
Junior High School	37.4	34.6	36.0
Secondary education	12.0	7.8	10.0
Tertiary education	3.6	2.8	3.2
Total	100.0	100.0	100.0

Field survey, 2014

## 2. LIVELIHOOD CHARACTERISTICS

Rural livelihood in Ghana is measured by several factors. The focus of this section of the report is to provide insight into some of the factors that give indication of rural livelihood which includes; proportion of main economic activity.

**Table 8: Distribution of main activity by farmer type households**

Main activity	Outgrower	Non-outgrower	Total
Income generating	23.4	23.2	23.3
School	40.4	33.3	37.0
Unemployed	6.5	7.5	7.0
Retired	0.6	0.3	0.5
Disabled	0.2	0.0	0.1
Subsistence	3.9	14.5	9.1
Domestic work	0.3	1.1	0.7
Others	18.4	11.0	14.8
Total	100	100	100

Field survey, 2014

Table 8 shows the distribution of main economic activities of the individuals in the Agriculture and Rural Livelihood Survey. The results clearly show that greater share of the individuals are in school accounted for over 37 percent in the region. This is followed by those whose main economic activity is income generating activity. Subsistence production and unemployment accounted for 9.1 percent and 7.0 percent respectively. For those who are in school, the results show that there is higher proportion of out-grower households (40.4%) as compared to the non-out-grower household (33.3%) as expected. However, there was higher proportion of non-outgrower households who were into subsistence production (14.5%) as compared to out-grower-households (3.9%).

**Table 2-1: Distribution of economic activities for economically active type household population**

Main Economic activity	Outgrower	Non outgrower	Total
Income generating	33.9	35.3	34.5
School	24.2	15.0	19.9
Unemployed	9.2	10.5	9.8
Retired	0.9	0.5	0.7
Disabled	0.2	0.0	0.1



Subsistence	5.6	22.3	13.5
Domestic work	0.5	1.5	1.0
Others	25.6	15.0	20.6
Total	100.0	100.0	100.0

Field survey, 2014

The distribution of economically across occupation is represented in Table 2-1. The results shows that a significant share of the economically active population are into income generating activity (34.5%) however the proportion was relatively higher for the non-outgrower households (35.3%) than it is for the case of outgrower households (33.9%). The second main activity of the economically active population is schooling which accounted for 19.9 percent with the proportion being higher for the outgrower households (24.2%) than for the non-outgrower households (15.0%). Subsistence production was also found to be a major economic activity in the survey however, the proportion was significantly higher for the non-outgrower households (22.3%) than it is for the outgrowers (5.6%) as we expected.

**Table 2-2:** Distribution of economic activities by age groups

	0-14	15-34	35-64	65+	Total
Income generating	0.3	30.3	43.8	9.3	25.4
School	94.1	33.1	1.5	16.3	39.6
Unemployed	1.3	15.9	2.1	2.3	7.6
Retired	0.0	0.0	0.6	9.3	0.5
Disabled	0.0	0.0	0.3	0.0	0.1
Subsistence	0.0	7.6	18.7	37.2	9.1
Domestic work	0.3	1.1	0.9	0.0	0.8
Others	3.9	12.1	32.0	25.6	16.1
Total	100.0	100.0	100.0	100.0	100.0

Field survey, 2014

The distribution of main activity across various age groups is represented in Table 2-2. The results show that most of the individuals less than 14 years are in school (94.1%). However, for those within 35-64 age cohorts, most of them are into income generating activities (43.8%) while those who are 65 years or older are into subsistence production (37.2%).

## 2.1 Livelihood Diversification and Transformation Rural Households

Diversification is a key feature in the transformation of rural lives in Ghana. The Agriculture and Rural Livelihood Survey revealed some of the ways in which the respondents think their lives have been transformed. These include their income and purchasing power. Thus, the section provides insight into the changes that have occurred in the lives of rural households and the reasons that account for them.

**Table 9: Comparison of Income now with the past 10 years by farmer type**

Income Level	Outgrower	Non-Outgrower	Total
Deteriorated	40.3	55.7	47.9
Same	7.8	11.3	9.5



Improved	51.9	31.3	41.8
Total	100.0	100.0	100.0

Field survey, 2014

The Agriculture and Rural Livelihood survey sought to find out the respondents view on whether their income has deteriorated same or improved comparing now to last 10 years. The statistics as illustrated in Table 9 reveals that about 48 percent of the respondents indicated that their income had improved which represent the highest for this region. However, among outgrower households, the proportion was higher (55.7%) as compared to the non-outgrower (40.3 %). Thus, most of the farmers were of the opinion that their income status in the past was better than the case now.

**Table 10: Purchasing Power by farmer type and sex**

	Outgrower			Non outgrower		
	Male	Female	Total	Male	Female	Total
Less goods	51.2	48.7	50.0	68.2	71.3	69.8
Same goods	3.4	4.5	3.9	3.7	7.0	5.3
More goods	45.4	46.8	46.1	28.1	21.7	24.9
Total	100	100	100	100	100	100

Field survey, 2014

Purchasing power is a key indicator of measuring change in livelihood as it represents people command over goods and services. From the agriculture and rural livelihood survey results as shown in Table 10, it is realised that almost 70 percent of non-out-growers think that their purchasing power has declined now compared to the last 10 years while that of the out-grower households was 50.0 percent. In terms of gender, more female non-out-growers (71.3%) compared to males (68.2%) reported that their purchasing power has declined. For, the out-growers, 51.2 percent males and 48.7 percent females noted that their purchasing power has declined. However, the proportion of those who indicated that their purchasing power could buy more good now was higher for out-grower respondents (46.1%) than the non-out-growers (24.9%).

## 2.2 Migration

Migration and commuting are typical strategies of rural households in Ghana in order to escape poverty and they do so through various means. Therefore, the discussion of rural livelihood in Ghana cannot be holistic without mentioning migration/commuting. This section of the survey provides information on the purpose of migration and commuting, most used means of transport among others.

The population in any given locality can be classified into indigenes – thus, those born in the locality or immigrants-those born outside the locality as noted in the agriculture and rural livelihood survey. The results in Table 0-1 show that bulks of the individuals in the survey were indigenes of their respective survey locality (74.3%) while the immigrants accounted for only 25.7 percent. However, we did not find any major difference in the distribution of indigenes and immigrants for the outgrowers and non-outgrower households.

**Table 0-1: Proportion of the population born in the same place (indigenes) and elsewhere (immigrants)**

	Outgrower	Non outgrower	Total
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Indigenes	73.9	74.7	74.3
Immigrants	26.1	25.3	25.7
Total	100.0	100.0	100.0

Field survey, 2014

**Table 11: Main purpose of migration/commuting by farmer type**

Main purpose of migration/commuting	Outgrower	Non-outgrower	Total
Formal work	7.4	9.1	8.2
Mining Work	3.7	18.2	10.2
Farming work	70.4	68.2	69.4
Trading	7.4	-	4.1
Other	11.1	4.6	8.2
Total	100.0	100.0	100.0

Field survey, 2014

Rural households in Ghana commute for several reasons. The major reasons as recorded in Table 11 are; farming work, mining work, trading and formal work. Those who cited farming work as the main reason for commuting represented the highest of all the reasons in the region which recorded 69.4 percent. Commuting to work in the mines is another major reason cited which accounted for 10.2 percent. This is not surprising because mining especially “galamsay” is a key activity practiced in the region apart from the usual rubber plantation farming. There was relatively higher proportion of out-growers (70.4%) than non-out-growers (68.2%) who cited that they commuting for farming related purpose. This is not surprising as rubber-out growing is viewed as an important business in the area and most of the farms are located at the out skirt of the town.

**Table 12: Main mode of transport for migration and commuting**

Most used means of transport	Outgrower	Non-outgrower	Total
Bus	29.6	40.9	34.7
Car	63.0	40.9	53.1
Truck	-	9.1	4.1
Motor bike	3.7	4.6	4.1
Other	3.7	4.6	4.1
Total	100.0	100.0	100.0

Field survey, 2014

Table 12 reports the main means of transport used by those individuals who had commuted during the last 12 months. The major means of transport reported by the respondents in the Agriculture and Rural Livelihood Survey in Ghana were; bus and car. Those commuters in the region who use car accounted for the highest share of the main means of transport (53.7 %) which is followed by use of bus (34.7%). The distribution of the results among outgrowers and non-out-grower households reflect some little variations. Bus usage as a means of transport had higher proportion for non-out-grower households (40.9%) than for the case of outgrower households (29.6%). However, in terms of car usage, it recorded over 62 percent for the out-grower households while the case of non-outgrowers was just 40.9 percent. Thus, outgrowers could afford cars as their means of transport for commuting while non-outgrowers depend of bus usage usually call “Trotro” (i.e. public transport) in Ghana.

**Table 13: Migration frequency**

Migration frequency	Outgrower	Non-outgrower	Total
Daily commuting	22.2	22.7	22.5
Every week	44.4	54.6	49.0
Every month	22.2	13.6	18.4
A few times a year	7.4	4.6	6.1
Seasonal/occasionally	3.7	4.6	4.1
Total	100.0	100.0	100.0

Field survey, 2014

Frequency of commuting as used in the survey is shown in Table 13. The frequency is measured based on daily commuting, every week, monthly, few times in a year and seasonal. The result shows that, commuting every week is the highest reported by the respondents (18.4%). Commuting on daily basis was the next highest which obtained 22.5 percent while seasonal commuting obtained the least share. The distribution of the results further reflects certain variations for out grower and non out grower households. Commuting done on daily basis obtained 54.6% for the non out grower households which was higher than the case for the out grower households (44.4%). Conversely, commuting for every month recorded a greater proportion for the out grower (22.2%) than it is for the non out grower households (13.6%). Thus, the results suggest that out grower households commute less often than non out growers.

**Table 14: Proportion of migrants/commuters who spent Most of their Time at destination locality (Rural/Urban)**

Locality	Outgrower	Non-outgrower	Total
Rural	70.0	64.0	67.3
Urban	32.9	34	33.4

Table 14 reports the average percentage of time spent by migrants/commuters in a particular destination. The results shows that on average, migrants and commuters spend most of their time in a rural area (67.3%) than in the urban area (33.4%). The distributions of the results show that relatively higher proportions of outgrowers spend more time in a rural area (70%) than their non-outgrower colleagues (33.4%). This is not surprising since the survey region was mainly rural and agriculture constitutes their main stay of livelihood. Thus, given that the Rubber Plantations are located in the surrounding villages, this could explain why more time in a rural location to work on their farms as reported by the survey respondents.

**Table 15: Mobility changes over the last 10 years**

	Outgrower	Non-outgrower	Total
Frequency increased	46.2	45.5	45.8
Frequency reduced	23.1	31.8	27.1
Distance increased	-	9.1	4.2
Distance reduced	3.9	-	2.1

No change	7.7	-	16.7
Other	19.2	13.6	4.2
Total	100.0	100.0	100.0

Field survey, 2014

Mobility has changed in several respects as indicated in Table 15. In terms of frequency, the results show that in the proportion of respondents who noted that there has been an increase in the frequency of trip accounted for 45.8 percent. Some respondents also reported that frequency of mobility has reduced which accounted for 27.1 percent. With respect to distance, there was no major change reported in the region. The distribution of the results among out-grower and non-out grower households reveals that, there was no clear variation for increase in the frequency of trips. However, those who reported that there has been a decrease in the frequency of trip obtained 31.8% for non-out grower households and this is relatively higher than for the out grower households (23.1%).

The survey results reveal a variety of previous residence of the immigrants in the survey region which mainly include Agyambra, Takoradi, and Abura as reported in Table 0-2. A major proportion of the immigrants cited Agyambra as their previous residence (40.9%). This is followed by Takoradi which accounted for 20.9% while Abura recorded the third highest proportion (15.3%).

**Table 0-2:** Top places of previous residence of immigrants

Previous residence	Freq.	Percent
Agyambra	88	40.9
Takoradi	45	20.9
Abura	33	15.3
Princess town	13	6.0
Kumasi	13	6.0
Tarkwa	13	6.0
Tumentu	10	4.7
Total	215	100.0

Field survey, 2014

**Table 16: Reasons for mobility changes over the last 10 years**

Reason	Outgrower	Non-outgrower	Total
Desire for more income	8.3	28.6	17.8
Job transfer/appointment	37.5	14.3	26.7
Job search	8.3	23.8	15.6
Increase in agricultural investment	4.2	-	2.2
No change	8.3	9.52	8.9
Other	33.3	23.3	28.9
Total	100.0	100.0	100.0

Field survey, 2014

The Agriculture and Rural Livelihood Survey sought to find out the reasons for the changes in mobility which is shown in Table 16. The responses obtained generally include desire for more income, job transfer and job search. The respondents in the region indicated job

transfers/appointments, desire for more income and job search as the major reasons why their mobility has changed. Job transfer/appointment accounted for 26.7 percent, desire for more income obtained 17.8 percent which job search constituted 15.6 percent. Higher proportions of out-grower households cite job transfers/appointments reasons (37.5%) as compared to non-out-grower households (14.3%). However, job search related reasons were cited by higher proportion of non-out-grower households (23.8%) compared to just 8.3 percent for the out-grower-households.

## 2.3 Remittances

Remittance is a key livelihood strategy of many Ghanaian households. It is well argued in theory that remittances are sent for altruistic and self-interest motives. The agriculture and rural livelihood survey identified two types of remittances which apply to the case of Ghana, namely, remittances from family members within the country and international remittances. As shown in Table 18, farm households receive both internal and international remittances in cash. As generally expected, the average total of internal remittances from family members was Gh ¢ 328.32 which is almost twice of international remittance (Gh ¢ 158.44). Interestingly, out grower households reported a higher mean amount of international remittances, Gh ¢ 213.04 which is over twice that of the non out grower households Gh ¢ 101.36. However, in terms of internal remittances, the average amount was higher for the non out grower households (Gh ¢ 376.77) than the case for the out grower households (Gh ¢ 254.94).

**Table 18: Average amount of cash remittance received**

Farmer Type	Mean cash internal remittance (Gh ¢)	Mean cash international remittance Gh ¢
Outgrower	254.94	213.04
Non out grower	376.77	101.36
Total	328.32	158.44

Field survey, 2014

### 2.3.1 Types and Average Remittance Flows

Internal Remittances received by households in the Agriculture and Rural Livelihood Survey are of various types, namely, cash, food as well as other goods as shown in Table 19. Cash constitutes the most dominant type of remittances received by the households in both regions. Remittances received in cash accounts for 87.5 percent. This is followed by remittance received in food such as cassava, plantain and provisions which for instance recorded 7.5 percent while remittances in form of other goods such as shoe, clothing and mobile phone represent the least share. It is noticed that the non out grower households reported more cash received as remittance (88.9%) than the case for the out grower households (84.6%).

**Table 19: Internal Remittance type by farmer type**

Type	Outgrower	Non outgrower	Total
Cash	84.6	88.9	87.5
Food	15.4	3.7	7.5
Other goods	-	7.4	5.0
Total	100.0	100.0	100.0

Field survey, 2014

### 2.1.2 Channels of Remittances

Rural households in the survey region receive remittances through informal and formal channels and this is illustrated in Table 20. Almost all (about 98%) of the households who received internal remittance was mainly through informal sources; the remaining 2% was received through formal channel. The entire out grower households who received remittance was through informal approach as compared to 97.3% for the non out grower households.

**Table 20: Main channel of remittance**

Channel type	Internal Remittance			International Remittance		
	Outgrower	Non-outgrower	Total	Outgrower	Non-outgrower	Total
Informal channel	100	97.3	98.0	0*	2*	2*
Formal channel	0	2.7	2.0	1*	0*	1*
Total	100	100	100	1*	2*	3*

Field survey, 2014

Note: \*is an absolute figure

With regards to the international remittance, only 3 households reported benefitting from that. 2 of these households received their international remittance through informal source with the remaining 1 household receiving it through formal channel. 2 of those who received international remittance belong to non out grower household while only 1 belong to an out grower household.

### 2.1.1 Frequency of Remittance Receipts

Table 21 reports the frequency at which remittances are received from other household members (especially those who are usually absent). Based on the number of times they receive remittance, about 83% of households indicated they receive remittance sometimes while only a small proportion of the households reported that they receive remittance on regular basis (10.2%). The results reflect some differences in for the out grower and non outgrower households. Remittance received for irregular basis accounted for 94.4% which is higher than the case for the non out grower households (78.1%). However, remittance received on regular basis was relatively higher for the non out grower households (12.2%) than the case for the out grower households.

**Table 22: Frequency of receipt of remittance**

How often received	Out grower	Non out grower	Total
Sometimes	94.4	78.1	83.1
Once	-	9.8	6.8
Regularly	5.6	12.2	10.2
Total	100.0	100.0	100.0

Field survey, 2014

### 2.1.1 Use of Remittances

Remittances received by rural households in Ghana are of several uses as revealed in the Agriculture and Rural Livelihood Survey as indicated in Table 23. The most dominant use of remittance reported in the survey is for daily consumption (41.9%). This is followed by health related purposes which obtained 20.9 percent while remittance for agriculture investment purpose obtained 27.9

percent. Education and funeral intended purpose of remittance obtained the least share. Remittance meant for daily consumption recorded a higher proportion for the non out grower households (48.2%) than the case for the out grower households (31.3%). However, in terms of agriculture related purpose of remittances, the proportion was higher for the out grower households (31.3%) than the case for the non out grower households (25.9%).

**Table 23: Use of remittance for the past 5 years by farmer type**

Main use of remittance	Outgrower	Non-outgrower	Total
Agriculture	31.3	25.9	27.9
Daily consumption	31.3	48.2	41.9
Education	-	3.7	2.3
Health	31.3	14.8	20.9
Housing	-	7.4	4.7
Funeral	6.3	-	2.3
Total	100.0	100.0	100.0

Field survey, 2014

### 2.1.1 Relationship with Remittance Senders

Two types of relationships to remittance sender were identified in the survey results as shown in Table 24, namely, household members and other relatives. Most of the remittances are received from other relatives such as brother, sister and untie which accounted for 52.6 percent while remittance received from household members obtained 47.4%. The distribution of the results for out growers and non out growers shows that over 90 percent of the out grower households received remittance from other relative while this represents only 37.0% for the non out grower households. Non-outgrower households however, received a higher proportion of their remittance from household members (63.0%) as compared to the outgrower households (9.1%).

**Table 24: Relationship with internal remittance sender**

Sender	Outgrower	Non-outgrower	Total
Household members	9.1	63.0	47.4
Other relatives	90.9	37.0	52.6
Total	100.0	100.0	100.0

Field survey, 2014

## 3. AGRICULTURAL PRODUCTION AND RURAL LIVELIHOOD

Agricultural production is relevant in the analysis of rural livelihood. However, plots are key variables for every agricultural activity. This section of the Agriculture and Rural livelihood survey provides relevant information concerning plots which include; average distance to plot and type of land tenure system, labour usage and land allocation to crops as reported in the survey.

### 3.1 Plots

**Table 3-1: Average land size (in hectares) and number of plots ownership**

	Outgrower	Non out grower	Total
Average plot size (hectares)	1.2	0.7	1.0

Average number of plots	1.7	1.5	1.6
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Field survey, 2014

The average plot size reported in the survey was 1 hectare as reported in Table 3-1. This can be explained by the fact that in Ghana, the traditional land tenure system which is family and communal systems constrain access to land for large-scale production. We however noticed that the average plot size recorded by the outgrower households was relatively higher (1.2 hectare) than for the non-outgrowers (0.7 hectare). With respect to plot number, the result indicates that the average plot number reported in the survey was 1.6. However, there was not clear difference in the average number of plots reported the outgrowers and non-outgrowers households.

**Table 3-2: Minimum and maximum plot ownership**

Variable	Obs	Mean	Std. Dev.	Min	Max
Average plot size	360	0.980	2.765	0.001	30
Number of plot	358	1.581	0.872	1	8

Field survey, 2014

Regarding the maximum and minimum size of plot and number, the results in Table 3-2 show that the minimum plot number reported in the survey was 1 while the maximum was 8. For plot size the minimum value recorded was 0 while the maximum was 30. Ownership of a single plot recorded the highest plot size on the average (1.3%) as shown in Table 3-3. However, we did not find any major difference in plot sizes for outgrower and non-outgrowers.

**Table 3-3: Average size by number of plots**

Number of plot	Outgrower	Non outgrower	Total
1	0.7	0.9	1.3
2	0.8	0.2	0.6
3	0.6	0.2	0.5
4	0.4	0.0	0.3
5	0.0	0.0	0.2
6			
7			
8		0.8	0.8
Total	1.2	0.7	1.0

Field survey, 2014

An important variable captured in the survey is in respect to the perceived distance to the plot location by farmers as shown in Table 25. The distance used in this report is measured in kilometres coupled with the time dimension (in minutes). The average distance (in minutes) covered by outgrowers is more (67.4 minutes) which also had the highest average distance in kilometres (8.0 km) than the non-outgrower which had 56.3 minutes with also the least distance in kilometres (6.6km). Thus, outgrowers covered more distance to a plot than non-outgrowers since most of the Rubber Plantations are outside the village of residence depending on where land is available at large scale while the food crops farmers have their plots located closer to the villages.



**Table 25: Average distance to plot**

Farmer type	Average distance (minutes)	Average distance (kilometres)
Outgrower	67.4	8.0
Non-out grower	56.3	6.6
Total	62.3	7.4

Field survey, 2014

**Table 26: Ownership of plot**

Plot ownership type	Outgrower	Non-outgrower	Total
Owned by household	67.7	60.7	64.5
Rented	3.6	4.8	4.1
Borrowed	1.5	9.5	5.2
Community land	1.5	-	0.8
Owned by cooperative	2.1	-	1.1
Owned by clan	17.4	13.1	15.4
State land	0.5	0.6	0.6
Other	5.6	10.6	8.2
	100.0	100.0	100.0

Field survey, 2014

A key variable captured in the Agriculture and Rural Livelihood Survey is the nature and structure of plot ownership. Traditionally, the land tenure system, especially within the African context is of major priority when it comes to land related issues. The survey results for Ghana which on the generally reflect the type of land ownership practiced in as shown in Table 26. The major forms of land ownership reported in the survey include, household owned, rented, borrowed, community land, owned by clan and state land. A total of about 64% of households in the region claimed the ownership of their respective plots by themselves. This is followed by roughly; an average of 15% of all the households used in the survey who reported that their land is owned by the clan. Land owned by the state however, accounted for the least share of all the systems of land ownership. A relatively higher proportion of outgrower households (67.7%) than non-outgrower households (60.7%) own their land by themselves. Again, land owned by clan accounted for a relatively higher proportion for out grower households (17.4%) than the case for non-out grower households (13.1%).

**Table 27: Change in plot size**

Change in size	Outgrower	Non-outgrower	Total
Decreased	4.5	8.1	6.3
Same	63.1	74.8	68.9
Increased	32.4	17.1	24.8

Field survey, 2014

The survey also revealed information in relation to the changes in plot size over the past decade as shown in Table 27. A higher proportion of non out grower households (74.8%) as against out grower households (63.1%) indicated that they had no change in the size of their plot. In terms of increase in the size of plot, a higher proportion was recorded by the out grower household (32.4%) as compared to the case for non out grower households (17.1%). With respect to the entire sample, a higher proportion was recorded for those who noted there has been no change in their size of plot

(68.9%), followed by those who said there has been an increase in the size of their plots now than the past decade while those who reported there has been a decrease in the size of their plots obtained the least.

### 3.2 Labour

Table 28 illustrates the nature and rate of labour usage in the region. Major sources of labour include; hired labour, family labour and the combination of both. As expected, most outgrower households in the survey (56.2%) reported the use of combination of hired and family labourers in their agricultural activities while this represents 45.8% for the non-outgrower households. It is noted however, that more proportion of non-outgrower households (44.4%) use family labour as compared to the out grower households (25.3%). This is not surprising because the non-outgrowers are generally into small-scale farming hence they use family labour as compared to the outgrowers who are into large-scale farming. In terms, of hired labour usage, outgrowers reported a higher proportion (15.5%) than the case for the non-outgrowers (6.5%) as expected. For the total, usage of combination of hired and family labour accounted for 51.6 percent, followed by family labour alone (33.8%) while hired labour alone accounted for 11.5 percent.

**Table 28: Labour usage**

Labour	Outgrower	Non-outgrower	Total
Hired	15.5	6.5	11.5
Family	25.3	44.5	33.8
Combination of both	56.2	45.8	51.6
Other	3.1	3.2	3.2

Field survey, 2014

**Table 29: Labour Positions of household members**

Labour Position	Outgrower	Non-outgrower	Total
Self Employed	71.3	60.3	65.8
Employer	2.5	-	1.2
Permanent wage labour	4.6	10.7	7.7
Long term contract	2.1	1.7	1.9
Short term contract	0.8	1.7	1.2
Casual wage labour	2.5	5.4	3.9
Family labour without pay	16.3	20.3	18.3
Total	100.0	100.0	100.0

Field survey, 2014

The outcome of the Agriculture and rural livelihood survey reveals several labour positions of household members as reported in Table 29. The major labour positions identified are, self-employed which accounted for over 65.8 percent in the region. This is followed by family labour without pay represents 18.3 percent while permanent wage labour accounts 7.7 percent. We also noted some differences in the labour positions among the various farm households. For instance, self-employment accounted for a higher share for the outgrowers 71.3 percent while it represented 60.3 percent for the non-outgrower households. However, family worker without pay recorded a higher proportion for the non-outgrower households than as reported for the outgrower households (16.3%).

**Table 30: Change in use of labour compared to last 10 years**

Use of labour	Outgrower	Non-outgrower	Total
Less	17.1	17.9	17.5
Same	42.7	60.2	51.4
More	40.2	21.9	31.1

Field survey, 2014

Table 30 illustrates the extent of changes in the use of labour as compared to the past ten years. The result indicates that, about 51% of farm households had used the same amount of labour on a plot while those who indicated they use more labour now accounted for 31.1 percent. The proportion was higher for non-outgrower households (60.2%) than the case for the outgrower households (42.7%). In terms of more labour usage however, the proportion was higher for outgrower households (40.2%) than it is for the non-outgrower households (21.9%).

### 3.3 Non-Labour Inputs

The major agricultural inputs used by households sampled in the survey include; seeds (bought) inorganic fertilizer, organic fertilizer, pest/herbicides, and irrigation water. The percentage of households that use these types of inputs is shown by Table 31. A total of 40% of the households purchased seeds in their agricultural activities. This is followed by inorganic fertilizer usage which constitutes about 30 percent. Pests/herbicides and inorganic fertilizer usage accounted for over 14% each. The analysis of the results among various farm households reflects some variations in the input usage. Thus, outgrower households use a higher proportion of almost all the inputs than the non-outgrower. Organic fertilizer usage was the only exception where the proportion was higher for the non-outgrowers (16.8%) than for the outgrowers (12.3%). This result is not surprising since the outgrowers being large-scaled farmers will use more inputs in their farming business than for the non-outgrowers.

**Table 31: Input Usage/Purchase**

Input type	Outgrower	Non-outgrower	Total
Bought seeds	38.7	42.4	40.2
Inorganic fertilizer	33.4	25.7	30.4
Organic fertilizer	12.3	16.8	14.0
Pest/herbicides	14.9	14.1	14.6
Irrigation Water	-	2.0	0.4
Total	100.0	100.0	100.0

Field survey, 2014

Regarding the use of non-labour inputs such as fertilizers as shown in Table 32, pesticides and herbicides, most of the farm households reported that they had used more labour now than the case of last ten years. Those who reported that they have used the same amount for labour represent 37.9 percent while those who use less labour obtained 18.8 percent. The distribution of these outcome further shows that almost 50 percent of outgrower households indicated that they use more proportion of non-labour inputs as against 36.8 percent for the non-outgrower households. However, in terms of same non-labour input usage, the proportion was higher for the non-outgrower households than the case of the outgrowers.

**Table 32: Change in use of non-labour inputs**

Non-labour input	Outgrower	Non-outgrower	Total
Less	19.9	17.3	18.8
Same	32.0	45.9	37.9
More	48.1	36.8	43.3

Field survey, 2014

### 3.4 Livestock

Livestock ownership is a key indicator in the analysis of rural livelihood in Ghana. Table 33 reports various livestock owned in the Agriculture and Rural Livelihood Survey. The main livestock reported in the survey are cattle, oxen, pigs, goats and sheep.

**Table 33: Average number of livestock**

Livestock name	Outgrower	Non-outgrower	Total
Cattle	35.2	31.9	33.5
Chicken	26.9	22.0	24.0
Duck	5.5	15.5	10.5
Goats	29.3	21.9	25.4
Oxen	36.2	31.9	33.9
Pigs	37.1	32.1	34.4
Rabbit	3.0	-	3.0
Sheep	33.3	32.1	30.7
Total	32.8	28.0	30.2

Field survey, 2014

Among the array of livestock reported by the respondents as shown in Table 33, Pigs recorded the highest mean (34.4). This is followed by cattle and oxen which obtained over 33 average numbers each. Rabbit however had the least average number reported (3.0). A careful observation of the table reveals that outgrower households generally own the highest mean number of livestock as compared to non-out growers. For instance, the mean number of goats owned by out growers was 29.3 while that for non-outgrowers was just 21.9. For all animals together, out growers own 32.8 amounts of livestock while the case for non-outgrowers was just 28.

**Table 34: Use of livestock**

	Outgrower	Non-outgrower	Total
Subsistence	60.5	50.0	55.2
Sale	10.5	3.4	6.9
Both	29.1	46.6	37.9
Total	100.0	100.0	100.0

Field survey, 2014

Regarding the use of livestock, rural households in the study area essentially use livestock for subsistence purposes (55.2%) as indicated in Table 34 while livestock kept for sale accounted for only 37.9 percent. Livestock kept for both subsistence and dual purpose accounted for 37.9 percent for the combined households. A higher proportion of out growers keep livestock for subsistence purpose (60.5%) as compared to the non-out growers (50.0%). Sale of livestock accounted for 10.5 percent for the outgrower households while that for non-outgrower households was just 3.4 percent.

However, in terms of dual livestock kept for purpose (sale and subsistence), non-out grower households reported the highest (46.6%) while that for out grower households was just 29.1 percent.

### 3.5 Crop Output, consumption and sale

It is relevant to analyse crop output in the context of rural livelihood. This section of the report focuses on providing information on land allocation to crop, use of labour and crop sale. In relation to land allocation, households were asked to compare to hint on the rate of land allocation over the past decade. The results as reported in Table 35 reveals that same land allocated to a crop now compared to last 10 years dominates for both non outgrower and out grower households. However, the proportion of non out grower households who cited same land allocated to a crop even now was higher (70%) than for the outgrower households (63.2%). More land allocated to a crop was however found to be higher for out-grower households (30.7%) than the case of non-out grower households (18.0%).

**Table 35: Change in land allocation to crop**

Change in consumption	Outgrower	Non-outgrower	Total
Less	6.1	12.1	9.2
Same	63.2	70.0	66.7
More	30.7	18.0	24.0
Total	100	100	100

Field survey, 2014

**Table 36: Change in crop consumption**

Change in consumption	Outgrower	Non-outgrower	Total
Less	12.0	38.8	26.0
Same	29.9	11.6	20.3
More	58.1	49.6	53.7

Field survey, 2014

The agricultural and rural household survey conducted further sought to solicit information regarding crop output consumption. From Table 36, out grower households as expected, reported more crops than consumption (58.1%) as against the case for the non out grower households (49.6%). A higher share of non-outgrower households however, reported less crop consumption (38.8%) than the case of out grower households (12.0%). In terms of reporting no change in crop consumption, there proportion was higher for outgrower households (29.9%) than the non out grower households (11.6%). For all households together, more than 50 percent reported an increment in crop consumption now while those who reported decrease and no change in crop consumption recorded 26.0 percent and 20.3 percent respectively. The increase in the level of crop consumption can be attributed to increase in household size over the years.

**Table 37: Crop output sale**

Change in crop sale	Outgrower	Non-outgrower	Total
Less	30.2	30.9	30.6
Same	16.0	11.4	13.5
More	53.8	57.7	55.9

Field survey, 2014

Table 37 reports on the relative importance of the extent of crop indicated sales by the respondents in the survey. On the average, higher proportion of non-outgrower households reported more crop sales (57.7%) as against their out grower cohorts (53.8%). In terms of those who reported there has been no change in their crop sales, however, the percentage was higher for the out grower households (16%) than the case for the non-out grower households (11.4%). For all households together, farm households who have more sales accounts for the highest proportion (55.9%) while those who had less sales accounted for 30.6 percent with those who reported same sales being the least.

### 3.5 Land Tenure Status

Type of Land tenure system is also relevant in investigating livelihood change among farm households in Ghana as shown in Table 38. As generally expected, almost half (47.7%) of out grower households own land with registered title as compared to 40.2% recorded for the non out grower households. However, relatively higher proportion of non out grower households reported that they own land without registered title (36.3%) compared to out grower households (32.2%) had land without registered title. Interestingly, a greater share of the non out grower households (21.6%) use land that are rent free which the case for the out grower household was just 14.4%. In terms of renting-in land, the results was relatively higher for the out grower households. The results for the for all households combined shows that, ownership of land with registered title accounted for the most (44.0%) followed by those owned without registered title (34.2%) while renting-in land obtained the least (3.8%).

**Table 38: Land tenure status by farmer type**

Tenure status	Outgrower	Non-outgrower	Total
Owned with registered	47.7	40.2	44.0
Owned w/o registered	32.2	36.3	34.2
Rented	5.7	1.9	3.8
Rent free use	14.4	21.6	17.9
Total	100.0	100.0	100.0

Field survey, 2014

### 3.6 Changes in Crops, Inputs and Output

From Table 39, farmers reported several kinds of changes that have occurred in their agricultural production process over the years. The survey captured some of the major changes witnessed by farmers in their agricultural production in the area of crop, output and input acquisition over the past decade. High cost of input other than labour such as fertilizer was the main change that was reported by most of the households (25.0%). Increment in crop consumption was another major change reported by the farmers (16.3%). However, reduction in crop yield and high cost of labour accounted for about just 13 percent each. A higher proportion of out grower households cited high cost of inputs as they key change in their crop production (31.5%) while this recorded only 17.9 percent for the non out grower households. Increase in crop output however accounted for a greater share for the non out grower households (14.3%) than the case for the out grower households (9.3%). Similarly, increment in crop consumption was found to represent a higher proportion for the non out grower households (19.1%) than the case reported for the out grower households (14.7%).

**Table 39: Main changes in crops, input and output**

Change	Outgrower	Non-outgrower	Total
Increase in output	9.8	14.3	11.9
Reduction in crop yield	12.0	16.1	13.9
Higher cost of farm input	31.5	17.9	25.0
Higher cost of labour	14.1	11.9	13.1
Increase in crop consumption	14.7	19.1	16.8
Increase in crop sale	4.9	7.7	6.3
Other	13.0	13.1	13.1
Total	100.0	100.0	100.0

Field survey, 2014

### 3.7 Crop marketing outlets and buyer types

There are various outlets through which farmers sell their crops as presented in Table 40. The major buyer types identified in the rural livelihood survey, namely, farm gate, market and company agents. As expected all the Rubber out growers sell their crops to a company at a company gate which is the Ghana Rubber Estates Ltd. (GREL) which had an outgrower office at Agona-Nkwanta, the District capital. For market outlet, the results show that over 66 percent of all the farmers sell their crops to local trader. As expected, a greater proportion of non out grower households sell their crops to a local trader at the market (82.6%) which this recorded only 47.7 percent in the case of the out grower households. For those who identified the farm gate as their sale outlet, the results reveals that all the non out grower sell their crops to a local trader while only 22.2 percent of the out grower households sell their crops through this medium.

**Table 40: Sale outlets and buyer type**

Buyer Type	Outgrower	Non-outgrower	Total
Farm Gate			
Local trader	22.2	100	36.4
Company agent	77.8	-	66.4
Farmers' organization	-	-	
Other farmer	-	-	
Cooperative	-	-	
Market			
Local trader	47.4	82.6	66.7
Company agent	10.5		4.8
Farmers' organization	42.1		28.6
Other farmer	-	17.4	
Cooperative	-		
Company Gate			
Local trader	100	-	-
Company agent	-	-	-
Farmers' organization	-		



		-	-
Other farmer	-	-	-
Cooperative		-	-

Field survey, 2014

### 3.8 Crop Prices

Table 41 shows the average minimum and maximum price of all the major crops revealed by farmers during the survey in the two regions. Most of crops reported are food crops, which include cocoa, oil palm, rubber, orange, plantain, cassava, maize, yam, and okro. However, few of the crops reported were cash crops, namely Rubber, Oil Palm, Cocoa and Sugar Cane. Among the food crops, Maize obtained the highest minimum average market price (Gh ¢67.4) this followed by Cocoyam which had Gh ¢66.6 as its next highest minimum average price. However, for the cash crops, Cocoa recorded the highest minimum market price (Gh ¢149.8), followed by Rubber (Gh ¢107.7) as generally expected.

**Table 41: Average minimum and maximum price per crop**

Type of crop	Average (min) price	Average (max) price
Cassava	48.6	55.9
Cocoa	149.8	151.8
Cocoyam	66.6	93.0
Maize	67.4	76.0
Oil palm	29.8	33.6
Okro	36.9	42.3
Orange	6.0	7.0
Plantain	33.5	32.2
Tomatoes	29.9	28.3
Sugar cane	20.2	20.6
Rubber	107.7	124.8
Total	54.2	60.5

Field survey, 2014

In terms of maximum prices for the food crops, Cocoyam had the highest maximum price (Gh ¢93.0) which is followed by cassava (Gh ¢55.9). The results for the cash crops reveals that Cocoa again had the highest maximum price (Gh ¢151.8) while Rubber recorded (Gh ¢124.8) as the next highest.

### 3.10 Production Assets

Production asset is relevant in the discussion of rural livelihood in Ghana. Table 42 provides information on the various production assets owned by rural households in the Agriculture and Rural Livelihood Survey. Some of the major assets include cutlass, cart, hoe, milling machine, Ox plough, spraying machine and tractor. Tractor, ox-plough, milling machine and cart reported the highest average number (over 18% each). There is no clear distinction however, between the ownership of farm assets among for out growers and non out growers.

**Table 42: Ownership of farm Assets**

Item name	Outgrower	Non-outgrower	Total
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Cutlass	13.5	13.7	13.5
Cart	18.3	18.2	18.2
Hoe	13.1	13.5	13.3
Milling machine	18.3	18.2	18.2
Ox-Plough	18.3	18.2	18.2
Spraying machine	0.2	0.2	0.2
Tractor	18.3	18.2	18.2
Total	100.0	100.0	100.0

### Access to common pool resources

Access to common pool resources was another focus variable revealed in the Agricultural a Rural Livelihood Survey. From Table 43, a higher share of non-outgrower households reported that they had access to common pool of resources (22.9%) such as forest, rivers etc. than the case of out grower households (17.2%). In total, only 20% of all households reported that they had access to common pool of resources which suggests that access to common pool of resource is not a common phenomenon in the study region. This can be attributed to the high rate of commercial farming (i.e. Rubber Plantation) in the area which requires a large piece of land and has resulted to the extinction of forest lands which could serve common interest of the people.

**Table 43: Access to communal land**

Access to communal land	Outgrower	Non-outgrower	Total
Yes	17.2	22.9	20.2
No	82.8	77.1	79.8
Total	100.0	100.0	100.0

Field survey, 2014

**Table 44: Use of communal land**

Use of communal land	Frequency	% of responses	% of cases
Agriculture	29	35.8	76.3
Livestock	16	19.8	42.1
Collecting of firewood	31	38.3	81.6
Making charcoal	1	1.2	2.6
Collecting food/natural resources	4	4.7	10.5
Total	81	100.0	213.2

Field survey, 2014

Several uses were identified for the few respondents who reported that they had access to common pool of resources as shown in Table 44. The main uses of communal land are; agriculture, livestock and collecting firewood. Collecting of firewood use of communal land accounted for the highest share of responses (38.3%). This is followed by agriculture which constitutes 35.8 percent while livestock represents 19.8 percent. However, the use of communal land for making charcoal accounts for the least share 1.2 percent in this region. This suggests access to communal land helps to promote rural livelihood.

**Table 45: Importance of communal land**

Importance	Outgrower	Non-outgrower	Total
Very important	66.7	28.6	46.2
Important	33.3	57.1	46.2
Not important	-	14.3	7.7
Total	100.0	100.0	100.0

Field survey, 2014

Various degree of importance of access to communal land is established by households as indicated in Table 45. Most of the respondents were of the view that access to communal land is important and very important to them which obtained over 46 percent each while those who said access to communal land is not important to them represents the least share (7.7%). Further analysis of the results reveals that most out grower households stated that access to communal land is very important to them (66.7%) while this represents only 28.6 percent for the non out grower households. Interestingly, none of the out growers stated that access to communal land is of no importance to them as against 14.3 percent for the non out grower households.

#### 4. ACCESS TO CREDIT AND LOANS

Financial asset constitutes important variable of interest in the Agriculture and Rural Livelihood Survey. The focus of this section of the report is to highlight and sources of loans to rural households in Ghana for the past five years. The section also gives information on the purpose of loans contracted by the households.

##### 4.1 Sources of Credit

Rural households in the survey region reported various institutions from which they have obtained loans as illustrated in Table 37. These include; rural banks, savings and loans companies and commercial banks. The highest proportion of households reported that they took loan from the commercial banks (38.3 %) within the past five years while loan from rural bank was the next highest (27.1 %) with savings and loans/microfinance companies being the least, 14%. The results further reveal some differences in the in the loans obtained from various sources among OG households and NOG households. Loans from commercial banks constituted more than half (53.6%) for out grower households while this represents 10.5% for the non out grower households. However, most of the non out grower households took loans from the rural banks (47.4%) while the case for out grower households was just 15.9%.

**Table 46: Sources of loan by farmer type**

Institution name	Outgrower	Non-outgrower	Total
Rural bank	15.9	47.4	27.1
Savings and loans/Microfinance	13.0	15.8	14.0
Commercial	53.6	10.5	38.3
Other	17.4	26.3	20.6
Total	100.0	100.0	100.0

Field survey, 2014

##### 4.2 Purpose for Contracting Credit (Loans)

Loans are meant for several uses as identified in the Agriculture and Rural Livelihood Survey as indicated in Table 47. The main uses of loans reported in this survey are; agriculture, business and

education. More than half (51.0 %) of the loans received by the households are invested into Agriculture. This was followed by business related purpose (26.1%) while loans used for education accounted for just 6.7 percent. In the Eastern Region however, loans used for business purpose obtained the highest (33.9%). The distribution of loan uses for out grower households and non out grower households reflected some interesting results. Over 62 percent of the loan received by the out grower households are invested into agriculture while this accounted for only 28 percent for the non out grower households. However, in terms of business purposes, it was higher for the non out grower households (37.1%) are invested into non- farm businesses while this recorded only 20.3 percent in the case of the out grower households.

**Table 47: Purpose of loan by farmer type**

Loan purpose	Outgrower	Non-outgrower	Total
Agriculture	62.3	28.6	51.0
Business	20.3	37.1	26.0
Education	4.4	11.4	6.7
Other	13.0	22.9	16.4
Total	100.0	100.0	100.0

Field survey, 2014

### 4.3 Use of Mobile Money

Use of ‘mobile money’ was another measure of financial assets that was used in the Agriculture and Rural Livelihood Survey as indicated in Table 48. The results show that mobile money is used mainly for receiving money (48.3%). This is followed by those who use it to receive money while those who used it for sending money accounted for 34.5 percent. The results reflect some variations in the use of mobile money for out grower and non out grower households. Using mobile money to receive money obtained a higher share for the out grower households (57.1%) as against 25.0 percent for the non out grower households. However, using mobile phone/money to send money recorded a higher proportion for the non out grower households (37.5%) as against the non out grower households (33.3%). Furthermore, use of ‘mobile money’ for saving represented a higher proportion for the non out grower households (12.5%) as against the out grower households (9.5%).

**Table 48: Use of ‘mobile money’ by farmer type**

Use of mobile money	Outgrower	Non-outgrower	Total
Sending money	33.3	37.5	34.5
Receiving money	57.1	25.0	48.3
Saving money	9.5	12.5	10.3
Other	-	25.0	6.9
Total	100.0	100.0	100.0

Field survey, 2014

## 5. HOUSEHOLD AND COMMUNITY CHARACTERISTICS

### 5.1 Housing

The discussion now turns to housing characteristics as identified in the Agriculture and Rural livelihood survey. Several dwelling types have been identified among rural residents in Ghana. It must however, be noted that this was an adaptation to the questionnaire as it pertains to the case of Ghana.

**Table 49: Dwelling types**

Type of dwelling	Outgrower	Non-outgrower	Total
Separate house	2.8	1.9	2.4
Semi-detached house	14.4	9.1	11.8
Flat apartment	2.8	1.0	1.9
Rooms compound house	40.5	53.1	46.7
Room other type	39.6	31.4	35.6
Several huts/building	-	1.1	0.6
Total	0.0	2.4	1.2

Field survey, 2014

The survey results in Table 49 show that over 46 percent of the households live rooms in a compound houses made up of several rooms. This consistent with the national case in the GLSS6 which reported that majority Ghanaian households dwell in compound houses made up of several rooms. The next major dwelling type in the rural livelihood survey was other type rooms (35.6%) live in rooms of other types. Several huts/building was however the least type of dwelling found in the area. A further analysis of the results indicates that more than half (53.1%) of non-outgrower households reside in rooms compound house as while this type of dwelling accounted for 40.5% for the out grower households. A greater share out grower households was found to live in rooms of other types (39.6%) than the case for the non outgrower households (31.4%). Interestingly, a relatively higher proportion of out grower households reside in separate house as well as flat apartment than the case of non out grower households. Thus, the use of improved dwelling type was found among the outgrower households than the case for the non-outgrowers.

**Table 50: Roofing type by farmer**

Roofing material	Outgrower	Non-outgrower	Total
Corrugated iron sheet	65.0	57.0	61.1
Tin or metals other than iron sheets	12.3	14.4	13.3
Asbestos	6.8	6.7	6.7
Thatch	0.6	0.0	0.3
Other	15.3	20.6	17.9
Total	100	100	100

Field survey, 2014

Most of the households used for the Agriculture and Rural Livelihood Survey live in houses that are roofed with corrugated iron sheet as illustrated in Table 50. However, the proportion of out grower households that live in houses roofed with corrugated iron sheet is higher (65.0%) as compared to their non out grower colleagues (57%). Other roofing materials such as Asbestos and Thatch were not found to be very common in the enumeration areas selected of the study.

## 5.2 Public Services

Access to public services is necessary in investigating rural livelihood in Ghana. Among these services include electricity, sources of drinking water and sanitation which are discussed as follows:

### 5.2.1 Access to Electricity.

Over 94 percent of households had electricity as shown in Table 51 which was even higher than the national case of 70% as reported in the GLSS6. However; the data shows that a relatively higher

proportion of out grower households have electricity (94.8%) as against the case of non out grower households (93.9%). Other sources of power such as solar were not commonly reported as generally the case in Ghana.

**Table 51: Electricity by farmer type**

Access to electricity	Outgrower	Non-outgrower	Total
No electricity	4.6	4.2	4.3
Electricity	94.8	93.9	94.4
Others	0.8	1.9	1.3
Total	100.0	100.0	100.0

Field survey, 2014

### 5.2.2 Sources of Drinking Water

Rural households in obtain their drinking water from several sources. Some of the major sources of drinking water to rural households in Ghana are borehole/protected well public network and unprotected well. Evidence from the survey results in Table 52 shows that borehole/protected well is the main drinking water source for the households which accounts for over 64 percent. Public network sources of drinking water accounted for 15.8% while unprotected well obtained the least share, 1.2 percent. Further analysis of the results did not reflect any major variation for out growers and non out grower households.

**Table 52: Source of drinking water**

Drinking water source	Outgrower	Non-outgrower	Total
Public network	15.2	16.5	15.8
Borehole/protected well	64.1	63.8	64.0
Unprotected well	2.2	0.2	1.2
Other	18.6	19.6	19.1
Total	100.0	100.0	100.0

Field survey, 2014

### 5.2.3 Sanitation

Another variable of interest captured in the survey in assessing the livelihood of rural households in Ghana sanitation. One variable that gives information on sanitation was the type of toilet facility used by the households as illustrated in Table 53.

**Table 53: Sanitation by farmer type**

Sanitation	Outgrower	Non-outgrower	Total
Flush toilet to a septic tank/sewer	7.1	2.0	4.5
Private latrine with sewer	20.4	13.9	17.1
Private latrine w/o sewer	21.4	15.8	18.6
Public/shared latrine	45.9	56.4	51.3
Other	5.1	11.8	8.5
Total	100.0	100.0	100.0

The major forms of this facility include; public/shared latrine, private latrine with sewer and private latrine without sewer. More than half of all the households (51.3%) use public/shared latrine which was even higher than the national case (35.7%). The next major type of toilet facility reported in the survey was private latrine without sewer represented 18.6 percent while flush toilet to a septic tank obtained the least usage, 4.5%. The results shows that a higher proportion of non out grower households use public/shared toilet (56.4%) as against 45.9% for the out grower households. Furthermore, a higher proportion of out grower use their own private latrine with sewer (21.4%) than the case of their non out grower household colleagues. Clearly, these results suggest that most improved toilet facility are used by the out grower households while the unimproved toilet facilities such as public latrine is used highly by the non out grower households.

## 6. HOUSEHOLD EXPENDITURE AND SAVINGS

In principles, any income earned by the households is distributed into consumption expenditure or saved for future use. This section of the rural livelihood survey report provides insight into household expenditure and savings.

### 6.1 Household Expenditure

Expenditure is part of rural daily lives as household spend on various items such as food, clothing and shelter to sustain their lives. Similarly, saving is held by certain proportion of households in a year. This section provides information on the mean annual expenditure and savings of households as recorded in the agriculture and rural livelihood survey.

**Table 54: Annual average expenditure by farmer type**

Farmer type	Average annual expenditure (Gh ¢)
Out grower	12025.01
Non out grower	5384.32
Total	8638.26

From Table 54, we noticed that out grower households report higher mean annual expenditure which is Gh ¢ 12025.01 as compared to the case of non-outgrower households (Gh ¢ 5384.32) which suggest that the out grower households are more wealthier because the Rubber Plantation business is more lucrative. However, the average annual expenditure for both households together was Gh ¢ 8638.26.

### 6.2 Household Savings

Saving is crucial in investigating measures of rural livelihood as depicted in Table 55. We realized from the results that a higher proportion of out grower households save each year (74.3%) as compared to non out grower households (52.9%). This is not surprising since out growers are into cash crop farming which generates more income to them than the ordinary non out growers who are mainly into food crop production. There was no clear gender difference observed in the saving behaviour of the households.

**Table 55: Percentage of household savings each year by sex**

	Outgrower			Non-outgrower		
	Male	Female	Total	Male	Female	Total



Yes	73.8	74.9	74.3	54.5	51.3	52.9
No	26.2	25.1	25.7	45.5	48.7	47.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Field survey, 2014

Table 56 provides information on the average saving in a year. As generally expected, on average, rubber out grower households save relatively higher amount ((Gh ¢ 1248.5) as compared to the non out grower households (Gh¢ 1140.2). A greater gender gap is observed between both households where males save up to Gh¢1655.3 on average as compared to ((Gh ¢ 605.8).

**Table 56: Average savings per year by sex and farmer type**

	Outgrower	Non-outgrower	Total
Male (Gh ¢)	1736.2	1585.1	1655.3
Female (Gh ¢)	629.5	611.2	605.8
Total (Gh ¢)	1248.5	1140.2	1179.5

Field survey, 2014

## 7.0 CONCLUSION – FINANL REFLECTION

This is the final section of the report for the Agriculture and Rural Livelihood Survey. As a final section, it highlights the summary of key findings, recommendation and conclusion. The main purpose of the survey is to investigate how the livelihood of rural households in the Ahanta West District (Western Region) of Ghana has changed compared to last ten years. To achieve this goal, two groups of farmers were sampled, namely, Rubber out-growers and non-out-growers which represented the treatment group and controlled group respectively. Some of the key specific objectives of the study are highlighted as follows:

- To identify the key changes in agricultural production among rural households in the region in terms of crop output, input usage, land allocation to crops as well as livestock ownership.
- To identify sources and use of credit among rural households.
- To investigate the extent of migration among rural households in terms of frequency, purpose of trip as well as main mode of transport.
- To analyse the role of remittance to Ghanaian rural households in terms of type and use.
- To compare rural livelihood in terms of average annual expenditure and savings.

### 7.1 Main Findings

The findings of the study generally conform to a priori expectations which are highlighted as follows:

#### Agricultural Production and Rural Livelihood

This section of the Agriculture and Rural livelihood survey provides relevant information concerning agricultural activities which include; average distance to plot and type of land tenure system, labour usage and land allocation to crops as reported in the survey. On average, outgrower households cover a higher distance (in kilometres) than the non-out grower households. In terms of type of land tenure system practiced in the survey region, the results show that ownership by households dominates for all households together. However, a relatively higher proportion of out grower households own their plots relative to the non-outgrower households. Regarding the use of labour inputs, the results shows that majority of the farm households reported that they use combination of hired labour and family labour inputs. However, use of hired labour alone was

higher for the outgrower households while use of family labour alone represented a higher proportion for the non-out grower household. For non-labour input usage, a higher proportion of the farmers bought seeds. However, the proportion of non-out grower households who bought seed was higher for the out grower households. In terms of labour position of the households, it is realised that most of the households are self-employed however; the proportion was higher for the outgrower households than the non-out grower households.

The results for livestock ownership revealed that most outgrower households reported a higher average number of livestock such as cattle, chicken and goats than the non-outgrower households. Livestock is kept mainly for subsistence use for all households and even among outgrowers and non-outgrowers. However, the proportion was higher for the outgrowers. Most of the households reported that there is no change in their land allocated to crops and even for outgrowers and non-outgrowers. This results also applies to the use of labour inputs plot size. Non-labour input usage was the only exception in which most households reported that they have used more compared to last 10 years.

With respect to crop consumption, most households reported that their there has been an increase however; the proportion was higher for the outgrower households than the non-outgrowers. This result was similar for crop-output sale however; the proportion was found to be relatively higher for the non-outgrower households than the case for the out growers. The main change identified for crop input, output was high cost of labour which was higher for the outgrower households than the out grower households. All outgrowers sell their crops to company agents at the market gate while non-outgrowers sell their crops mainly to local traders at the market and farm gates. For farm assets ownership, cart, milling machine and ox-plough had the highest number. With respect to access to communal land, the results show that only small proportion of the households had access to communal land however; the proportion was higher for the non-ougrower households than the case of the outgrowers. Regarding the use of communal land, collecting of firewood and agriculture usage dominate.

### **Migration/Commuting and Rural Livelihood**

The migration/commuting section of the Agriculture and Rural Livelihood Survey focused on main purpose of trip, frequency and proportion of time spent in a locality. In terms of mode of transport, commuters use mainly car as their main mode of transport while bus was the next highest. Among different households, a higher proportion of outgrower households use car as compared to the non-outgrowers. However, in terms of bus usage, the proportion was higher for the non-out growers than the outgrowers. Regarding frequency of trips, the results revealed that commuting on weekly basis dominated but the proportion was greater for the non-outgrower households than the outgrower households. In relation to average time spent in a locality, more commuters on average spent a higher proportion of their time in a rural location than for an urban location but the proportion was higher for the non-out growers than for the out growers. The survey result also indicated that mobility has changed mainly in respect of increase in frequency but no clear difference was found outgrower and non-outgrower households.



### **Remittances flows and Rural Livelihood**

The role of remittance to rural livelihood cannot be underestimated as realised in the survey results. In terms of type, cash was the most dominant type of remittance received by rural households but the proportion was higher for the non-outgrowers than for the outgrowers. For the cash remittance, non-outgrower households report the highest internal remittance received in cash on average while for international remittances, outgrower households had the highest proportion of mean cash received. Regarding frequency, most households indicated that they receive remittance “sometimes” but the proportion was higher for the outgrower households than the non-outgrowers. With respect to use, daily consumption accounted for the highest share however, the proportion was found to be higher for the non-outgrower households than the outgrower households. For relationship to sender, most of the internal remittance was received from other relatives such as brother, uncle other than household members but the proportion was higher for the outgrower households than it is for the non-outgrowers.

### **Use of credit and Loans and Rural Livelihood**

The Agriculture and Rural Livelihood Survey investigated access and use of credit for farm households. In terms of source, credit obtained from commercial banks constituted the highest proportion. However, the proportion of credit from commercial banks was far higher for the outgrower households than for their non-outgrower colleagues. Rural bank of credit however, dominated for the non-outgrower households than for the outgrowers. Evidence from the survey again, revealed several purposes of credit to the rural households. Agricultural related purpose accounted for the highest however; the proportion cited for outgrower households was more than twice higher than the non-outgrowers. In terms of business purposes however, the proportion was higher for the non-outgrower households than the case for the outgrowers. For use of ‘mobile money’, the results show that most rural households use mobile money to receive money however, the percentage of those who use mobile money for receiving money was higher for the non-outgrower households than the outgrowers.

### **Expenditure, Savings and Rural Livelihood**

In terms of expenditure, the survey results show that outgrower households reported the highest annual expenditure on the average than the case for the non-outgrower households. With respect to savings, the results indicate that over half of the entire households save each year. However, the proportion of those who save was higher for the outgrower households than the case for the non-outgrowers. In addition, the average annual savings reported by the outgrower households was higher than the case for the non-outgrowers.

### **7.2 Reflections on rural-urban linkages**

The results of the survey reflect an intense process of rural-urban linkages facilitated by good road networks which allow households in the study area to easily connect to major and secondary cities and towns both far and near in Ghana as well as the presence of cash crops economy with both national and international links. Indeed, these conditions have contributed to the attraction of urban-based farmers many of whom are involved in the outgrower scheme as self-financing farmers.

Consequently, there is increasing competition for land as large rubber plantations compete for land for cocoa and other cash crop production as well as food crops. Other studies undertaken in Ghana under similar conditions revealed that land tenure arrangements become very complex and land is commodified (ISSER 2013). In addition, land tenure arrangements ceased to arrange on freehold

basis. The implications of the changing land tenure from freehold and communal holdings to leaseholds lead to a situation whereby small scale farmers and the poor are increasingly displaced as they are unlikely to afford the price of land.

Nevertheless, new opportunities as a resulting of the increasing commercialization and diversification of crops emerge in the rural. These come in the form of new labour hiring as poor farmers are displaced from the land and find employment on rubber plantations and large large farmers especially those under outgrower self-financing schemes. Even for small-scale and other subsistence farmers evidence from the study area indicates that some of these continue to engage in farming while earning wage labour on the plantations and large farmers.

Nevertheless, for some poor farmer households restrictions in access to production assets and common pool resources, particularly land, can have significant negative impacts on household poverty and general well-being. For such households, especially the young members, migration can be used as both a short and long-term response. Awumbila et al. (2011, 2014) have argued that the decision to migrate is a complex process involving the individual and the household, but the ultimate goal will be to seek either agricultural employment (rural-rural migration) or non-agricultural employment (rural-urban migration). The consequences of migration and mobility for the 'sending' households will be for migrant to remit to support such households. However, in the absence of remittances, the sending household can become worse off as it loses its household members, especially if there are no family labour and no alternative means to hire labour for farm work and other activities (including children and young ones within the household). Nevertheless, Awumbila et al (2014) in their study of poor migrants from northern Ghana in Accra concluded broadly that migration has had positive impact on both the migrant and sending households.

### **7.3 Impact of State Level Policies**

Poor economic performance, corruption and mismanagement, and political instability throughout the late 1960s to early 1980s resulted in Ghana seeking to the IMF/World Bank support under the Economic Recovery Programme (ERP)/Structural Adjustment Programmes (SAPs) initiatives to restore macro-economic stability and economic growth. A key initiative under the ERP/SAPs was the diversification of mismanaged and none performing state-owned enterprises (SOEs). The Divestiture Implementation Committee (DIC) was established in 1988 to implement and execute all Government policies in respect of this divestiture programme under a broad neoliberal and privatization agenda of the state which started in the mid-1980s.

The divestiture programme is intended to reduce the size of the public sector and to improve the performance of enterprises by mobilizing private sector management and capital as well reduced the financial and managerial burden on Government. It is expected that proceeds from the divestiture of SOEs would be support infrastructure and other key sectors of the national economy.

The Ghana Rubber Estates Limited (GREL) took over the state-owned rubber plantations as part of the country's divestiture and privatization agenda. Indeed, the divestiture and privatization agenda have led to influx of foreign direct investments (FDIs), especially in Ghana's natural resources sector, such as rubber. GREL start from the late 1980s with the rehabilitation of old plantations and the improvement of infrastructure. Following the successes of the initial investments, the outgrower scheme was introduced in the mid-1990s.

The establishment of the outgrower scheme has not only created employment but has also led to the establishment of a rubber process factory in the study area with the capacity to produce 3 metric tonnes of raw rubber per hour. Currently, GREL has 544 employees on its payroll and 3,149 on contract. The farm and non-farm employment created plus the direct provisions of basic services (3 clinics and 3 basic schools) as well as road networks connecting villages and settlements within the operational area of the company make a huge contribution to the local and national economy, and more specifically livelihood transformation and mobility.

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# RURBAN AFRICA

## AGRICULTURE AND RURAL LIVELIHOOD SURVEY

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A DRAFT REPORT ON OIL PALM OUTGROWERS  
VERSUS NON-OUTGROWERS IN THE KWAEBIBIREM  
DISTRICT, GHANA



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# 1. INTRODUCTION

## 1.1 Background to the Study

The contribution of agriculture to the economy of Ghana over the years has been widely acknowledged. Though the share of agriculture in GDP has been declining in recent years, the sector remains the mainstay of the economy (especially the rural economy), currently employing more than 40 percent of the country's work force. Thus, agriculture cannot be discounted in its role in the livelihood of many Ghanaians. For this reason, the sector remains a major target for governmental and non-governmental initiatives targeted at improving incomes and livelihoods of the less privileged in the country. Over the years key government initiatives have focused on making the sector more attractive to improve the food security situation in the country. It is therefore not surprising that Ghana has been identified as one of the few countries in the Sub-Saharan African region on the way to achieve the first Millennium Development Goal (MDG1) which aims at significantly reducing extreme poverty and hunger by 2015. The key government initiative identified for this livelihood study is the Ghana Oil Palm Development Company (GOPDC) with an outgrower office at Kade in the Eastern Region. However, the study is relevant because in spite of the introduction of many initiatives by the government and non-governmental organisations in the agricultural sector, it is not clearly established whether agriculture has succeeded in achieving the desired transformation in the livelihood of Ghanaian farmers. Poverty levels, for instance, are still high in the country, especially in the rural areas and it is higher among food crop farmers (Ghana Statistical Service, 2014).

It is in this context that the Rurban Africa Research Project which is a cross-country comparative study being conducted in Ghana and three other Sub-Saharan African countries, namely, Cameroun, Rwanda and Tanzania). The main goal of the survey is to investigate whether farm households have had a change in their livelihood in areas such as crop production, farm assets, livestock, household asset, income, expenditure and savings, and the extent of rural agricultural transformation and rural-urban interactions and mobility. The reference period for comparing the change in farm households their livelihood is 2014 as compared to the last ten years (2004). This research project is a collaborative research involving four African universities – University of Dschang (Cameroon), University of Ghana, University of Rwanda, Sokoine University of Agriculture (Tanzania) – and five of their European counterparts –University of Copenhagen (Denmark), Loughborough University (United Kingdom), International Institute for Environment and Development (United Kingdom), Université Toulouse II Le Mirail (France), and the Utrecht University (Netherlands).

For Ghana, the study broadly covers two types of farmers under the outgrower schemes centred on rubber in the Ahanta West District in the Western Region and oil-palm in the Kwaebibirem District in the Eastern Region. In both districts, the outgrowers have registered their farms and they are either self-financed or out-financed by the Ghana Rubber Estate Limited (GREL) in the case of rubber, and for oil-palm, the Ghana Oil Palm Development Company (GODPC). On the other hand, the non-outgrowers are those farmers who mainly produce food crops such as cassava, maize



and plantain. The survey covered crop output, use of inputs, livestock, farm assets, mobility and remittances.

This report discusses the results from the survey of oil palm outgrowers (treatment group) and non-outgrowers (control group) in the Kwaebibirem District in the Eastern Region of Ghana. The rest of the report is structured as follows:

The report is structured as follows: In Section 2, we discuss the sampling and survey methodology. Section 3, discusses the population characteristics of the households, Section 4 analyses Livelihood diversification and transformation. Section 5 focuses on Migration. Section 6 discusses Agriculture. Section 7 discusses sources and use of credit. Section 8 analyses Housing and Public services and Sanitation characteristics while section 9 discusses expenditure and saving of households. Section 10 deals remittances while section 11 deals with summary of key findings and conclusion.

## **1.2 Country Background**

Ghana is located in the western part of Africa, south of the Sahara. The country has a land area mass of 238,535 km<sup>2</sup> and is bordered by Cote d'Ivoire to the west, Burkina Faso in the north, Togo to the east and the Gulf of Guinea and Atlantic Ocean to the south. The country's population in 2010 was about 24.6 million and estimated at 27.0 million in 2014 (Ghana Statistical Service, 2014). The country has a relatively diverse and rich natural resource base. Minerals, principally gold, diamonds, manganese, and bauxite are produced and exported. A major oil discovery off the coast of Ghana in 2007 has made the country an oil exporter in recent years.

Though agriculture remains a crucial sector of the economy, its share in GDP has been declining in recent years, reaching about 22 percent of GDP in 2013, and estimated to drop further to about 20 percent by the end of 2014 (Government of Ghana, 2014). However, the sector still remains a major contributor to employment (employs about 60% of the workforce). The Population and Housing Census 2010 Report shows that the agriculture forestry and fishing sector employs about 41 percent of the active labour force (Ghana Statistical Service, 2012; p-10). Ghana's primary cash crop is cocoa, which provided about 21 percent of all export revenues in 2012. Other agriculture products exported include timber, coconuts and other palm products, sheanuts and coffee.

Ghana's industrial base is relatively advanced compared to many other African countries. However, additional scope exists for value-added processing of agricultural products. Industries include textiles, apparel, steel (using scrap), tires, flour milling, cocoa processing, beverages, tobacco, simple consumer goods, and car, truck, and bus assembly. Industry, including mining, manufacturing, construction and electricity, accounts for about 21 percent of GDP.



### 1.3 Description of Survey Site

#### 1.3.1 Oil Palm industry

Until the beginning of the 20<sup>th</sup> century, oil palm was a leading export earner for Ghana (Dickson 1971). In fact, by the late 19<sup>th</sup> century oil palm exports accounted for about 75% of the country's exports. It is however noted that 1960 marked the beginning of a serious attempt by the Government to promote the oil palm industry (Ministry of Food and Agriculture, 2012).

Currently a total land area of about 305,758 hectares is under oil palm cultivation, with the majority (about 80%) being cultivated by smallholder farmers. It is estimated that a total of about 885,000 tonnes of unmet demand exist with the bulk of it (over 96%) coming from the ECOWAS sub-region. The oil palm plants are mainly concentrated in the Eastern and Central regions of Ghana although Ashanti, Brong-Ahafo and Volta Regions are all suitable for its cultivation.

The oil palm sector in Ghana has very important value chain dynamics. This dynamics include not only large firms, but also smallholders all along the value chain. In more recent years these dynamics are being affected by mining activities in some of the areas of oil palm production. This has been particularly hard on labour mobility away from the industry. Fortunately, the returns to the sector mean that it is still able to compete favourably with the emerging small scale mining sector.

Figure 1 shows the map of the study area, which indicates GODPC main plantations at Kwaie and Okumaning as well as the surrounding communities – all located in the Kwaebibirem District of the Eastern Region of Ghana. This region basically constitutes the operational area of the GODPC with its large plantations as well as small-scale outgrower farms. For effective and efficient management of the numerous small-scale outgrower farmers, the GODPC operational area in the Kwaebibirem District is divided into about 12 districts or smaller units as shown in Figure 1. However, the focus of the study was around the emerging vibrant town of Asuom.

**Figure 1.1: District Map of Kwaebibirem District**



Source: GOPDC, 2014

#### 1.4 Objectives of the Outcome Survey

The main purpose of the survey is to investigate whether farm households have had a change in their livelihood over the last ten years. In order to achieve this objective, two farmer groups have been considered, namely, outgrowers and non-outgrowers. Some of the specific objectives of the study are stated as follows:

- i. To identify the key changes in agricultural production among rural households in the region in terms of crop output, input usage, land allocation to crops as well as livestock ownership.
- ii. To identify sources and use of credit among rural households.
- iii. To investigate the extent of migration among rural households in terms of frequency, purpose of trip as well as main mode of transport.
- iv. To analyse the role of remittance to Ghanaian rural households in terms of type and use.
- v. To compare rural livelihood in terms of average annual income, expenditure and savings.

#### 1.5 Implementation of the Survey

Before the implementation of the survey instrument, the selected applicants through an advertisement were trained for two days dated 26<sup>th</sup>-27<sup>th</sup> August, 2014. Again, a day was devoted for pre-testing of the instrument which was conducted at Korkunduru, Akuapem South District to find

out the flow of the questions and identify key challenges on the questionnaire. Data collection for the agriculture and rural livelihood survey was conducted in the Kwaebibirem District started on the 17<sup>th</sup> September and ended on the 30<sup>th</sup> September, 2014. Thirteen (13) days were used for the data collection in this survey area, including two travelling days and a rest day. Four enumerators were recruited for the data collection exercise and each was required to submit five completed questionnaire per day and worked for 10 days for the actual data collection. The minimum educational qualification of the enumerators used for this survey was a first degree. In addition, all the enumerators have had experience in previous related large scale surveys.

### **1.6 Local Adaptations to the Questionnaire**

Few areas of the generic questionnaire for the WP1 and 2 for the Rurban Africa Project did not directly apply to the local conditions of Ghana; namely, ward/cell, size of floors in metres squared and GPS coordinates were not taken. Consequently, the questionnaire was slightly modified by creating a new variable called 'type of dwelling' which information was easier to be obtained from respondents in Ghanaian context than the size of floor in metres squared. Again, we created a variable to capture the mobile phone numbers of respondents for future contact. Furthermore, at the remittances section, the question on the 'amount of remittances' was separated from 'type of remittances' – these questions were originally captured as a single variable. Finally, in Ghana, districts and regions are different hence this has been taken into account by creating separate variables for them on the questionnaire before it was administered.

### **1.7 Methods of Data Analysis**

Data collected for the survey is analysed using Stata for convenience. Relevant tables were generated based on the data sets obtained in Ghana following the outline provided for the report. These tables were described using simple percentages and frequencies. Some of the tables were further converted into graphs which give clearer visual impressions.

### **1.8 Limitations of the Survey**

One key limitation identified in this survey is the difficulty in locating the out-growers which were randomly selected from a register obtained from the Managers of the outgrower scheme of GODPC. This is because the register from which we sampled did not contain the phone numbers of the farmers. This posed a huge challenge to enumerators who have to rely on others (those who know the names of those selected) to locate the respondents.

Finally, the survey covered only two districts in two regions of Ghana. However, there are ten (10) administrative regions and over 270 districts in Ghana presently. Therefore, the outcome of the survey may not be conveniently generalised in for the entire country.

## 1.9 Survey Methodology

### 1.9.1 Sample Size Determination

A practical sampling strategy was developed that allowed each of the survey population (out-growers and non-out growers) to be covered. Indeed, to ascertain the needed change in the livelihood of farm households, we focused on outgrowers and non-outgrowers. The out-growers were randomly sampled from a register obtained from the managers of the schemes. Once we had sampled the out-growers, the sample for the non-outgrowers followed their footprints. In other words, we matched up the non-outgrowers with the outgrowers in each selected community.

A statistically acceptable sample size of 200 farm households was interviewed for the oil palm study area. This is made up of 100 outgrowers and 100 non-outgrowers.

### 1.9.2 Sampling Strategy

The sampling procedure used for the purpose of the Agriculture and Rural Livelihood Survey was a simple random technique described as follows:

Agricultural households constitute the focus of the Agricultural and Rural Livelihood Survey. Four communities were selected in each of the two regions from the list of out-growers obtained from the Programme Manager of Ghana Rubber Estates Limited (GREL) and Ghana Oil Palm Development Company Ltd. (GOPDC). We randomly selected 100 out-growers from each region which represents just 13 percent of the entire list. The sample distribution across communities was however, disproportional as it was based on the representation of out-growers in each of the selected communities. The four selected farming communities in the study region are; Akawani, Amanfrom, Asuom, Tweapease (see Table 1-1).

**Table 1-1: Sample Frame for Eastern Region**

Community	Outgrowers	Non-outgrowers	Total
Akawani	23	23	46
Amanfrom	13	13	26
Asuom	38	38	76
Tweapease	26	26	52
Total	100	100	200

Source: Field Survey, 2014

Similarly, we used random walk sampling approach to select a statistically acceptable sample size for oil palm outgrowers. With this sampling technique, each of the randomly selected communities was further blocked into four as represented by the cardinal points, namely, north, south, east and west. Each of the four field officers took one of these blocks and randomly selected non-outgrowers from every 5<sup>th</sup> structure to match up the same sampling frame as used for the outgrowers' sample.

### 1.10 Demographic Characteristics

The Agriculture and Rural Livelihood Survey in the Eastern Region comprises 200 households made up of 1,204 individuals. The rest of the section provides information on the household composition and size, age, gender, ethnicity and education distributions of household members in the survey region.

### 1.10.1 Household Composition

The definition of household composition is defined as a *stretched* household, consisting of resident households and *usually absent* members. Table 1-2 portrays the distribution of whether household members are resident or usually absent. We observe that the vast majority of household members are resident. Female household members appear to be more resident (91.0%) than their male counterparts (89.0 %). In total, there resident household members accounted for 90.0 percent while the non-resident household members represented only 10 percent.

**Table 1-2: Type of Household Member**

Type of household member	Male	Female	Total
Resident	89.0	91.0	90.0
Usually Absent	11.0	9.0	10.0
Total	100.0	100.0	100.0

Source: Field Survey, 2014

The survey inquires the reasons why usually absent household members visit and reported the findings in Table 1-3. Most non-resident (usually absent) household members do pay visit to their respective households for various reasons. Majority of these usually absent households individuals on the average pay visit to see to their family welfare, to attend funeral, for financial reasons, festive and for vacation. The most common reason for visitation by usually absent household members is to see their *family* (33.3%), followed by vacation (31.5%). A considerable proportion also reported visiting due to *financial* reasons, and others cited *funerals* as their reason for visit. A least reason for visitation by usually absent household members is visitation due to *festive* seasons. The reasons cited differ for usually absent household members from outgrower and non-outgrower households.

**Table 1-3: Usually Absent Household Members' Visitation Reasons**

Visitation Reason	Outgrower	Non-outgrower	Total
See family	28.1	50.0	33.3
Funeral	12.2	3.9	10.2
Festive	3.7	3.9	3.7
Financial	19.5	15.4	18.5
Vacation	35.4	19.2	31.5
Other	1.2	7.7	2.8
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 1.10.2 Household Size

The mean household size reported in the survey is approximately 7, far above the national average household size of 4 in the 2012/2013 Ghana Living Standards Survey, GLSS6 (Ghana Statistical Service, 2014). The larger household size observed in this study may be attributed to its definition of household composition which extends to usually absent members who are not included in the GLSS 6 definition of household composition. Besides, the relatively large household size recorded may be due to the rurality of the study sites as other surveys tend to record higher household sizes for rural

areas compared to the urban. The minimum household size recorded in the survey was 1 while the maximum household size was 15.

The household size reported in the study region ranges from 1 to 11. The result shows that individuals who belong to three-member households accounted for the highest share (19.8%) followed by those who belong to five-member households (13.9%) and six-member households (13.4%). Ten-member households obtained the least share (2.1%). Non-outgrowers who belong to three-member households were found to be higher (24.7%) as compared to outgrowers (15.4%). Similar observations are made for single-member and two-member households. We also notice that the household sizes for the outgrowers are generally larger than that of non-outgrowers (see Table 1-4).

**Table 1-4: Proportion of individuals belonging to various household sizes**

HH sizes	Outgrower	Non outgrower	Total
1	0.2	2.1	1.1
2	4.6	21.9	12.8
3	15.4	24.7	19.8
4	16.0	9.6	13.0
5	14.2	13.5	13.9
6	16.8	9.6	13.4
7	12.2	8.0	10.2
8	5.4	5.1	5.2
9	5.7	3.7	4.7
10	4.0	0.0	2.1
11	5.7	1.9	3.9
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 1.10.3 Age Distribution

As observed from Table 1-5, the age distribution is such that the majority (66.5%) of household members in the survey fall within the working population, followed by children in the 6–14 years age bracket. The age group with least proportion is the aged (those above 65 years), representing 5.3 percent of the distribution.

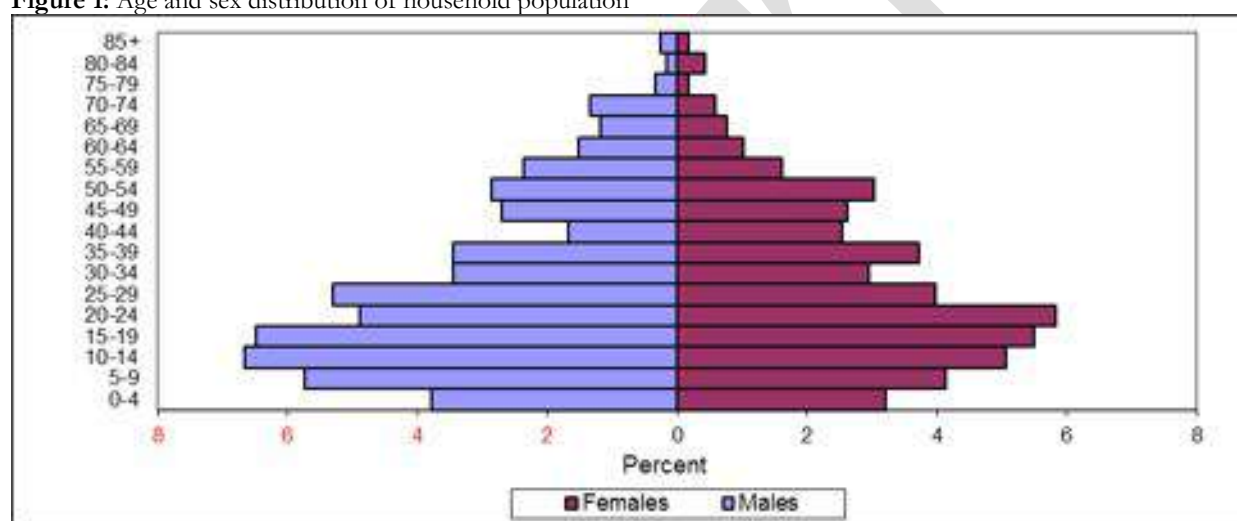
**Table 1-5: Age Distribution**

Age group (years)	Frequency	Percent
0 – 5	106	8.8
6 – 14	233	19.4
15 – 64	800	66.5
65+	64	5.3
Total	1,203	100.0

Source: Field Survey, 2014

The distribution of the sample population by age and sex are represented by Figure 1. From the figure, we observed that majority of the sample population are between the ages of 0 to 29, giving the population pyramid a broader base and a narrow tip. Overall, the pyramid indicates that there are relatively more females than males in the sample. This observation follows that of the national population distribution which shows more females than males (Ghana Statistical Service, 2014). We observe a generally higher proportion of females to males in the old age groups partly due to longer life expectancy of females. The structure of wide base and narrow tip also demonstrates high birth rates and death rates in the sample population. The youthful population is evidently large from the pyramid. This has implications for high unemployment rates in the study area if employment (economic) opportunities are not expanding in the area.

**Figure 1:** Age and sex distribution of household population



Source: Field Survey, 2014

Table 1-6 depicts the average age of individuals in the survey region. The average age of those understudied in the Eastern region is 28 years, for which the mean age of individuals in outgrower households exceeds that of those in non-outgrower households.

**Table 1-6: Mean Age by Farmer Type**

Farmer type	Mean Age
Outgrower	31.3
Non-outgrower	25.1
Total	28.3

Source: Field Survey, 2014

Household heads belong to various age categories as observed in Table 1-7. A significant proportion of non-outgrower household heads (71.1%) were less than 35 years old while this represents only 61.4 percent for their outgrower counterparts in the same age bracket. However, for 35-64 age cohorts, the proportion for the outgrower heads exceeded that of the non outgrowers.



Household heads who are at least 65 years old did not account for a significant share for both outgrowers and non-outgrowers. For all households together, those within the 35-64 age cohort account for the most share (70.5%) while those less than 35 years old account for the least share.

**Table 1-7:** Proportion of household head within various age groups

Head age	Outgrower	Non outgrower	Total
Less than 35	61.4	71.1	10.1
35-64	31.5	25.6	70.5
65+	7.1	3.3	19.3
Total	100.0	100.0	100.0

Source: Field Survey, 2014

The economically active population as a proportion of the total population is reported in Table 1-8. We observe from the table that the economically active population constituted a significant share of the total population recorded in the survey (76.3%). A higher proportion of outgrowers were found to be economically active (43.4%) as compared to non-outgrowers (32.9%). In terms of gender distribution of the results, a relatively higher proportion of males belong to the economically active age group (39.7%) as compared to their female counterparts (36.4%).

**Table 1-8:** Economically active population as a proportion of total population

	Outgrower	Non-outgrower	Total
Total Population			1,133
Economic Active (15+yrs)	43.4	32.9	76.3
Male	22.2	17.6	39.7
Female	21.2	15.4	36.4

Source: Field Survey, 2014

#### 1.10.4 Gender Composition

The gender distribution of the sample is displayed in Table 1-9. The proportion of males in the sample (54.4%) slightly outweighs that of females (46.6%). Disaggregating the age of respondents by gender, Table 1-10 shows a slightly higher proportion of males to females in the 0 – 5, 6 – 14, and over 65 years age groups. This indicates that there are relatively more male than female dependants. Females however have a relatively higher proportion (69.3 percent) of the working class than their male counterparts (64.1 percent).

**Table 1-9: Gender Distribution**

Gender	Frequency	Percent
Male	643	53.4
Female	561	46.6
Total	1,204	100.0

Source: Field Survey, 2014

**Table 1-10: Age Group by Gender**



Age group (years)	Male	Female	Total
0-5	9.0	8.6	8.8
6-14	20.8	17.7	19.4
15-64	64.0	69.3	66.5
65+	6.1	4.5	5.3
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 1.10.5 Ethnicity

The ethnic distribution of the sample is shown in Table 1-11. As expected, we observe that the sample is dominated by Akans (87.4%), the major ethnic group in Ghana. This is followed by the Ewes (6.8%) and Ga-Adangbe (2.7%) ethnic groups. Other tribes together constitute 22.5 percent of the sample, and northern tribes accounted for 2.2 percent. We observe that there is no Ga-Adangbe in the out-grower sample. A relatively higher proportion of outgrowers than non-outgrowers were Akans and Ewes. Comparatively higher proportions of outgrowers than non-outgrowers are reported for northern tribes, however.

**Table 1-11: Ethnicity by Farmer Type**

Ethnic Groups	Outgrower	Non-outgrower	Total
Akan	88.3	86.5	87.4
Ewe	7.8	6.5	6.8
Ga-Adangbe	-	5.1	2.7
Northern tribes	4.5	1.4	2.9
Other tribes	-	0.4	0.2
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 1.11 Education

In Table 1-12, we discuss the educational levels attained by household members in the sample. The distribution reveals that majority of individuals obtained Junior High School education (41%). This is followed by those who had lower primary education (21.5%), and those with secondary education. A relatively small proportion of individuals have tertiary education; and a comparatively high proportion of others had no education. Quite significant differences exist between the education experience of those in out-grower households and those in non-outgrower households. Out-grower households show higher proportions of those with higher levels of education (junior high, secondary and tertiary), whilst non-outgrower households relatively dominate in terms those with no education and lower educational levels.

**Table 1-12: Education**

Level of Education	Outgrower	Non-outgrower	Total
No education	10.1	15.7	12.8
Lower primary	16.8	26.8	21.5
Upper primary	5.5	7.3	6.4

Junior High	44.3	37.4	41.0
Secondary	16.3	9.6	13.1
Tertiary	7.0	3.2	5.2
Total	100.0	100.0	100.0

Source: Field Survey, 2014

## 2. LIVELIHOOD CHARACTERISTICS

Rural livelihood in Ghana is measured by several factors. The focus of this section is to provide insight into some of the factors that give indication of the level of rural livelihoods. The results in **Error! Not a valid bookmark self-reference.** clearly show that greater share of the household members individuals are in school, accounting for 38.6 percent for both outgrower and non-outgrower households. The relatively high proportion of household members in school reflects high proportion of dependant young individuals within the surveyed rural households. After school, those whose main economic activity is income generating come in second place. These household members are likely to be the economically-active members of the households. We noted that a relatively smaller proportion of the household individuals are into subsistence production, however. Responses slightly differ across farmer types. Outgrowers reported relatively higher proportions than non-outgrowers for activities such as income generating, retired and domestic work. Non-outgrowers slightly dominate categories of activities such as subsistence, disabled, and unemployed.

**Table 2-1: Distribution of Main Activity of Household Members by Farmer Type**

Main Activity	Outgrower	Non-outgrower	Total
Income generating	38.0	30.7	34.5
School	38.6	38.6	38.6
Unemployed	6.1	6.2	6.1
Retired	0.8	0.5	0.7
Disabled	0.0	0.2	0.1
Subsistence	1.3	3.2	2.2
Domestic work	0.3	0.0	0.2
Others	15.0	20.6	17.6
Total	100.0	100.0	100.0

Source: Field Survey, 2014

With respect to the distribution of main activity among household members in the economically active population, the result shows that *income generating* activities accounted for the largest proportion (48.0%). This is followed by *school*, which obtained 21.3 percent, 8.5 percent are *unemployed*, while *subsistence* production accounted for 3.0 percent (see Table 2-2).

**Table 2-2: Distribution of economic activities for economically active population**

Main Economic activity	Outgrower	Non outgrower	Total
Income generating	48.7	47.1	48.0
School	24.3	17.3	21.3
Unemployed	7.8	9.5	8.5

Retired	1.0	0.8	0.9
Disabled	0.0	0.3	0.1
Subsistence	1.6	4.9	3.0
domestic work	0.4	0.0	0.2
Others	16.0	20.3	17.8
Total	100.0	100.0	100.0

Source: Field Survey, 2014

The distribution of main activity is further classified according to age group as shown in Table 2-3. The results show that all household members less than 14 years were in school (100%) while schooling represented 40.8 percent. We also noted that the main activity for those within 15-64 age groups was “income generating” which obtained 65.5 percent. In total schooling recorded the highest proportion across all age groups (40.0%) followed by income generating activity (36.6%).

**Table 2-3: Distribution of economic activities by age groups**

Activity	0-14	15-34	35-64	65+	Total
Income generating	0.0	33.9	65.5	52.4	36.6
School	100.0	40.8	0.0	0	40.0
Unemployed	0.0	15.1	1.2	1.6	6.5
Retired	0.0	0.0	1.5	4.8	0.7
Disabled	0.0	0.2	0.0	0.0	0.1
Subsistence	0.0	2.7	3.8	1.6	2.3
domestic work	0.0	0.5	0.0	0.0	0.2
Others	0.0	6.9	28.1	39.7	13.6
Total	100.0	100.0	100.0	100.0	100.0

Source: Field Survey, 2014

## 2.1 Livelihood Diversification and Transformation

Diversification is a key feature in the transformation of rural lives in Ghana. The Agriculture and Rural Livelihood Survey revealed some of the ways in which the respondents think their lives have been transformed. These include their income and purchasing power. Thus, the section provides insight into the changes that have occurred in the lives of rural households and the reasons that account for them. In other words, this section enquires into respondents view on whether their income has deteriorated, remains the same or improved now as compared to the last ten (10) years. The distribution of responses is presented in Table 2-4. Majority of households (54.7%) reported that their income levels have actually deteriorated now, relative to the past ten (10) years, while others (38.5%) indicated their income levels improved, and yet others (6.8%) reported that their income levels have not experienced any change over the past ten (10) years. A comparatively higher proportion (39.9%) of outgrower households reported improved income than their non-outgrower counterparts (36.9%). Non-outgrower households on the other hand reported higher proportion of same and deteriorated income (55.7% and 7.4% respectively) than outgrower households. This

suggests that farmers in the study region opine that they used to earn more income in the past ten (10) years than they are earning now.

**Table 2-4: Comparison of Income Now with the Past Ten (10) Years by Farmer Type**

Income Level	Outgrower	Non-Outgrower	Total
Deteriorated	53.8	55.7	54.7
Same	6.3	7.4	6.8
Improved	39.9	36.9	38.5
Total	100.0	100.0	100.0

Source: Field Survey, 2014

Purchasing power is one of the key indicators for measuring change in livelihood as it indicates the degree to which an individual has command over goods and services. The respondents were asked if their purchasing power can buy less, same or more goods now, compared to the past 10 years. The distribution of the responses is presented in Table 2-5. Majority of respondents indicate that their purchasing power can afford them less goods compared to the past ten (10) years. This observation cuts across gender and farmer type. The proportions are however higher for females than males across farmer type; and also higher for non –outgrowers (64.3%) compared to outgrowers (59.8%). A considerable proportion (over 30%) also indicated that they could afford more goods now than in the past ten (10) years. The proportions of those that could afford more goods now is slightly higher for outgrowers than their non-outgrowers counterparts.

**Table 2-5: Purchasing Power now Compared with Past 10 years by Sex and Farmer Type**

Purchasing Power	Outgrower			Non-outgrower		
	Male	Female	Total	Male	Female	Total
Less goods	59.4	60.2	59.8	63.1	65.9	64.3
Same goods	5.9	3.6	4.8	5.8	4.1	5.1
More goods	34.7	36.3	35.4	31.1	30.1	30.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Field Survey, 2014

## 2.2 Migration

Migration and commuting have essentially been livelihood strategies adopted by rural households in Ghana to escape poverty and to accumulate wealth. The discussion of rural livelihood in Ghana can therefore not be holistically complete without reference to migration and commuting. This section provides information on the purpose of migration and commuting, as well as most common means of transportation in the study area among others.

Table 2-6 displays the proportions of household members who are indigenes and those who are immigrants. The indigenes represent those who were born in the same place of residence and immigrants –those born outside the current place of residence. The results show that most household members interviewed are indigenes (65.5%) while only 34.5 percent were born outside the current residence (34.5%). We did not find any substantial difference between the outgrower and non-outgrower households.

**Table 2-6: Proportion of the population born in the same place (indigenes) and elsewhere (immigrants)**

	Outgrower	Non outgrower	Total
Indigenes	65.2	65.9	65.5
Immigrants	34.8	34.1	34.5
Total	100.0	100.0	100.0

Source: Field Survey, 2014

Various reasons are assigned with regards to why households in rural communities, especially those in the study area migrate or commute. Some of these reasons such as farming and trading are prominently cited, and the distribution is displayed in Table 2-7. We observe that majority of households commute due to farming activities (86.5%), followed by trading activities (13.5%). Higher proportions of non-outgrower than outgrower households reported farming as the main reason for commuting. A higher proportion of outgrower households also reported trading as a reason for commuting than non-outgrower households.

**Table 2-7: Main Purpose of Migrating/Commuting by Farmer Type**

Main purpose of migration/commuting	Out-g rower	Non-Out Grower	Total
Farming work	76.5	95.0	86.5
Trading	23.5	5.0	13.5
Total	100.0	100.0	100.0

Source: Field Survey, 2014

Table 2-8 gives the distribution of the modes of transport for migrating and commuting households. The most common means of transport reported in the survey are bus, car and truck. Majority of respondents reported using *bus* (62.2%), followed by *car* (29.7%); and the least mode of the three main modes reported is *truck* (5.4%). Disaggregating the responses according to farmer type shows that a higher proportion (70.6%) of outgrower households reported using bus than their non-outgrower counterparts (55.0%), whilst the latter reported higher proportions of using car and truck than the former.

**Table 2-8: Main mode of Transport for Migrating and Commuting**

Most used means of transport	Outgrower	Non-outgrower	Total
Bus	70.6	55.0	62.2
Car	23.5	35.0	29.7
Truck	-	10.0	5.4
Other	5.9	-	2.7
Total	100.0	100.0	100.0

Source: Field Survey, 2014

A brief description of the frequency of movement of household members is reported in **Error! Not a valid bookmark self-reference..** Migration frequency is operationally measured based on daily commuting, every week, monthly, few times in a year and seasonal/occasional. We observe that

most household members in the study area move monthly (32.4%), followed by those who commute daily (27%). A significant proportion (21.6%) also reported moving a few times in a year; and a relatively small proportion (8.1%) reported moving seasonally or occasionally. Further observation reveals that the proportion of individuals in outgrower households commuting daily and weekly are higher (30%) as compared to those in outgrower households (23.5%). Compared to those in non-outgrower households, a higher proportion of individuals in outgrower households is however reported for those who move monthly and a few times in a year. This case could partly be explained by the observation that most outgrowers do not reside in the farming communities compared to non-outgrowers who usually reside in the farming communities.

**Table 2-9: Migration Frequency**

	Outgrower	Non-outgrower	Total
Daily commuting	23.5	30	27.0
Every week	5.9	15.0	10.8
Every month	35.3	30.0	32.4
A few times a year	29.4	15	21.6
Seasonal/occasionally	5.9	10.0	8.1
Total	100.0	100.0	100.0

Source: Field Survey, 2014

We report the average percentage of time spent by migrants/commuters in a particular locality (rural or urban) in

Table 2-10. The results generally show that migrants and commuters spend the bulk of their time in the rural areas (45.8%) comparative to the urban areas (56.7%). This is obviously expected since the survey regions are mainly rural and agriculture constitutes their main stay of livelihood. Additional observation shows that outgrower households spend a higher proportion of their time in the urban localities compared to non-outgrowers and vice versa. Again, the observation that most outgrowers do not reside in the farming communities as compared to non-outgrowers could qualify as a plausible explanation to these disparities in the proportions of time spend by households in rural and urban locations. The point is that non-outgrowers usually reside in the farming communities while non-outgrowers in towns and cities and only come to the area where their farms are located during harvesting season.

**Table 2-10: Average percentage of time spent by commuters in a destination locality**

Locality	Outgrower	Non-outgrower	Total
Rural	45.9	66.3	56.7
Urban	53.5	38.1	45.8

Source: Field Survey, 2014

**Error! Not a valid bookmark self-reference.** displays changes in mobility between now and the past ten years. The data confirms that the frequency of mobility in the study region has either

increased, decreased, distance increased or there is no change in mobility over the reference period. Majority of households surveyed (51.4%) reported that they experience no change in mobility over the past ten years. Significant proportions of households also reported increased (13.5%) and decreased mobility frequency (32.4%). The distribution shows some significant differences in the responses of outgrower and non-outgrower households. For instance, 70.6 percent of outgrower households reported no change in mobility whilst 35.0 percent of non-outgrower households no change in mobility.

**Table 2-11: How Mobility has changed over the last 10 years**

Change in Mobility	Outgrower	Non-outgrower	Total
Frequency increased	-	25.0	13.5
Frequency reduced	29.4	35.0	32.4
Distance increased	-	5.0	2.7
No change	70.6	35.0	51.4
Total	100.0	100.0	100.0

Source: Field Survey, 2014

## 2.3 Remittances

The flow of remittances is a key livelihood strategy for many Ghanaian households. It is well argued theoretically that remittances are sent for altruistic and self-interest motives. Remittance flows remain one of the most effective tools for livelihood improvement all over the developing world. Remittances are crucial to livelihoods, especially in the rural areas since they complement farm income. Hence the flow of remittances cannot be ignored from the discussion of rural livelihood in Ghana. Remittances could be received from internal or international sources.

### 2.3.1 Types and Average Remittance Flows

The flow of remittances cannot be ignored from the discussion of rural livelihood in Ghana. We observe from Table 2-12 that households generally receive higher average remittances from international sources (GH¢ 947.10) relative to internal sources (GH¢ 328.32). Again, outgrower households reported higher amounts of remittances than non-outgrower households.

**Table 2-12: Average Amount of Cash Remittance Received**

Farmer Type	Mean cash internal remittance (GH¢)	Mean cash international remittance (GH¢)
Outgrower	477.93	1,277.44
Non-outgrower	295.60	676.82
Total	384.43	947.10

Source: Field Survey, 2014

Internal Remittances received by households in the survey are received in various forms, mainly, cash, and food as well as other in-kind forms. Cash remittances accounts for the bulk of remittances received by the households in the region, representing 65 percent of surveyed households. This is

followed by remittance received in food such as cassava, plantain and provisions recording 20 percent, while other remittances in form of goods such as shoe, clothing and mobile phone among others recording the least share. We notice that a comparatively higher proportion of non-outgrower households receive cash remittances than outgrower households. The reverse is observed for food remittances (see Table 2-13).

**Table 2-13: Type of Internal Remittance by Farmer Type**

Type	Outgrower	Non-outgrower	Total
Cash	59.2	70.6	65.0
Food	26.5	13.7	20.0
Other goods	14.3	15.7	15.0
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 2.3.2 Channels of Remittances

The major channels through which remittances are received is displayed in Table 2-14. These channels are mainly classified as formal and informal channels. For both internal and international remittances, majority of households revealed that they received remittances through informal channels. This observation cuts across farmer types, though the proportion of non-outgrower households is higher for both internal and international remittances. In terms of formal remittances, the proportion of outgrower households outweighs that of non-outgrower households for both internal and international remittances. This result essentially suggests that the bulk of remittances (both internal and international) pass through informal channels hence may not be captured by official data on remittances. The implication, therefore, is that the official remittance data often captured through the formal channel may be grossly understating remittance flows into and within the country. In order to improve data accuracy, regular surveys on remittance flows at the household level is recommended.

**Table 2-14: Main channel of Remittance**

Channel	Internal Remittance			International Remittance		
	Outgrower	Non-outgrower	Total	Outgrower	Non-outgrower	Total
How received						
Informal channel	96.9	98.2	93.8	50.0	83.3	70.0
Formal channel	3.8	1.8	1.8	50.0	16.7	30.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Field Survey, 2014

### 2.3.3 Frequency of Remittance Receipts

**Error! Not a valid bookmark self-reference.** reports the frequency of remittance receipt by households in the survey region. We observe that the majority of households (80 percent) receive remittances *sometimes*, compared to 15.5 percent of households who receive remittances on regular basis. Higher proportions of outgrower households (20.4%) reported receiving remittances on regular basis than non-outgrower households (10.7%), whilst the latter reports a higher proportion



of those who receive remittances *sometimes* than the former. We could, therefore, conveniently conclude that the bulk of remittances in the region are not received on regular basis.

**Table 2-15: Frequency of Receipt of Remittances**

How often received	Outgrower	Non-outgrower	Total
Sometimes	72.2	87.5	80.0
Once	7.4	1.8	4.6
Regularly	20.4	10.7	15.5
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 2.3.4 Use of Remittances

We observe from **Error! Not a valid bookmark self-reference.** that remittances received by households are put into diverse uses. Essentially, majority of households severally spend remittances on daily consumption, education, health, and housing. Daily consumption (55.8%) has been reported as the main use for remittances received by households in the region, followed by housing (35.6%) and agriculture (5.8%). Generally, remittance use is not widely varied for outgrower and non-outgrower households.

**Table 2-16: Use of Remittance for the Past 5 Years by Farmer Type**

Main use of remittance	Outgrower	Non-outgrower	Total
Agriculture	6.1	5.5	5.8
Daily consumption	55.1	56.4	55.8
Education	4.1	0.0	1.9
Health	-	1.8	1.0
Housing	34.7	35.4	35.6
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 2.3.5 Relationship with Remittance Senders

Farm households in the region reported having received remittances from various relationships which are displayed in Table 2-17. It is observed that remittances are mainly received from *other relatives* and this constitutes siblings, uncles, uncles, among others, accounting for 55.6 percent. This is followed by remittance received from household members, representing 31.5 percent. Remittance received from *other non-relatives* such as friends and neighbours was the least reported. A higher proportion of outgrower households reported having received remittances from *household members* and other *non-relatives* than non-outgrower households. On the other hand, a higher proportion of non-outgrowers than outgrowers reported having received remittances from *other relatives*.

**Table 2-17: Relationship with Internal Remittance Sender**

Sender	Outgrower	Non-outgrower	Total
Household members	35.9	27.3	31.5
Other Relatives	50.9	60.0	55.5

Other Non- Relatives	13.2	12.7	13.0
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 3. AGRICULTURAL PRODUCTION AND RURAL LIVELIHOOD

This section provides a description of agriculture activities in the survey area. We discuss farm plot characteristics and ownership, labour and non-labour inputs, crop output, crop output consumption, livestock, production assets, and common pool of resources.

#### 3.1 Plots

Information on farm plots is undoubtedly crucial for agricultural decision-making. This section highlights household responses on the average distance to farm plots and type of land tenure system practiced in the study area.

The average plot size recorded in the survey region is 2.0 hectares. This low plot size can be attributed the constraints in the acquisition of land for large scale production, especially due to the issue of land fragmentation. Outgrowers own relatively larger plot sizes (2.0 ha) than non-outgrowers. In terms of number of plots, the mean recorded in the survey is 2.5. The proportion is however relatively higher for outgrowers (2.6) than non-outgrowers (2.2). The minimum size of plot recorded in the survey is 0 and the maximum is 56. In terms of number of plots, the minimum recorded is 1 while the maximum is 8 plots (see Table 3-1).

**Table 3-1: Minimum and maximum average plot size and number of plots**

Variable	Obs	Mean	Std. Dev.	Min	Max
Average plot size	566	1.97	2.75	0.00	56
Average number of plots	566	2.46	1.63	1	8

Source: Field Survey, 2014

The distribution of average plot size by number of plots is shown in Table 3-2. On average, the results show that those who reported one plot recorded the highest mean size (2.6 ha) while each of the rest of the number of plots recorded a mean size less than 2 percent. We note that outgrowers generally had higher mean plot sizes than non-outgrowers.

**Table 3-2: Average plot size by number of plots**

Number of Plots	Outgrower	Non-outgrower	Total
1	3.1	2.0	2.6
2	2.4	1.3	1.9
3	1.4	1.3	1.3
4	1.6	1.8	1.7
5	2.2	0.9	1.9
6	1.6	1.2	1.5
7	1.9	0.9	1.5

8	1.7	1.6	1.7
Total	2.3	1.6	1.97

Source: Field Survey, 2014

Table 3-33 reports the average distance from the households to their farm plots. The overall average distance covered by households to their farm plots is 4.4 kilometres, with outgrower households reporting longer average distance (6.0 km) to their farms than non-outgrower households (2.5 km).

**Table 3-3: Average Distance to Plot**

Type of farmer	Average distance (kilometres)
Out grower	6.0
Non-out grower	2.5
Total	4.4

Source: Field Survey, 2014

A key variable captured in the agriculture and livelihood survey is the nature and structure of plot ownership. Traditionally, the land tenure system, especially within the African context is of major priority when it comes to land related issues. Ownership of farm plots, a measure of land tenure is at the heart of the study. Table 3-3 gives a distribution of land ownership in the study area. We observe that most farm plots are owned by the households. This is the case for both outgrower and non-outgrower households. A significant proportion of households also reported that farm plots are owned by their clan. A comparatively insignificant proportion of households indicated that the plots are rented, and this pertains only to outgrower households. Similar observation is made for *state land*, and *community land*.

**Table 3-3: Ownership of Plot**

Ownership	Outgrower	Non-outgrower	Total
Owned by household	61.9	65.9	64.0
Rented	1.5	-	0.7
Borrowed	13.9	7.9	10.8
Community land	0.5	-	0.2
Owned by clan	19.3	26.2	22.8
State land	3.1	-	1.5
Total	100.0	100.0	100.0

Source: Field Survey, 2014

Respondents in the survey area were also asked if their plot sizes increased, decreased, or remained the same over the past decade. the distribution in Table 3-4 points to the fact that plot sizes of households in the area remains relatively the same over the period, though a larger proportion of non-outgrowers reported that their plot sizes remain the same than their outgrower counterparts. This notwithstanding, the number of households reporting increased plot sizes are comparatively more than those reporting decreases in plot sizes.

**Table 3-4: Change in Plot Size**

Change in size	Outgrower	Non-outgrower	Total
Decreased	2.2	1.6	1.9
Same	76.3	83.0	79.6
Increased	21.5	15.5	18.6
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 3.2 Labour

The type of labour used on the farm by outgrowers and non-outgrowers in the study area is displayed in Table 3-5. The main types of labour in the survey area include hired labour, family labour, or a combination of family and hired labour. In line with expectation, majority households reported using the combination of hired and family labourers in their farming activities. A higher proportion (14.1%) of households reported using family labour than hired labour (3.8%); but the proportion is higher for non-outgrower households than outgrower households.

**Table 3-5: Labour Usage**

Type of Labour	Outgrower	Non-outgrower	Total
Hired	6.8	0.4	3.8
Family	11.5	17.1	14.1
Combination of both	81.4	81.8	81.6
Other	0.3	0.7	0.5
Total	100.0	100.0	100.0

Source: Field Survey, 2014

An assessment of labour positions in the households interviewed reveal that the vast majority (92.4%) of workers are self-employed. The rest are in permanent wage employment, long term contract, family labour without pay, casual wage employment, and a few are employers. The proportions of employment status of household members do not generally differ for outgrower and non-outgrower households (Table 3-6).

**Table 3-6: Labour Position of household members**

Labour Position	Outgrower	Non-outgrower	Total
Self Employed	92.7	92.0	92.4
Employer	1.2	1.3	1.3
Permanent wage labour	2.4	1.8	2.0
Long term contract	1.2	1.8	1.5
Casual wage labour	0.4	1.8	1.1
Family labour without pay	2.1	1.3	1.7
Total	100.0	100.0	100.00

Source: Field Survey, 2014

Table 3-7 portrays changes in households' use of labour now change compared to the past ten years. It is observed that the majority of households increased their labour usage (65.9% of households) between the year 2004 and 2014. A significant proportion (25.7%) of households also reported that their labour usage over the past ten years has not changed, whilst a relatively smaller proportion

(8.4%) reported having reduced their labour usage over the reference period. The changes in labour usage slightly differ for outgrowers and non-outgrowers. Whilst a higher proportion of outgrowers reported *same* and *more* labour usage in relation to the past 10 years, non-outgrowers reported a relatively higher proportion for less labour usage.

**Table 3-7: Change in Use of Labour**

Use of labour	Outgrower	Non-outgrower	Total
Less	7.0	9.8	8.4
Same	25.8	25.6	25.7
More	67.3	64.5	65.9
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 3.3 Non-Labour Inputs

Various inputs are used in the agricultural production process. Responses from input use are captured in Table 3-8. The input which recorded the highest proportion of households is inorganic fertilizer (43.6%), followed by bought seeds (41.2%), and pesticides/herbicides (12.3%). A relatively smaller proportion of households reported the use of organic fertilizers, implying that households in the study area are more favourably disposed towards the use of inorganic fertilizers than organic fertilizers. Outgrower households reported higher proportions for organic and inorganic fertilizer usage than non-outgrowers.

**Table 3-8: Non-Labour Input Usage/Purchase**

Input type	Outgrower	Non-outgrower	Total
Bought seeds	39.6	43.2	41.2
Inorganic fertilizer	45.4	41.4	43.6
Organic fertilizer	3.8	1.2	2.7
Pest/herbicides	11.1	13.6	12.3
Others	-	0.6	0.3
Total	100.0	100.0	100.0

Source: Field Survey, 2014

Table 3-9 portrays changes in households' use of non-labour now compared to the past ten years. Similar to the case of labour, it is observed that the majority of households use more non-labour inputs (61.6% of households) now compared to the past ten (10) years. A significant proportion (29.6%) of households also reported that their non-labour input use now and the past ten years has not changed, whilst a relatively smaller proportion (8.8%) reported having reduced their non-labour input use over the reference period. The changes in non-labour input use slightly differ for outgrowers and non-outgrowers. For instance, while a higher proportion of outgrower households reported *less* non-labour input use in relation to the past 10 years, non-outgrowers reported a relatively higher proportion for *same* non-labour input usage.

**Table 3-9: Change in Number of Non-Labour Inputs**

Non-labour inputs	Outgrower	Non-outgrower	Total
Less	11.0	6.6	8.8
Same	27.2	32.1	29.6

More	61.9	61.3	61.6
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 3.4 Livestock

Livestock ownership is a key variable in the analysis of rural livelihood in Ghana. **Table 3-10** shows the various livestock reported by households in the survey. The livestock predominantly reported in the survey are; cattle, oxen, pigs, goats and sheep. We observe that pigs, cattle and oxen were the livestock with the average highest number reported (approximately 35 each), each recording approximately 35 animals. Generally, outgrower households reported higher average number (34.4) of livestock than non-outgrower households (28.9).

**Table 3-10: Average Number of Livestock/Reared Animals**

Livestock Name	Outgrower	Non-outgrower	Total
Cattle	37.8	32.0	34.8
Chicken	29.1	22.8	25.9
Dog	-	2.0	2.0
Duck	1.0	16.0	11.0
Goats	27.5	25.4	26.4
Oxen	37.8	32.0	34.8
Pigs	38.0	32.0	35.0
Rabbit	25.0	4.0	19.5
Snail	-	30.0	30.0
Sheep	37.0	29.7	33.3
Total	34.4	28.9	31.6

Source: Field Survey, 2014

Table 3-11 presents a distribution of the use of the various livestock owned by households. Households mainly reported using livestock for subsistence, sale or both subsistence and sale purposes. It is observed that the majority of households use livestock for subsistence purposes (55.8 percent), followed by 41.1 percent of households who own livestock for both sales and subsistence purposes. This generally implies that livestock in the study area are purposely owned for purely subsistence reasons than for purely sale purposes. It is important to note however that none of the non-outgrower households reported ownership/reared animals.

**Table 3-11: Use of Livestock/Reared Animals**

Use type	Outgrower	Non-out grower
Subsistence	55.8	-
Sale	3.1	-
Both	41.1	-
Total	100.0	-

Source: Field Survey, 2014

### 3.5 Crop Output

Crop output is a crucial indicator for measuring rural livelihoods, especially as majority of rural dwellers relies on crop produce to meet ends meet. This section provides information on land allocation to crop, use of labour, and crop sale.

With regards to land allocation, households were asked to compare the size of land allocated to crop production now to the size allocated in the past ten (10) years, and the results are shown in Table 3-12. Majority of households still allocate the same size of land for crop production as in the last ten (10) years. A comparatively higher proportion (24.2%) of households indicated that they have allocated more land for crop production than those who reported that they have allocated less land to crop production (3.6%). We could therefore conveniently deduce that the size of land allocated to crop production by most households has either largely remained the same or slightly increased over the past decade. A second glance at Table 3-12 reveals that a higher proportion of outgrower households reported allocating less and same land size comparative to non-outgrowers; whilst a higher proportion of non-outgrowers reported allocating more land now than their outgrower counterparts.

**Table 3-12: Change in Land Allocation to Crop**

Land allocated	Outgrower	Non-outgrower	Total
Less	4.7	2.5	3.6
Same	75.9	68.8	72.3
More	19.4	28.8	24.2
Total	100.0	100.0	100.0

Source: Field Survey, 2014

Changes in crop output consumption is reported in Table 3-13. Majority of households (76.3%) reported that they have consumed more off their crops now than in the past ten years. While 19 percent of respondents indicated reductions in their crop output consumption, 4.7 percent of them reported that their crop output consumption remains the same from the past 10 years. Outgrowers reported a comparatively higher proportion of a reduction in crop output consumption; and non-outgrowers on the other hand reported higher proportions of increased and same crop output consumption now relative to the past decade.

**Table 3-13: Crop Output Consumption**

Crop output consumption	Outgrower	Non-outgrower	Total
Less	23.7	14.0	19.0
Same	4.2	5.3	4.7
More	72.0	80.7	76.3
Total	100.0	100.0	100.0

Source: Field Survey, 2014

Crop output sales undoubtedly constitute one of the main sources of income for farm households. Similar to crop output consumption, responses in crop output sale follows similar patterns. For

instance, In Table 3-14, we observe that the highest proportion (75.7%) of respondent allude to an increase in their crop output sales now relative to the past 10 years, though the proportion is higher for non–outgrowers (79.1%) than outgrowers (72.2%).

**Table 3-14: Crop Output Sale**

Crop output sales	Outgrower	Non–outgrower	Total
Less	24.4	14.3	19.3
Same	3.3	6.6	5.0
More	72.2	79.1	75.7
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 3.6 Land Tenure Status

Land tenure system is one of the crucial mechanisms used in investigating livelihood change among farm households in developing countries. The land tenure status of households as reported in **Error! Not a valid bookmark self-reference.** indicates that majority of households use owned but unregistered lands (49.5%), though a relatively significant proportion (29.7%) also use own registered lands. A comparatively higher proportion of outgrower households (53.6%) reported owned registered lands than their non–outgrower counterparts (44.9%). Additionally, a slightly significant proportion of households reported using rent–free plots of land. The least category in the land tenure status is those who reported having rented land (7.6%), implying that land rentals for farming activities are not common in the study region.

**Table 3-15: Land Tenure Status by Farmer Type**

Tenure status	Out–grower	Non–outgrower	Total
Owned with registered	35.9	22.9	29.7
Owned w/o registered	53.6	44.9	49.5
Rented	1.9	14.0	7.6
Rent–free use	8.5	18.2	13.1
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 3.7 Changes in Crops, Inputs and Output

Farm households in the survey experienced various kind of changes and obstacles in the agricultural production process over the past decade. The survey captured some of the major changes relating largely to crop output and input acquisition. Some of the major changes (positive and negative) outlined by farmers (which also reflects the national case) include increase in output, higher cost of farm input, reduction in crop yield, higher cost of labour, increase in crop production, and increment in crop consumption (mainly due to increase in household size). The study focused on only the major change observed by farmers in the area of crop, output and input acquisition. The proportion of farm households that reported the various changes for both outgrowers and non–outgrowers is presented in **Error! Not a valid bookmark self-reference..** Increase in output is reported as the leading change observed by farm households in the survey, accounting for almost 22



percent of all households. We also observe that 17.3 percent of farm households in the region considered high cost of farm inputs as a major obstacle in production process.

**Table 3-16: Main Changes in Crops, Input and Output**

Change	Outgrower	Non-outgrower	Total
Increase in output	22.3	21.1	21.7
Reduction in crop yield	10.5	11.4	11.0
Higher cost of farm input	22.3	11.4	17.3
Higher cost of labour	5.6	13.9	9.5
Increase in crop consumption	15.8	13.6	14.8
Increase in crop sale	17.3	13.2	15.4
Other	6.2	15.4	10.5
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 3.8 Market for Crop Sales

The bulk of the farm households in the survey are into commercial farming (especially the outgrowers). The commercial crops are usually sold by the farmers at the farm gate, market centre, and at the company gate. Table 3-17 presents the distribution of the various buyers of farmers' products at each centre by farmer type. We observe that the major buyers reported irrespective of the centre of transaction are local traders, company agent, and other farmers. Local traders are the major buyers of farm produce at the *farm gate*, other farmers are the major buyers in the *market*, and company agents mainly buy at the *company gate*.

**Table 3-17: Sale of crop outlet and Type of Buyer**

Buyer Type/sale outlet	Outgrower	Non-outgrower	Total
Farm gate			
Local trader	77.8	66.7	75.0
Farmers' organization	0.0	33.3	8.3
Other farmer	22.2	0.0	16.7
Market			
Local trader	15.5	7.5	10.9
Company agent	31.0	27.5	29.0
Other farmer	51.7	61.3	57.3
Farmers' organization	0.0	1.3	0.7
Cooperative	1.7	2.5	2.2
Company gate			
Company agent	60.0	33.3	53.9
Cooperative	40.0	33.3	38.6
Farmers' organization	0.0	33.3	7.7

Source: Field Survey, 2014

### 3.9 Crop Prices

In Table 3-18, reports the maximum and minimum market prices of the crops they sold in a specified unit during the past 12 months. The major crops on which prices are reported by farmers are cocoa, oil palm, rubber, orange, plantain, cassava, maize, yam, and okro. We observe that cocoa, oil palm, and orange generally command the highest unit prices (see Table 3-18).

**Table 3-18: Average Minimum and Maximum Price per Crop**

Type of crop	Average minimum price (GH¢)	Average maximum price (GH¢)
Cassava	78.00	81.90
Cocoa	187.30	200.30
Cocoyam	70.70	72.90
Maize	81.30	95.30
Oil palm	225.60	306.10
Okro	18.00	21.50
Orange	190.90	220.70
Plantain	47.60	52.10
Tomatoes	8.00	10.00
Yam	59.20	68.20
Total	96.70	112.90

Source: Field Survey, 2014

### 3.10 Production Assets

Ownership of agricultural related production assets remains one of the crucial determinants of rural livelihood in developing regions. Table 3-19 therefore provides information on the various agricultural production assets owned by rural households in the survey region. The major agricultural assets reported by farmers are cutlass, cart, hoe, milling machine, ox plough, spraying machine and tractor. We observe that outgrower households generally reported higher percentages of asset ownership than non-outgrower households. This may be the case since outgrowers are usually supplied with such inputs in the production process.

**Table 3-19: Ownership of Farm Assets**

Item name	Outgrower	Non-outgrower	Total
Cutlass	18.1	17.8	17.9
Cart	18.0	17.8	17.9
Hoe	9.9	10.8	10.4
Milling machine	18.0	17.8	17.9
Ox -lough	18.0	17.8	17.9
Tractor	18.0	17.8	17.9
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 3.11 Common Pool of Resources

A large proportion of the poorest rural households in developing countries depend critically on common-pool resources such as forests, fisheries, and farmlands for their food and livelihood (IFPRI, 2011). Access to communal land is therefore a relevant factor in determining agriculture and rural livelihood in Ghana. However, in the agriculture and rural livelihood survey, most of the respondents report that they do not have access to communal land. From Table 3-20, we observe that the majority of households (88.4%) surveyed do not have access to communal land. We further observe that relatively higher proportions of non-outgrower households have access to communal land than outgrower household.

**Table 3-20: Access to Communal Land**

Access to communal land	Outgrower	Non-Outgrower	Total
Yes	10.3	12.8	11.6
No	89.7	87.3	88.4
Total	100.0	100.0	100.0

Source: Field Survey, 2014

Farm households that have access to communal land mainly use it for purposes such as agriculture, livestock, and collection of firewood. Table 3-21 indicates that communal lands are used mainly for agriculture (42.3%), followed by livestock (40.4%), and the least proportion (17.3%) is reported for collection of firewood.

**Table 3-21: Use of Communal Land**

Use	Frequency	% of responses	% of cases
Agriculture	22	42.3	100.0
Livestock	21	40.4	95.5
Collecting of firewood	9	17.3	40.9
Total	52	100.0	236.4

Source: Field Survey, 2014

The Agriculture and Rural Livelihood Survey sought the views of the respondents are also gathered on the importance of communal land access to their households. The results obtained as represented in Table 3-22 give the indication that most of the respondents are in favour of the assertion that access to communal land is important to them, though a relatively smaller proportion of households (5.2%) reported that communal lands are not important to them. Disaggregating the responses according to farmer type shows that higher proportions of outgrower households allude to the importance of communal lands than their counterpart non-outgrower households.

**Table 3-22: Importance of Communal Land**

Importance of access to land this household	Outgrower	Non-outgrower	Total
Very important	50.0	44.4	47.3
Important	50.0	44.4	47.4
Not important	-	11.1	5.2
Total	100.0	100.0	100.0

Source: Field Survey, 2014

## 4. ACCESS TO CREDIT AND LOANS

This section highlights the access and sources of loans to rural households in Ghana over the past five years. The section also gives information on the purpose of loans contracted by the households. Access to credit facilities, especially loans is paramount to the livelihood conditions of farm households in rural communities. Such facilities contribute to livelihoods by reducing the gross lack of capital and inputs for agricultural production investments.

### 4.1 Sources of Credit

From Table 4-1, households in the survey region identified rural banks, savings and loans companies, and commercial banks as their main sources of loans. We observe that more than half of the loans (56.1%) were obtained from rural banks. This is followed by loans obtained from savings and loans companies (31.8%) while loans from other sources such as money lenders, friends and relatives obtained the least share. The results further reveal some differences in the loans obtained from various sources among outgrower and non-outgrower households. For instance, loans from rural banks recorded 68.8 percent for outgrower households while this represents just 44.1 percent for non-outgrower households. A higher proportion of non-outgrowers sought loans from friends and relatives than their out-grower colleagues. However, institutional loans were significantly higher for out-growers than for their non-outgrower colleagues. This may probably be attributed to the fact that out-growers had credible collaterals which is the oil palm cash crop while the non-out growers do not have credible collaterals (i.e. food crops) to guarantee for loans.

**Table 4-1: Sources of Loan by Farmer Type**

Source	Outgrower	Non-outgrower	Total
Rural bank	68.8	44.1	56.1
Savings and loans/Microfinance	28.1	35.3	31.8
Fiends/relatives	3.1	17.7	10.6
Other	-	2.9	1.5
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 4.2 Purpose for Contracting Credit (Loans)

Table 4-2 reports the purposes for which households in the study area contract loans. Interestingly, the highest proportion of farm households chose business as their main purpose of loans than agriculture (29.2 percent). This in a way suggests that farm households, especially non-outgrower households are favorably disposed to contracting loans for non-agriculture (business) activities than direct agriculture activities. The responses are widely varied across farmer type, however. For instance, higher proportions of outgrower households contracted loans for agriculture activities and education than their non-outgrower counterparts. This interesting finding undoubtedly has relevant implications for agricultural investment and livelihood improvement policies in the study region. Education (29.2 percent) also featured prominently as one of the major reasons for household loans in the region, accounting for 29.2 percent of households.

**Table 4-2: Purpose of Loan by Farmer Type**

Loan Purpose	Outgrower	Non-outgrower	Total
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Agriculture	40.6	18.2	29.2
Business	15.6	51.5	33.9
Health	-	6.1	3.1
Education	37.5	21.2	29.2
Other	6.3	3.0	4.6
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 4.3 Mobile Money

It is widely acknowledged that mobile money services promote financial inclusion which is crucial for poverty reduction and development. The use of mobile money has therefore been integrated into the analysis agriculture and rural livelihoods. The results in Table 4-3 show that mobile money services are mainly used by households for receiving money (43.3%). This is followed by those who use it to send money (41.8%) while those who used it for saving money accounted for just 13.4 percent. A slightly higher proportion of outgrower households than non –outgrower households use mobile money services for receiving money. The converse is observed for those who use the service for sending money.

**Table 4-3: Use of Mobile money by Farmer Type**

Use of mobile money	Outgrower	Non–outgrower	Total
Sending money	40.5	43.3	41.8
Receiving money	44.0	40.0	43.3
Saving money	10.8	16.7	13.4
Other	2.7	-	1.5
Total	100.0	100.0	100.0

Source: Field Survey, 2014

## 5. HOUSEHOLD AND COMMUNITY CHARACTERISTICS

### 5.1 Housing

The analyses of housing characteristics in the study are at the heart of the Agriculture and Rural livelihood survey. We provide a distribution of household characteristics in Table 5-1. Several dwelling types have been identified among rural residents in Ghana. It must however, be noted that the results provided here are obtained from an adaptation of the questionnaire to fit housing conditions in Ghana. We observe that majority of households in the study region live in either rooms (not compound houses) or rooms in compound houses. It is also revealed that only a small proportion of households live in separate houses and several huts/buildings. Housing characteristics, slightly differ for outgrower and non –outgrower households. For instance, 5.7 percent of outgrower households live in separate houses whilst less than 1 percent of non–outgrower households live in separate households.

**Table 5-1: Dwelling Type of Respondents**

Dwelling type	Outgrower	Non–outgrower	Total
Separate house	5.7	0.2	3.1

Semi-detached house	8.5	9.3	8.9
Rooms compound house	41.9	38.3	40.2
Room other type	43.8	49.0	46.3
Several huts/building	0.0	3.3	1.6
Total	100	100	100

Source: Field Survey, 2014

The roofing characteristics of households surveyed are shown in Table 5-2. The distribution reveals that the majority of households live under corrugated iron sheets (75), followed by tins or metals (24.4%). Again, the distribution slightly differs across farmer types. While a comparatively higher proportion of outgrower than non-outgrower households reported living under tins or metal roofs, a higher proportion of non-outgrower households (76.9%) reported living under corrugated iron sheet roofs relative to their outgrower counterparts (73.3%).

**Table 5-2: Roofing Characteristics by Farmer Type**

Roofing	Outgrower	Non-outgrower	Total
Corrugated iron sheet	73.3	76.9	75
Tins or metals other	26.7	21.9	24.4
Other	-	1.2	0.6
Total	100.0	100.0	100.0

Source: Field Survey, 2014

## 5.2 Public Services

Access to public services is crucial in examining rural livelihood in Ghana. The public services assessed in the survey include electricity and drinking water which are subsequently discussed.

### 5.2.1 Electricity

Table 5-3 essential highlights household's access to various sources of power such as electricity and generators. The vast majority of households (90.6%) reported having access to electricity. A relatively smaller proportion (7.5%) reported having no electricity, whilst less than 1 percent used generators. Access to electricity does not appear to differ significantly for outgrower and non-outgrower households.

**Table 5-3: Electricity by Farmer Type**

Access to electricity	Outgrower	Non-outgrower	Total
No electricity	7.9	7.0	7.5
Generator	-	1.8	0.8
Electricity	92.1	89.0	90.6
Others	-	2.3	1.1
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 5.2.2 Sources of Drinking Water

Rural households in Ghana obtain their drinking water from several sources. Some of the major sources of drinking water to rural households in Ghana are borehole/protected well, public network and others such as unprotected well, ponds, rivers/streams among others. The results in Table 5-4 suggests that majority of households in the study area source their drinking water from borehole/protected wells. A relatively significant proportion of households (19.7%) also get water from public water networks, and some 15.6 percent of households also reported getting their drinking water from sources other than public water networks and borehole/protected wells. The distribution appears relatively similar for outgrower and non-outgrower households.

**Table 5-4: Source of Drinking Water**

Drinking water source	Outgrower	Non-outgrower	Total
Public network	20.1	19.2	19.7
Borehole/protected well	65.8	63.5	64.7
Other	14.0	17.3	15.6
Total	100.0	100.0	100.0

Source: Field Survey, 2014

### 5.2.3 Sanitation

Sanitation, especially access to safe sanitation facilities at home and public places is crucial to the well-being of people all over the world. In developing countries in particular, access to safe and hygienic toilet facilities has been a great challenge over the years. Respondents in the survey region were therefore asked to indicate the kinds of toilet facilities they use, and the responses are reported in **Error! Not a valid bookmark self-reference..** The distribution reveals that the majority of households either use private latrine with sewer (44.2%) or private latrine without sewer (42.0%), though a higher proportion of outgrower than non-outgrower households reported the former than the latter, and vice versa. Only relatively small proportions reported using public/shared latrine (6.1%), and flush toilet to a septic tank/sewer (4.1%).

**Table 5-5: Sanitation**

Sanitation	Outgrower	Non-outgrower	Total
Flush toilet to a septic tank/sewer	6.7	1.2	4.1
Private latrine with sewer	53.7	33.7	44.2
Private latrine w/o sewer	34.5	50.2	42.0
Public/shared latrine	4.0	8.4	6.1
Other	1.1	6.5	3.7
Total	100.0	100.0	100.0

Source: Field Survey, 2014

## 6. HOUSEHOLD EXPENDITURE AND SAVINGS

Economic theory suggests that household incomes, generally, may either be spent or saved for future use. This section provides a brief analysis of household expenditure and savings.



## 6.1 Household Expenditure

Table 6-1 provides information on the mean annual expenditure of households in the survey region. The average annual expenditure reported by households is GH¢ 8,551.40. Comparatively, outgrowers reported a higher average annual expenditure (GH¢ 10,134.70) than non-outgrowers who spend an average of GH¢ 6,799.00 annually.

**Table 6-1: Annual Average Expenditure by Farmer Type**

Type of Farmer	Average annual expenditure (GH¢)
Outgrower	10,134.70
Non-outgrower	6,799.00
Total	8,551.40

Source: Field Survey, 2014

## 6.2 Household Savings

Table 6-3 reports the savings characteristics of households surveyed disaggregated by farmer type and sex of respondents. We observe that the majority of respondents save each year. This observation cuts across farmer type and sex of respondents. A higher proportion of outgrowers than non-outgrowers counterparts save each year. Though not significantly different, slightly higher proportions of males than females save each year across farmer type.

**Table 6-2: Percentage of Household Savings Each Year by Sex**

HH saves each year?	Outgrower			Non-outgrower		
	Male	Female	Total	Male	Female	Total
Yes	67.2	66.7	66.9	60	56.8	58.6
No	32.8	33.3	33.1	40	43.2	41.4
Total	100	100	100	100	100	100

Source: Field Survey, 2014

Table 6-3 provides information on the average saving in a year. The average annual saving reported is GH¢ 1,073.30. On average, outgrowers in the study region save relatively higher (GH¢ 1,250.70) than non-outgrowers (GH¢ 843.40). The result across gender is mixed. While male outgrowers reported a relatively higher average annual savings (GH¢ 1,265.80) than female their counterparts (GH¢ 1,235.00), female non-outgrowers reported higher average annual savings (GH¢ 857.20) than their male counterparts (GH¢ 833.10).

**Table 6-3: Average Savings per year by Sex and Farmer Type**

Sex	Out-grower (GH¢)	Non-outgrower (GH¢)	Total (GH¢)
Male	1,265.80	833.10	1,064.40
Female	1,235.00	857.20	1,083.70
Both sexes	1,250.70	843.40	1,073.30

Source: Field Survey, 2014



## 7. CONCLUSION – FINAL REFLECTIONS

The agriculture sector of Ghana is undoubtedly one of the major wheels on which the economy strives. The sector is therefore a major recipient of both government and non –governmental livelihood improvement initiatives over the years. The impact of these initiatives on the livelihoods of the targeted households and individuals are not clearly established, however. It is in the light of this that the current study provides an assessment of the livelihood conditions of oil palm outgrower scheme in selected rural farming communities in the Eastern Region of Ghana.

To achieve this goal, two groups of farmers were sampled, namely, oil palm outgrowers and non-outgrowers, representing the treatment and controlled groups respectively. Household questionnaires were administered to the two farmer groups and the results are displayed in tables and graphs for clarity and easy visualisation. Some of the specific objectives of the study are stated as follows:

- i. To identify the key changes in agricultural production among rural households in the region in terms of crop output, input usage, land allocation to crops as well as livestock ownership.
- ii. To identify sources and use of credit among rural households.
- iii. To investigate the extent of migration among rural households in terms of frequency, purpose of trip as well as main mode of transport.
- iv. To analyse the role of remittance to Ghanaian rural households in terms of type and use.
- v. To compare rural livelihood in terms of average annual expenditure and savings.

### 7.1 Main Findings

The results emerging from the study largely fall in line with *a priori* expectations, and are subsequently discussed as follows:

#### Agricultural Production and Rural Livelihood

We find that most farm households in the study region own the plots they farm, and that a higher proportion of non-outgrowers farm on their own household plots compared to outgrower households. Most households in the survey region do not rent land for farming activities; in fact, no non-outgrower household reported having rented land for farming activities. Majority of households also use the combination of hired and family labour in their farming activities. Households spend on farm inputs such as seeds, pesticides / herbicides, organic, and inorganic fertilizer. Majority of households reported using inorganic fertilizers than any other farm input.

The survey reveals that households own various livestock, prominently, pigs, cattle, oxen, sheep, goats, and chicken. We find that outgrower households generally reported higher numbers of

livestock than non-outgrower households. Most households use livestock for subsistence purposes and only a few reported raising livestock purposely for sale.

We observe that household plot allocation for crop farming has not changed significantly over the past ten years. A higher proportion of non-outgrower than outgrower households reported increased land allocation to crop production. Households however reported using more labour now comparative to the past ten (10) years, though the proportions reported are higher for outgrowers than for non-outgrowers. Similar observation is made for changes in non-labour inputs over the past decade.

Households reported more crop consumption now (76.3%) comparative to the past 10 years, though a relatively significant proportion reported declines in crop consumption (19.0%) over the past decade. Similarly, increases in crop sales have also been reported by the majority of households. Higher proportions of non-outgrower households reported higher consumption and crop sales now compared to the past ten (10) years. The data reflects that plot sizes of majority of households (79.6%) remains relatively the same over the period under review.

Land tenure characteristics of households is such that most households own lands which are unregistered (49.5%), though a relatively significant proportion also own registered plots (29.7%). More outgrower households than non-outgrower households own registered lands.

Farmers usually sell their crops at the farm gate, market centre, and at the company gate. Local traders, company agents, and other farmers are the major buyers of crops at the various selling points.

Cutlasses, carts, hoes, milling machine, ox-ploughs, and tractors are the main farm assets owned by farm households in the study area. Outgrower households generally reported higher percentages of asset ownership than non-outgrower households. This may be the case since outgrowers are usually supplied with such inputs in the production process.

Majority of households (88.4%) do not have access to communal land; and relatively higher proportions of non-outgrower households have access to communal land than outgrower household. Communal land is mainly used for agriculture, livestock, and firewood collection activities. Households affirm the importance of communal lands to economic activity and livelihood.

### **Access to Credit and Rural Livelihood**

The section also gives information on the purpose of loans contracted by the households. Access to credit facilities, especially loans is paramount to the livelihood conditions of farm households in rural communities. Such facilities contribute to livelihoods by reducing the gross lack of capital and inputs for agricultural production investments. Majority of households (56.1%) access loans from the rural banks, and savings and loans (microfinance) institutions (31.8%). Majority of households contracted loans for business (33.9%), education (29.2%) and agriculture (29.2%) purposes, though higher proportion of outgrower households contracted loans for agriculture and education purposes whilst a higher share of non-outgrower households use loans for business purposes. Mobile money

services are widespread in the communities as the greater share of respondents indicated having used mobile money services for sending, receiving and saving money.

### **Migration and Rural Livelihood**

Migration and commuting have essentially been livelihood strategies adopted by rural households in Ghana to most of the times escape poverty and improve livelihood condition. Majority of households in the localities surveyed commute essentially for farm work, and others for trading activities. Relatively higher proportions of outgrowers commute for trading activities whilst comparatively higher proportions of non-outgrowers commute for farming work. The most common means of commuting in the study are the use of buses (popularly known as *trotro* in local parlance), car and sometimes trucks. Most households reported commuting monthly and a considerable proportion also commute daily. In all, we observe that the frequency of commuting is considerably high in the study area. Most households spend the bulk of their time in rural areas than in urban settlements. Outgrower households spend more time in the urban settlements than in rural areas whilst non-outgrower households spend more time in rural settlements than in the urban areas. Majority of households (51.4%) generally reported that they have experienced no change in their mobility over the past decade. Comparatively significant proportions also reported increases (13.5%) and declines (32.4%) in their frequency of mobility over the decade.

### **Remittances flows and Rural Livelihood**

The flow of remittances is a key livelihood strategy for many Ghanaian households. Households surveyed receive remittances in the form of cash, and food as well as other non-food in-kind forms. Remittances could be received from internal or international sources. We find that households generally receive higher amounts remittances from international sources (GH¢ 947.10) relative to internal sources (GH¢ 328.32), of which outgrower households (irrespective of the source) receive higher amounts of remittances than non-outgrower households. Remittances are mostly received in cash, though other forms such as food and other non-food in-kind remittances were also reported by households. Most remittances in the region are received through informal channels, implying that data captured on remittances from formal sources alone may be grossly misleading. It also appears that remittances are mostly not received on regular basis, since majority of households (80 percent) reported that they receive remittances *sometimes*. The bulk of households indicated that they use remittances for mainly daily consumption and housing purposes. Remittances are predominantly received from other relatives (who are not household member) and household members (that is, usually absent household members).

### **Expenditure, Savings and Rural Livelihood**

Distribution of expenditure indicates households spend an average of GH¢ 8,551.40 annually. Outgrowers comparatively reported a higher average annual expenditure (GH¢ 10,134.70) than non-outgrowers who spend an average of GH¢ 6,799.00 annually. A higher proportion of outgrowers than their non-outgrowers counterparts save each year. A slightly higher proportions of males indicated they saved each year as compared to females. The average annual saving reported is GH¢ 1,073.30. Outgrowers save relatively higher (GH¢ 1,250.70) than non-outgrowers (GH¢

843.40). Male outgrowers reported relatively higher average annual savings (GH¢ 1,265.80) than female (GH¢ 1,235.00), female non-outgrowers on the other hand reported higher average annual savings (GH¢ 857.20) than male non-outgrowers (GH¢ 833.10).

## 7.2 Reflections on Rural-Urban Linkages

Clearly the survey results indicate that rural-urban linkages which refer to a multitude of spatial linkages (flow of people, goods, services and information) exist between study rural centres and their urban counterpart. Indeed, for many rural households, rural-urban linkages are part of the local reality for household members carrying out diverse tasks of producing income on and off the farm, maintaining a living space in the village, and going to local and even distant towns to shop, market, work, and seek specialized services (Douglass 1998). This is also true of some urban residents such who either on a regular or irregular basis seek livelihood opportunities in rural areas or engage in rural (or non-urban) based activities.

The results of the study indicates that like many rural communities, flow of people, goods, service and information take place between the study sites in Kwaebibirem District and the nearby district capital or administrative centre, Kade, as well as other urban centres in Ghana. These linkages are greatly aided by the oil palm industry which has large national, West African sub-regional and global markets. The oil palm industry has contributed to the presence of heterogeneous rural communities by attracting populations from all over Ghana and beyond which in itself contributes to the intense flows in and out of the study sites.

The conversion of about 21,000 hectares of land to oil palm plantations at Kwae and Okumaning by the Ghana Oil Palm Development Company (GOPDC) as well as the presence of several thousand of small and large-scale farmers in the outgrower oil palm schemes have contributed to the intense competition for land. This situation about land is further compounded by the demand for land for other cash and food crops as well as mining, particularly small-scale artisanal or illegal mining popularly referred to as *galamsey*.

Intense competition for land for oil palm plantations and for other agricultural use as well as mining results in situation whereby communal or freehold tenurial arrangements begin to give way to commodification of land and other tenurial arrangements requiring the payment of land either cash or in-kind. The implications of the changing land tenure from freehold and communal holdings to leaseholds lead to a situation whereby small scale farmers and the poor are increasingly displaced as they are unlikely to afford the price of land.

Nevertheless, new opportunities as a resulting of the increasing commercialization and diversification of crops emerge in the rural. These come in the form of new labour hiring as poor farmers are displaced from the land and find employment on rubber plantations and large large farmers especially those under outgrower self-financing schemes. Even for small-scale and other subsistence farmers evidence from the study area indicates that some of these continue to engage in farming while earning wage labour on the plantations and large farmers.

Nevertheless, for some poor farmer households restrictions in access to production assets and common pool resources, particularly land, can have significant negative impacts on household poverty and general well-being. For such households, especially the young members, migration can be used as both a short and long-term response. Awumbila et al. (2011, 2014) have argued that the

decision to migrate is a complex process involving the individual and the household, but the ultimate goal will be to seek either agricultural employment (rural-rural migration) or non-agricultural employment (rural-urban migration). The consequences of migration and mobility for the 'sending' households will be for migrant to remit to support such households. However, in the absence of remittances, the sending household can become worse off as it loses its household members, especially if there are no family labour and no alternative means to hire labour for farm work and other activities (including children and young ones within the household). Nevertheless, Awumbila et al (2014) in their study of poor migrants from northern Ghana in Accra concluded broadly that migration has had positive impact on both the migrant and sending households.

### **7.3 Impact of State Level Policies (compulsory land acquisition by the state )**

Under the vision of Ghana's immediate first post-independent government, large lands were acquired in several parts of the country for large plantation. These land tracts of land for large-scale agricultural plantations were acquired under the state's compulsory land acquisition laws and in many cases compensations to landowning families have not been paid. Even though the present national constitution has called for prompt payment of fair and adequate compensation to paid and for the state to resettle displaced inhabitants of compulsorily acquired land on suitable alternative land with due regard for their economic well-being and social and cultural values, this is yet to be implemented in several areas of the country.

It is on the basis of this that the Kwae area was acquired by the state in the 1960s for oil palm plantations. However, poor economic performance, corruption and mismanagement, and political instability led to several state-owned enterprises (SOEs) underperforming and running into difficulties or even collapsing by the early 1980s. To revive the Ghanaian economy, Ghana adopted the IMF/World Bank supported Economic Recovery Programme (ERP)/Structural Adjustment Programmes (SAPs) initiatives to restore macro-economic stability and economic growth. A key initiative under the ERP/SAPs was the diversification of mismanaged and non-performing state-owned enterprises (SOEs). The Divestiture Implementation Committee (DIC) was therefore established in 1988 as the vehicle to implement and execute all Government policies in respect of this divestiture programme under a broad neoliberal and privatization agenda of the state.

The divestiture programme is intended to reduce the size of the public sector and to improve the performance of enterprises by mobilizing private sector management and capital as well reduced the financial and managerial burden on Government. It is expected that proceeds from the divestiture of SOEs would be support infrastructure and other key sectors of the national economy.

Established in 1975, the GOPDC became a private entity in the mid-1980s as a result of the privatization drive of the state. Indeed, the divestiture and privatization agenda have led to influx of foreign direct investments (FDIs), especially in Ghana's natural resources sector, such as oil palm sector. GOPDC is wholly owned by Société d'Investissement pour l'Agriculture Tropicale (nv Siat sa) of Belgium, and employs about 3,000 workers in the peak season, produces over 35,000 tons of palm oil and palm kernel oil per annum and has a storage capacity of about 21,000 tons both at Kwae and Tema (harbour). It is estimated that it has created direct or indirect income for over 50,000 people.

The presence of the GOPDC and the establishment of the outgrower scheme has not only created employment but has also led to the development what can be described as an 'oil palm processing cluster' in the Kwabibirem District. GOPDC supports the communities it operates in, not only

through the results from its business operations, but through investment in education, health and the environment which are essential factors in social development with the aim of improving the living standards for the majority of the people. Currently, the GOPDC operates a medical centre - GOPDC Clinic. In order to facilitate the collection of palm fruit from the farmers, GOPDC maintains about 500 km of roads and assists the communities with the rehabilitation/construction of primary schools, village markets, water boreholes, power lines and sanitary facilities. Many of these development interventions are undertaken through the company's Corporate Social Responsibility Policy. These interventions make a huge contribution to the local and national economy, and more specifically livelihood transformation and mobility within the study rural communities.

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## **African Rural-City Connections (RurbanAfrica)**

### **Agricultural Change and Rural Livelihoods The case of Sesame in Kilwa District, Lindi Region Tanzania**



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## 1. EXECUTIVE SUMMARY

Sesame Seed production has been booming within the past four decades: from 144.420 tonnes in 2010 to 357.162 in 2011 and 456.000 tonnes in 2012 (FAO STAT 20/3-2015). Similar has the export been booming between 2008 and 2009 - in 2011 21.3% (76,017 tonnes) of the production was exported (according to FAOSTAT data) - mainly to China. So the expansion of

Sesame has emerged as a new, very popular cash crop of the area produced by households almost entirely for the market. Surging market prices of sesame 2010-2014 and a favorable market (incl. more buyers) are some of the main drivers of this sesame boom.

In the Ward of Kinjumbi, commercial sesame production is very new. Among the households covered in the questionnaire survey 60% of the households have only grown sesame since 2010.

201 households across 3 villages in the Ward of Kinjumbi covered in the survey. This is approx. 6.5% of the population of the ward. The questionnaire survey faced many challenges, including poor survey team management and hesitant (and sometimes hostile) attitude from the site of the respondents. Due to these challenges, there are a lot of important limitations to the questionnaire survey and all data must be used with precaution.

The majority of households in the area practice agriculture – production of food crops for home consumption as well as sale is important. In the survey 82% practice farming and out of these 165 households 71% cultivates sesame for selling. This is in the upper end of the estimated range (40-70%) for Kilwa District in general (40-70%). Sesame, however, is rarely the only cash crop of the household, but sesame has increased in importance. Among the households cultivating sesame today, 94.5 % indicated that the income from sesame is either important or very important.

Transition to commercial sesame production alters the cultivation system of smallholders towards a higher reliance of inputs, mainly purchased seeds and pesticides. The data collected in this survey compared to National Agricultural Census data from 2007 indicate a ten-fold increase in the use of chemical pesticides in the area over the past 7 years.

Sesame income is mainly spent on covering basic needs, including clothes and medicines.

The sesame boom is very new; in the Ward of Kinjumbi it has “taken off” since 2013 (whereas in other parts of the district it “took off” from around year 2000). Hence the survey data from the Ward of Kinjumbi fail to fully document the socio-economic outcomes of the sesame boom. It is simply too early to see the impact in the ward yet. The questionnaire survey data shows no clear difference between sesame and non-sesame producing households (with agricultural livelihoods). This indicates that sesame production (at least at the current state) is not dominated by any particular group or income quartile. The sesame boom hence has offered a new income source to a broad and diverse part of the population of the area.

Qualitative information gathered, indicates a potential poverty-reducing effect of the sesame boom, however, if this is the case, it is not backed-up with the questionnaire survey data.

Migration (including seasonal) is relatively uncommon in the area, and relatively few households have members who can be considered multi-local.

## 2. METHODOLOGICAL BACKGROUND OF THE STUDY

### CRITERIA USED FOR THE SELECTION OF THE SITE

*For this survey we used the criteria for selection as to identify a 'Dynamic region'.*

*According to RurbanAfrica criteria, a 'Dynamic region' – during the past decade – is characterized by:*

- Growth of production and income
- Increasing productivity (in agriculture)
- New and/or increasing investments in productive facilities (e.g. equipment, inputs, agro-industry, etc.)
- Increasing quality of infrastructure and service provision (physical, social and functional, e.g. communication)
- Increase and/or growth of urban settlements
- Economic diversification (including spin-off effects to non-agricultural activities; e.g., artisans, SMEs, shops, other services etc.)
- Demographic changes (increase or decrease of rural population; changing household composition)
- Changed and/or accelerated mobility patterns
- Presence of 'new actors' (corporate interests, migrant entrepreneurs, traders, etc.)

*These dynamics are primarily looked for in regions characterized by either:*

- 'New' crop – introduction and expansion of a new crop to the region, increasingly important and significant for the regional economy
  - Governance and value chain dynamics is of main interest to policymakers, donors, NGOs, (etc.)
  - Impact of value chain dynamics can be isolated and investigated (profit/rents, savings, investments in agriculture, processing, services such as transport, governance, regulation, etc.).
- 'New' production system
  - New 'scale' of production (small/large), labour 'regime' (direct labour, sharecropping, piecework, domestic labour) forms of integration (contract farming – backwards by processor/exporter, forward by input supplier)

During the first fieldwork autumn 2013 seven potential sites in Southern Tanzania (see map) were visited. For the survey in spring 2014, one of the sites, Kinjumbi Ward, was chosen based on the following criteria:

- 1) The site can be characterized as a Dynamic Region
- 2) Good contacts have been established within the site
- 3) Survey is logistically feasible to carry out at this site.

#### SAMPLING FRAME FOR THE SURVEY CONSTRUCTED

It was agreed to sample 200 households as a compromise between obtaining a statistically interesting proportion of the total households and at the same time keeping the survey within the limits of what the time and budget set aside would allow.

Within Kinjumbi Ward, due to practical reasons, we selected households from only 3 out of 7 villages with varying distance to the main road: Somanga, Kinjumbi and Miumbu.

The households were selected based on lists of households obtained from village authorities. We faced challenges with this, as the village authorities has mislead us to think that all households were included in the household list, however, when we were presented to the lists, these were only complete for certain sub-villages. The village authorities explained us that the un-complete household lists only included households which were easily accessible. As using these incomplete household lists would have biased the sample, we decided to only select households from sub-villages where household list were complete. We selected two sub-villages in each of the villages Kinjumbi and Miumbu.

Selection in Somanga gave us more challenges. As we were to start sampling we were presented with lists that were clearly out of date and not representative of the rapidly growing village of Somanga. We therefore decided to base the household selection on a thorough mapping of Somanga village and a stratified, random selection of houses. In order to adjust the sampling frame to the fact that one house could be inhabited by more than one household, the enumerators followed these instructions:

- 1-2 households in one house: Select randomly 1 household for interview



- 3 or more households in one house: Select randomly 2 households for interview.

#### NUMBER OF 'RESPONDENTS'

According to census data 2012 there are in total approx. 14,400 inhabitants of the Kinjumbi Ward and the average household size is 4.6, meaning there are approx. 3100 households in the ward. Out of these, 201 households were included in this survey, hence approx. 6.5 % of the population.

In the survey 82% practice farming and out of these 165 households 71% cultivates sesame.

Because cultivation of sesame has increased (in area as in people cultivating the crop) within the past four years, no precise data is available on the amount of farmers in the District or Region. However, according to the District government Trade Officer of Kilwa District, in 2013 6481,952 tons of sesame seeds (licensed) were exported from Kilwa District. If one household produces 225 kg (our survey average), there are approx. 28,809 households producing sesame in Kilwa District. With an average household size of 4.6, this means 132,520 people live in households producing sesame. That is 69% out of the total population of 190,744 in Kilwa District. Since production of sesame can vary tremendously from household to household, it is hard to estimate based on production data. A few very large producers might distort the calculation. A careful estimate would suggest that between 40-70% of the population in Kilwa District produces sesame.

#### IMPLEMENTATION OF THE SURVEY

The survey was implemented from 18<sup>th</sup> May to 7<sup>th</sup> of June 2014.

Three enumerators and one data entry assistant were hired and trained for the survey. Training of the enumerators took approx. 1 week and included the following:

1. Introduction to the survey – background and objectives
2. Team building exercises
3. Thorough reading through the questionnaire and discussion of all questions, incl. agreement on the correct translation of questions into local languages
4. Introduction to sampling methods and planning of logistics
5. Discussion about research ethics and good conduct in the field
6. Practice of enumeration in class
7. Practice of enumeration in the field
8. Feedback after practice and adjustments

The training went well and according to the plan, however, it became clear during the process that the hired enumerators found the job very challenging. All enumerators were selected for the job on a basis of former experience with enumeration, but despite their experience they found this particular questionnaire survey difficult to handle. It would have delayed the process much to hire new enumerators, hence we decided to continue with the team, adding continuous follow-up training concerning the challenging issues. Despite the efforts, the quality of the questionnaire

survey interviews and hence the questionnaire survey data never fully lived up to the expectations. (See more under limitations).

#### LOCAL ADAPTATIONS TO THE QUESTIONNAIRE

##### CHANGES MADE TO THE QUESTIONNAIRE WERE:

- On front page: added space to write the number of the GPS coordinate
- Three questions added on Extension and Membership.
- Addition of one extra page of questions specific for the case of sesame as a cash crop

Furthermore, we made the following modifications of the original SPSS template:

- Extra variable for adding the no. of the GPS waypoint
- Extra variable for the year of the establishment of the household/ the family
- For Expenditure, added variables to indicate unit, year, week or month
- For C-1 modified and added many variables to make it possible to add crop specific data
- Several places added coding for acre = 1
- Added codes for most common ethnic groups
- Added all the variables for the extra page 9 about sesame
- Added variables for adding extra questions about extension
- Added a variable in the end to add enumerator's comments

#### MAIN LIMITATIONS OF THE RESEARCH

There are a lot of important limitations of the questionnaire survey data and *any data from this survey must be used with precaution*, especially regarding the following issues:

- Reaching a common understanding of the questionnaire was difficult and due to resource restrictions we accepted to start running the survey knowing that the enumerators were still a) practicing to run it in a correct way b) learning to understand the questions fully c) learning to formulate the questions in exactly the same way and d) learning to be able to discover lack of consistency in the replies. In terms of a), b) and c) we had the impression that these were learned slowly but surely over the first week of work, but d) never really fully.
- All questions regarding 'compared to 10 years ago' in the questionnaire were challenging to enumerator as well as respondents. Among the challenges were the question on how to deal with households which were not yet established 10 years ago (something commonly found in our sample). On the 4<sup>th</sup> day of survey we added a second question on the front page on the year of establishment of the household/family.
- Enumerators had great difficulties understanding the questions under C-4 and only about half-way in the survey started to ask the question in the correct manner.
- It seems there is often a lack of consistency between the income and the expenditure stated by the household and we find it highly unlikely that we obtain full and correct information on this – the data should be used with A LOT of caution.
- It seems strange to us that so few households receive any remittances and we wonder if the questions should have been asked differently – really inquiring from the households if they really don't receive any money or goods from outside. Or perhaps the respondents were simply unwilling to share this information with us. Again use data with precaution.
- Even though we really made an effort to record all crops grown by the household, it is very likely that some were left out. It is common to have more than 10 different crops and the



respondents might not be able to remember all of their crops or consider some of them, like vegetables and fruit trees as not important to mention.

- Similarly, we really made an effort to make households inform us if they had uncultivated/fallow land, but due to the local concept of farms/fields ('shamba') it is likely that there is much not-cultivated land which has not been recorded.
- Similarly again, the qualitative interviews gave us the impression that we are by no means catching the full picture of income sources/ livelihood strategies of the household with this questionnaire. Respondents tend to forget or leave out many minor occupations/sources of income such as vegetable gardens and weaving of mats which does actually in some cases contribute substantially to the income of the household. Hence, it is not possible on the basis of this questionnaire to draw conclusions about the number and diversity of livelihood activities and the variation and dynamics of this.
- It is important to be aware that date was obtained in the middle of the harvest season for sesame. Some households had already harvest and even sold their sesame, but most had not yet reached so far. Hence, there might be data that seems contra dictionary at the first glance such as households stating that they earn no cash from agriculture and at the same time saying that sesame is important for their income which is explained by the fact that they were growing sesame for the first year and had not yet sold. Additionally, regarding the volumes and prices in C-3 it is important to be aware that some might be referring to the season of 2013, some to the season of 2014.

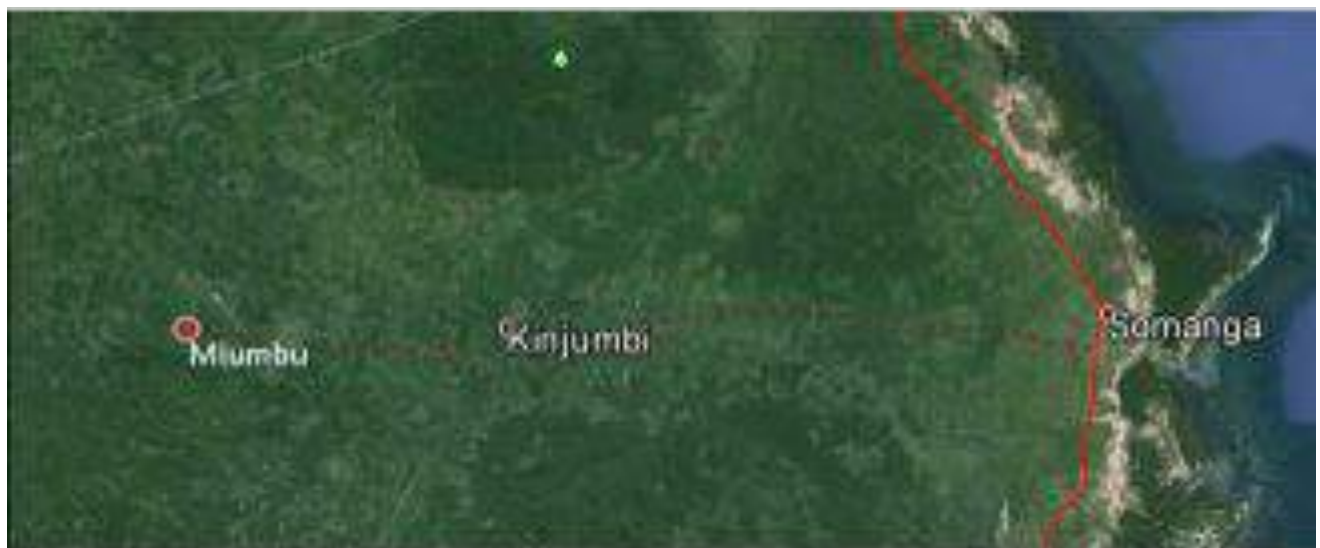
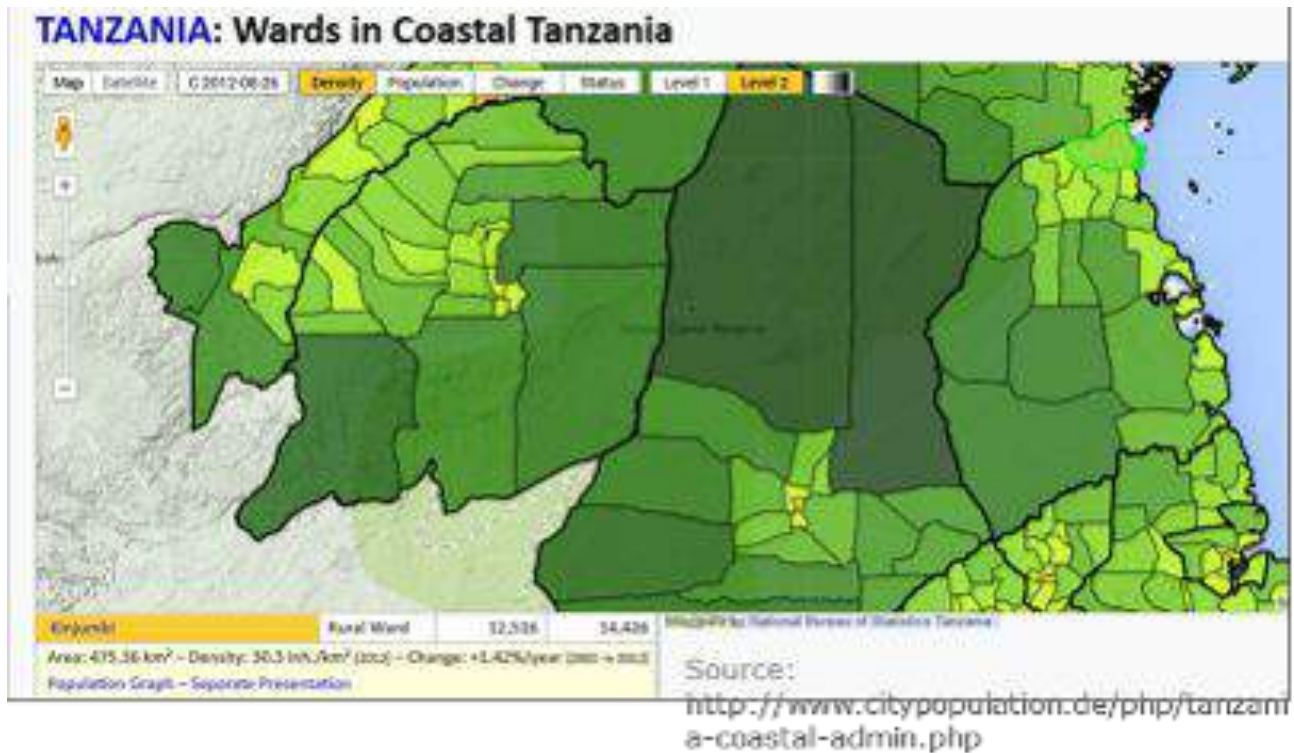
#### OTHER COMMENTS

During the last part of carrying out the survey we became aware that some inhabitants in Kinjumbi Ward are very critical towards surveys, as they have had some bad experiences with the National Census surveys. This was mainly an issue in the village Somanga, where we encountered hostile households (several times enumerators were chased away or verbally abused). Apparently, the critical attitude to surveys in this area is partly religiously based, since the national census by some religious and political leaders have been criticized for manipulating with the population statistics. It is said that the current (prevailing Christian) ruling party is arguing that Tanzania is has a majority of Christian people based on false statistics. Hence, some religious and political leaders during the national census 2012 encouraged Muslim citizen to boy-cut surveys.

In relation to mobility patterns, it is worth mentioning that we observed a mobility-tendency which was not captured by the survey due to the sampling method used (see more in the section:

#### GENERAL MOBILITY PATTERNS IN THE RESEARCH AREA)

### 3. MAP OF THE RESEARCH SITE (INCLUDING TOPOGRAPHICAL CHARACTERISTICS)



Source: modified from Google Earth



#### **4. DESCRIPTIVE ACCOUNT OF RELEVANT CONTEXTUAL CHARACTERISTICS OF THE RESEARCH AREA.**

##### **TOPOGRAPHY/ELEVATION/SOILS/HYDROLOGY/ENVIRONMENTAL ISSUES**

No research was done on this. (topography and water bodies to be presented on map?)

Under environmental issues, it could be mentioned that parts of Kinjumbi Ward is a forest reserve (Kitope Forest Reserve of approx. 3,900 ha.)

##### **AGRICULTURAL SYSTEM (CROPPING PATTERNS; LAND USE; LAND TENURE, ETCETRA)**

Kinjumbi Ward has a dynamic agricultural system under constant change – that is, it is hard to say which are the typical agricultural systems of this area, since different households are trying out different (new) cultivation systems. However, below are some general remarks:

Agricultural land is typically located some few kilometers equivalent to an average of 20-30 minutes' walk from the households, however, some households have invested in additional land more than 4 hours travel distance from their home. The farmland of one household can be scattered over several plots located in different areas. Not all plots may be cultivated every season. The size of each plot or field varies every year, according to the conditions of weather, available labor, crop choice and many other factors. Parts that were cultivated last year might be left fallow this year or vice versa. Hence, the agricultural land does not consist of clearly distinguishable, square plots/fields, but rather of complex webs of cultivated, fallow and non-agricultural land weaved in and out of each other.

When triangulated with observations and qualitative data, it is our impression that the actual fallow area under (potential) ownership by the households is larger than what is captured by the questionnaire survey. Due to the nature of the dynamic cultivation practices described above each household might not have a precise account for their fallow land and potential farmland.

Virgin and fallow land is cleared with machete and fire and land is rarely tilled before sowing. Very few households use any machinery; hand hoe and machete are the preferred tools to be used.

Land is considered abundant in the area. Formal, registered land tenure is not common.

##### **RELEVANT HISTORICAL BACKGROUND**

Kinjumbi Ward has like most parts of Tanzania been affected by the Villagization campaign in the 1970's. At least in parts of the ward settlements became more centered around trading centers as a result of the Villagization, however many households kept their agricultural land in the same locations and some households are still scattered far away from main roads and trading centers.

**LEVEL OF HUMAN DEVELOPMENT RELATIVE TO NATIONAL AVERAGE (E.G. HDI; POVERTY; DEPRIVATION; GINI INDEX; EDUCATIONAL LEVELS; LIFE EXPECTANCY, ETCETERA)**

Our survey data only contributes with data on educational level (please refer to analysis by Jakob). According to the latest published national census (2012), this is the national average for educational level in Tanzania:

Education Attainment	Percentage		
	Both Sexes	Male	Female
Total	100	100	100
Primary School	81.70	79.80	83.60
Training after Primary	0.70	0.70	0.70
Secondary School	14.40	15.60	13.10
Training after Secondary	0.80	0.80	0.80
University and Others	2.30	2.90	1.70

NBS Census Results

Source: Tanzania Bureau of Statistics: <http://www.nbs.go.tz/>

**GENERAL MOBILITY PATTERNS IN THE RESEARCH AREA**

Work-related migration, including seasonal migration seems to be rare in this area. Only 2% of households have indicated that they spend any time in other areas due to work-related migration.

Similarly, multi-local households appear to be rare in this area. According to the questionnaire survey, only 4% of responding households had one or more members who are usually absent. Qualitative interviews carried out in the same area indicate that the real number could be higher, and that the tendencies were not easily captured by a questionnaire survey, respondents either misunderstood or (more likely) were unwilling to share the information on these issues under the circumstances of a questionnaire survey interview.

In relation to mobility patterns, it is worth mentioning that we observed a mobility-tendency which was not captured by the survey due to the sampling method used. Households were selected from lists of households divided into sub-villages, and if they were not home at the time of visit, the household was skipped and replaced by another randomly selected from the list. This method meant that entire households that had temporarily migrated to other areas would typically not be included in the survey. In Miumbu community, the very active and well-informed community leader informed us that approx. 5 out of 50 randomly selected households were temporarily absent because they had gone to a neighboring community to cultivate sesame. Due to logistical reasons, we found it impossible to include these households in the questionnaire survey, however, we went specifically for qualitative interviews with some of them. Through qualitative interviews we learned that it is not uncommon in Kinjumbi Ward to seasonally migrate to other areas to cultivate cash crops such as sesame and rice. The distance to the household could be more than 20km and hence people would not travel forth and back each day, but would construct a temporary house and live there during the busy months of cultivating. Mr. K. and his family is an example of a household like this:

*“Mr. K. told us that they are from Kinjumbi and that they have walked on foot all the way out here [approx. 25 km]. They came in December [6 months ago] and have lived here since. They have settled here because it is too far to walk daily from Kinjumbi. When I asked why they have decided to farm here and not closer to Kinjumbi they said there are too many coconut trees at Kinjumbi!*

*They told me it is their first year to come here and farm. When I asked how they had heard about this place they said that their elders used to come and farm here. They used to farm rice, millet, maize and cassava here.*

*This family has 10 acres of land here on which they are farming only sesame. When I asked why sesame Mr. K. said: ‘Pesa!’ – money. They got the land for free – they just asked for it and got it. It was a forest here with big trees and they cleared it all with the help of 30 laborers. These laborers came just from around the area.”*

#### **SETTLEMENT PATTERN (DISPERSED, NUCLEATED; VILLAGES VS. URBAN, ETCETERA)**

The three communities covered in Kinjumbi Ward are very different in this aspect. Miumbu community furthest from the main road is very dispersed with up to more than an hours’ walking distance between households. There is no real trading center of Miumbu and several households can only be reached by foot since the paths are too small for using motorcycle or similar means of transport. The community of Kinjumbi is similar to Miumbu in that most of the households are dispersed over a large area and only accessible by foot paths. However, there are several trading centers along the dirt road and some proportion of the households can be found here. The central part of Somanga covered by this survey is a relatively densely populated village with most households located within minutes of walking distance to the main road.

#### **INFRASTRUCTURE**

The main road from Dar es Salaam to Lindi Town and Mtwara Town passes through Somanga. This is a broad, relatively new (approx. 10 years old) tarmac road with many daily minibuses and busses passing and stopping.

Most households are located west of the main road and a good, all-season dirt road connects most of the western communities to the tarmac road.

There are several motorcycle taxis in the area which makes it relatively easy to get around for those who can afford it (approx. US\$5 to rent a motorcycle taxi to transport one person from Miumbu to Somanga).

#### **CONNECTIONS TO NEAREST URBAN SETTLEMENTS AND/OR MAJOR TOWNS (E.G. ROADS, TRANSPORT, TRADE, ETCETERA)**

The nearest major town is Kilwa Masoko, the district capital of Kilwa District. There is tarmac road all the way from Somanga and getting there by a shared minibus or bus is easy for those who can afford it. It takes approx. 5-8 hours to get by minibus or bus from Somanga to Dar es Salaam.

#### **MARKET FACILITIES**

I assume this question refers to open markets. There is a relatively big open, daily market in Somanga where crops and vegetables are sold along with clothes, domestic utensils, farming tools, electronic etc. Approx. once a month there is a large market (mainly clothes) in Somanga where traders come from far and put up temporary stalls.

Smaller markets and shops are found in the trading centers of Kinjumbi, having a wide selection of similar goods as can be sold and purchased in Somanga.

#### **PUBLIC SERVICES (INCL. EDUCATIONAL AND HEALTH CARE FACILITIES; TRANSPORT AND COMMUNICATION)**

Public health facilities are few within the Ward. There is a public health clinic in Somanga, but there is no staff during evenings and in weekends, and the provided services are limited. Most people use another health clinic in the neighboring ward. Small, private pharmacies are plenty.

There are several Primary Schools within Kinjumbi Ward and one Secondary School located near the center of Kinjumbi village.

Tele-communication is provided by private companies, and approx. 4 different tele-networks cover (parts of) the Ward. Multi-sim-card phones are most popular! The coverage has improved a lot over recent years and most areas have some degree of mobile phone coverage.

#### **INSTITUTIONS AND REGULATIONS (INCL. INHERITANCE SYSTEMS, COLLECTIVE CONTROL; POLYGAMY; ETCETERA)**

*These issues were not or only very sporadically covered in this research.* Polygamy is common, but still not so socially acceptable that it is spoken about openly. According to our questionnaire survey 2.8% of household heads have more than one wife (NB: female headed households have not been excluded!). However, the true number is likely to be higher.

#### **ETHNIC COMPOSITION AND SOCIAL DIFFERENTIATION OF THE POPULATION**

In total 18 ethnic groups are represented in the sample from Kinjumbi Ward (See table 1 below). Among these is the Matumbi the most common (56.2% of household members across the 201 households). Other major ethnic groups are Mgindo (23.4%) and Makonde (7.8%).

**Household member ethnicity**

	Frequency	Percent
Matumbi	516	56,2%
Mgindo	215	23,4%
Makonde	72	7,8%
Mwela	33	3,6%
Ndengeleko	25	2,7%
Yao	20	2,2%
Mnyasa	8	0,9%
Shirazi	5	0,5%
Zaramo	2	0,2%
Arab	2	0,2%
Makuwa	4	0,4%
Mdigo	1	0,1%
Mhehe	3	0,3%
Mjita	1	0,1%
Muhaya	1	0,1%
Ngoni	1	0,1%
Pogoro	4	0,4%
Shamahi	4	0,4%
Missing don't know / no answer	1	0,1%
Total	918	100%

Table 1: Ethnic groups represented in the sample. NB: there are a few spelling mistakes: Pogolo and Pogoro is the same ethnic group, as is the case for Mnyasa and mnyasa – a neater table can be made if really needed!

### **LAND CONFLICTS**

Our study did not research land conflicts specifically, and it is possible that we have overlooked major issues. However, the overall impression is that land conflicts are rare in this area. Land conflicts were very rarely mentioned in qualitative interviews touching on challenges of the households in the area. Apart from the unavoidable small everyday disputes over plot borders, browsing livestock etc. the only case of a recent land conflict heard of in Kinjumbi Ward was related to a few households illegally settling in an area designated as a forest reserve and subsequently being sent away by the community committee in charge of the forest reserve.

The general attitude among community leaders as well as citizens is that there is plenty land in Kinjumbi Wards. Hence, the different new-comers investing in land in the area (for sesame production mainly) were only observed to be welcomed by the locals. The following quote is from a qualitative interview with a native farmer in an area where several new farms have been opened during the last year, and is typical for the attitude found in Kinjumbi Ward:

*“According to Mr. K. they are not experiencing any negative impact of the arrival of all these new people, only positive in the form that they co-operate. I uttered that I had thought that there might be an issue of the land here becoming more crowded, but he said that land here is free and you can just come! ‘This forest is big’ he added. Besides, they agree about the boundaries between them.”*

### **(OBSERVABLE) SOCIAL NETWORKS (E.G. PRODUCER ASSOCIATIONS, COOPERATIVES, CLUBS)**

Several NGO’s have been in the area, mainly relating to the forest reserves of Kinjumbi Ward. Some of these NGO’s have formed groups and committees such as forest protection committees. In recent years (since 2010) the most noticeable organization in the area is Amsha Rural Entrepreneurship Institute Ltd. A company-cum-charity engaged in a wide range of on-farm and non-farm projects, including a project enhancing commercial sesame production. The popularity of Amsha has decreased over the years in this area and according to our survey, only 3.2% of the households had one or more members who are members of Amsha.

Strong social networks relating to traditions and religious gathering were observed. The majority of the people in Kinjumbi Ward are Muslim and, for the men, the mosques provide important meeting points. For all adults funerals are important social gatherings during which the (several hundred) visiting households contribute financially to the household which has lost a member.

Furthermore, Somanga has a very active youth when it comes to sport and exercise. The local football teams play well-visited matches on a regular basis and raise money for their activities.

Officially, there is an Agricultural and Marketing Cooperative Society (AMCOS) in Kinjumbi, however in practice it has been inactive since 2012. The AMCOS has existed since 1998 and has approx. 100 members. The official function of the AMCOS is to support members and non-members of Kinjumbi ward with marketing of the major cash crops cashew nuts and sesame. However, the current board of the AMCOS has not found it worthwhile to undertake the tasks in practice, since they find that the purchase of the cash crops is better left with a certain private trader with whom they have a favorable agreement.

**DESCRIPTION OF MAIN TRANSFORMATIONS OF THE LOCAL AND/OR REGIONAL ECONOMY, INCLUDING THEIR CAUSAL FACTORS (E.G. STATE POLICIES, INNOVATIONS, FOREIGN COMPANIES; ETCETERA)**

This is a big question! A lot of things have changed in Tanzania, including Kinjumbi Ward, over the past decades in terms of e.g. an increasing privatization as well as commercialization of the society. The only aspect of economic and agricultural transformation that our research in Kinjumbi Ward is really qualified to contribute to, is to the analysis of the causes and effects of the rapid increasing significance of sesame as a cash crop:

Much more about this will be presented in a fourth-coming paper by Hansen et al. (with the working title 'Behind the Boom'). Some of the main points of this paper are:

- In the Ward of Kinjumbi, a favorable unit price and the easy access to market through higher prevalence of (agents of) private traders has been the main driver of an increased production of sesame
- There are more households engaged in sesame production: Among the households covered in the questionnaire survey 60% of the households have only grown sesame since 2010.
- Sesame production is of greater importance to the households: Among the households cultivating sesame today, 94.5 % indicated that the income from sesame is either important or very important. Whereas among the households with more than ten years of experience in sesame cultivation 79.4% responded that 10 years ago sesame was of little or no economic importance to their household economy.
- The typical new sesame producers are smallholder farmers who are adopting sesame as a new cash crop in their portfolio of crops. Additionally, the new sesame producers include investors who venture into land purchase for the sole purpose of sesame production. These investors are a diverse array of people including migrants from neighboring districts, wealthy traders from small towns and entrepreneurial business people from Dar es Salaam. Yet small in numbers, these new investors have a relative large impact as they produce sesame under a scale ten to hundred fold larger than the average smallholder
- Transition to commercial sesame production alters cultivation system of smallholders towards a higher reliance of inputs, mainly purchased seeds and pesticides.
- How is the sesame income re-invested? According to the questionnaire survey: the majority, 85%, spent sesame money earned in the season 2013 on food and other basic needs, including clothes and medicine. Besides, 8% of the responding households invested the income in improving their house or building a new house, 5% invested money in improving or expanding their farm and 2% used the income to finance other business, such as a shop.

The rapid increasing significance of sesame as a cash crop ('the sesame boom') is new and has only taken off from 2013 in Kinjumbi Ward. Hence it is too early to tell if the boom will have significant and lasting impacts on the local and regional economy. The data on re-investment of sesame income showed above, indicate that most producers are not in a (financial) situation where they have excess income to invest in farm or off-farm business. This could be an indication that the catalyzing effect of the sesame boom is relatively limited, in the sense that it has not (yet) lead to major investments in and outside agriculture.

Qualitative information gathered, indicates a potential poverty-reducing effect of the sesame boom, however, if this is the case, it is not backed-up with the questionnaire survey data. According to the questionnaire survey only 24.0% of the responding households have experienced that their income has improved today (2014) compared to ten years ago (2004). Whereas 53.3% find that their income has deteriorated and 22.8% that it has remained the same. Somehow surprisingly, there is

no significant difference between sesame producing and non-sesame producing households in terms of the percentage that report improved income.

The discouraging pattern is similar when it comes to perceived change in purchasing power. Among the responding households, a majority of 57.9% find that today they can purchase less goods for the same income compared to ten years ago, whereas 26.2% find they can purchase the same goods, and only 15.6% that they can now purchase more.

#### LOCAL LABOUR MARKET (WHICH ARE LARGE EMPLOYERS, IF ANY?)

According to the questionnaire survey, 98.2% of the economic active household members are self-employed. This is typically within agriculture or fishing or, for a small part, owning a small business like a shop.

There are no factories, plantations or similar potential large employers within Kinjumbi Ward. However, hiring farm laborers is not uncommon for the typical smallholder household. No respondents rely on hired labor alone for any of their plots, but a proportion of between 22-40% (varying for each plot) use a combination of hired and family labor who are typically local labors.

#### IMPORTANCE OF NON-FARMING ENTERPRISES IN THE AREA (E.G. MINING, MANUFACTURE, CONSTRUCTION, COMMERCE, SERVICES; ALSO: PUBLIC SECTOR INSTITUTIONS)

The most important non-farming activities in the area are fishing and commerce. Somanga is a fishing village, where fresh fish are processed and sold to trucks and busses stopping on the way to Dar es Salaam or Mtwara. The traffic on the main road also creates the basis for other commercial activities such as restaurants, sale of clothes and electronics as well as, sadly enough, prostitution. The scale and extend of prostitution was not covered well in this study, as it is a very sensitive issue that was not mentioned neither in the questionnaire survey or in the qualitative interviews, but was only recorded during informal talks.



## 5. POPULATION CHARACTERISTICS (FORM A-1 – HOUSEHOLD ROSTER)

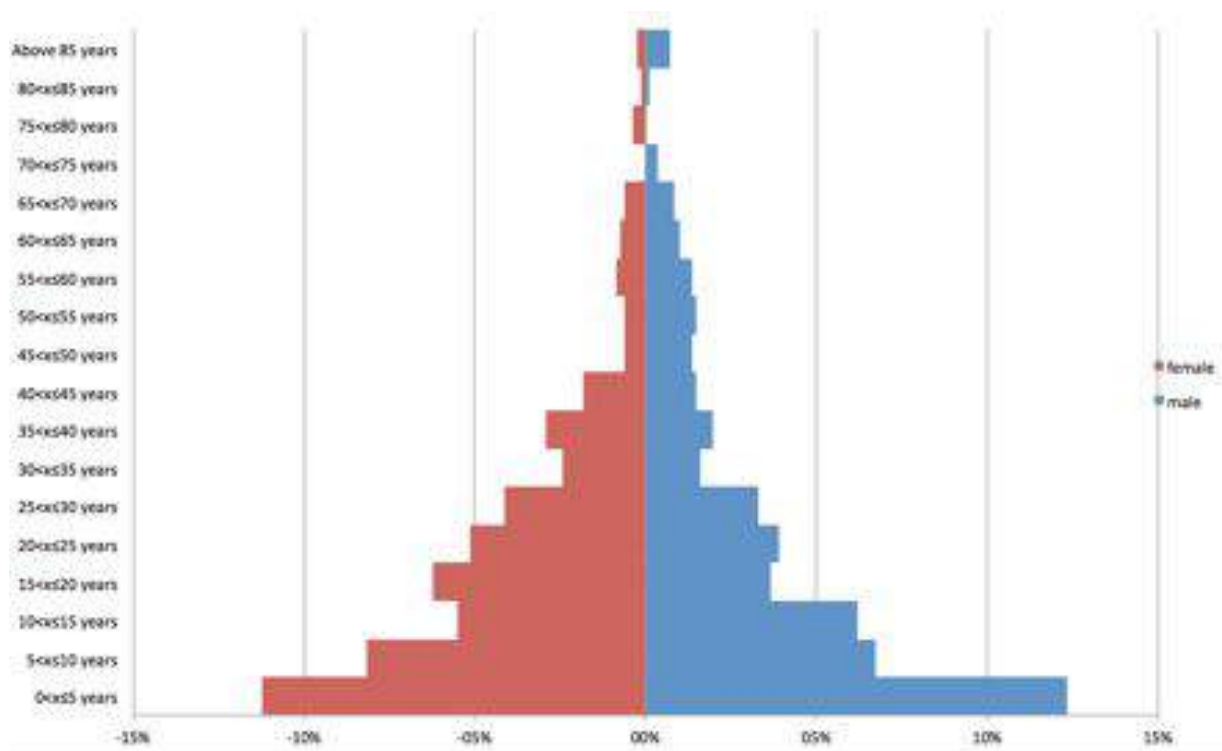
Kilwa District: Area, 15,000.09 km<sup>2</sup>; population, 190.744 (2012); density, 12.7 inh./km<sup>2</sup> (2012) (change: +1.09%/year; 2002 → 2012)

According to census data 2012 the total population is 14,426 in Kinjumbi Ward and the average household size is 4.6, meaning there are approx. 3100 households in the ward. Population density is 30.3 inh./km<sup>2</sup> (2012).

### 5.1 Population pyramid by age/gender as & of population in 5-year age classes.

Important to note is the fact that you have 86 missing values (9.3 % of respondents have not given age). Furthermore you have two outlier values at 119 and 442 years old. I have looked at the data, and these seem to be mistakes. [respondent 48] age 119 is coded as "child", thus I have changed his age to 19. [Respondent 900] age 442 is head of household, but have children at ages 2 and 3, I have thus changed his age to 42. These and further data-cleansing is saved in a separate dataset.

The gender variable has 13 missing values. Thus we are left with a total of 820 respondents out of 918, meaning 10.6 % of respondents are not present in the data below.



In the data, age is not always registered in integer values – hence the continuous definition of the categories.

#### 5.1X Gender of heads of households

79.9% of households have a male head of household in the questionnaire.



**Head of household gender**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	159	79.1	79.9	79.9
Valid Female	40	19.9	20.1	100.0
Total	199	99.0	100.0	
Missing don't know / no answer	2	1.0		
Total	201	100.0		

**5.2 Average size of household**

The Average size of the households in this dataset is 4.6 persons/household. It is found by dividing the total respondents 918 by number of households 201.

**5.3 Educational attainment levels (% by age and gender)**

The original educational data from the survey has been recoded into categories as agreed on with Msese (Njombe case). Children below the age of seven have been coded as “too young for school”. [Be aware of missing values]. The first table is a simple frequency table of the distribution in the population. The second shows education level and age.

**Highest educational attainment level (categories)**

	Frequency	Valid Percent	Cumulative Percent
No formal education	182	20.2	20.2
Too young for school	228	25.3	45.5
Primary School	430	47.7	93.2
Valid Secondary education	41	4.6	97.8
High school education	1	.1	97.9
Other types of education	19	2.1	100.0
Total	901	100.0	

**Highest educational attainment level (categories) by age groups Crosstabulation**

			Age				Total
			Below 18 years	18-35 years	36-65 years	Above 65 years	
Highest educational attainment level	No formal education	Count	17	66	43	15	141
		% within age group	4.0%	28.4%	33.3%	51.7%	17.2%
	Too young for school	Count	228	0	0	0	228
		% within age group	53.3%	0.0%	0.0%	0.0%	27.9%
	Primary School	Count	166	135	78	12	391
		% within age group	38.8%	58.2%	60.5%	41.4%	47.8%
	Secondary education	Count	7	27	6	0	40
		% within age group	1.6%	11.6%	4.7%	0.0%	4.9%
	High school education	Count	0	1	0	0	1
		% within age group	0.0%	0.4%	0.0%	0.0%	0.1%
	Other types of education	Count	10	3	2	2	17
		% within age group	2.3%	1.3%	1.6%	6.9%	2.1%
Total		Count	428	232	129	29	818
		% within age group	100.0%	100.0%	100.0%	100.0%	100.0%

The table indicates that the younger generations have better/more education than the older ones. Thus, while 52% of those above 65 have no formal education, this holds true for only 33% of those between 36-65, and finally 28 % for those between 18 and 35. More than half of those below 18 years, are in fact too young for school.

**Highest educational attainment level (categories) \* Household member gender Crosstabulation**

	Household member gender	Total
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			Male	Female	
Highest educational attainment level (categories)	No formal education	Count	67	115	182
		% within gender	15.4%	25.4%	20.5%
	Too young for school	Count	119	106	225
		% within gender	27.4%	23.4%	25.3%
	Primary School	Count	221	201	422
		% within gender	50.8%	44.4%	47.5%
	Secondary education	Count	20	20	40
		% within gender	4.6%	4.4%	4.5%
	High school education	Count	1	0	1
		% within gender	0.2%	0.0%	0.1%
	Other types of education	Count	7	11	18
		% within gender	1.6%	2.4%	2.0%
Total	Count		435	453	888
	% within gender		100.0%	100.0%	100.0%

#### 5.4 % of single-parent households (female and male headed)

I have taken single-parent households to mean households where no spouse is present. Thus the household might include adult relatives living in the household, but without the Head of household having a spouse.

#### Is there “a spouse” living in the household?

	Frequency	Percent	Valid Percent	Cumulative Percent
No	48	23.9	23.9	23.9
Valid Yes	153	76.1	76.1	100.0
Total	201	100.0	100.0	

#### Cross tabulation of Single parent households and HH's gender

			Head of household gender		Total
			Male	Female	
Is there a spouse living	No	Count	15	33	48
		% within HH gender	9.4%	82.5%	24.1%

in the household?	Yes	Count	144	7	151
		% within HH gender	90.6%	17.5%	75.9%
Total		Count	159	40	199
		% within HH gender	100.0%	100.0%	100.0%

This crosstabulation shows a quite significant majority in single-parent households within female-headed households. Thus 82.5% of female-headed households are also single-parent households, while this holds true for only 9.4 % of male-headed households.  
[Be aware that your total population is 199 in the cross-tab].

### 5.5 % of households with one or more members categorized as usually absent

#### Household member resident of the HH

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Resident	192	95.5	95.5	95.5
Usually absent	9	4.5	4.5	100.0
Total	201	100.0	100.0	

4.5 percent of households have one or more members categorized as usually absent.

### 5.6 % of population who live elsewhere and contribute to households livelihood

I have chosen "contribute to household livelihood" to mean any person included in the household that is specified as "usually absent". Keep in mind that in section 8 study these "Absent household members" more closely, and find that it is more likely that there are 22-24 usually absent.

#### Household member resident of the HH

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Resident	897	97.7	97.7	97.7
Usually absent	21	2.3	2.3	100.0
Total	918	100.0	100.0	

### 5.7-5.10 % of households with a head of household aged under 35 years

For the next four answers, I have subdivided the dataset into only Heads of Households. Since the age is missing for 23.3% percent of the HH population, the following percentages are somewhat arbitrary – I display them as percentage of valid respondents and percentage of total population.

#### Household member age (full years)

	Frequency	Percent	Valid Percent	Cumulative Percent
Total	155	76.7	100.0	
Missing don't know / no answer	47	23.3		
Total	202	100.0		

	Frequency	Percentage of valid population	Percentage of total population
HH aged below 35 years	54	35%	27%
HH aged 35 and above	101	65%	50%
HH aged 65 and above	19	12%	9%
HH aged from 35 to 65 years	82	53%	41%

### 5.11 Dependency rate

I use the variable Hm\_main\_activity. In order to calculate the dependency rate, I used the total population.

Dependency rate = income generating population/ non-income generating population = 378/540 = 0,7

#### Household member main activity

	Frequency	Percent	Valid Percent	Cumulative Percent
Income generating	378	41.2	58.0	58.0
school	165	18.0	25.3	83.3
unemployed	20	2.2	3.1	86.4
disabled	8	.9	1.2	87.6
Valid subsistence production	40	4.4	6.1	93.8
domestic work	37	4.0	5.6	99.4
other	4	.4	.6	100.0
Total	652	71.1	100.0	
don't know / no answer	8	.8		
not applicable	258	28.1		
Missing Total	266	28.9		
	918	100.0		

## 5.12 Main activity by age and gender

I have decided to employ the same age categories as used in the education section. As shown above you have 266 missing, totalling 29% of the total population. If you do a cross-tab on age and missing values, you find that 253 of the missing values are for ages below 20yr, 241 of them below 10yrs. - according to interviewees some household members had "no main activity", as these were mainly children below schooling age.

**Household member main activity by age Crosstabulation**

			Age				Total
			Below 18 years	18-35 years	36-65 years	Above 65 years	
Household member main activity	Income generating	Count	6	162	123	22	313
		% within age group	3.3%	71.7%	93.2%	75.9%	54.9%
	School	Count	150	12	0	0	162
		% within age group	82.0%	5.3%	0.0%	0.0%	28.4%
	Unemployed	Count	2	15	1	0	18
		% within age group	1.1%	6.6%	0.8%	0.0%	3.2%
	Disabled	Count	2	1	0	5	8
		% within age group	1.1%	0.4%	0.0%	17.2%	1.4%
	Subsistence production	Count	2	21	8	2	33
		% within age group	1.1%	9.3%	6.1%	6.9%	5.8%
	Domestic work	Count	18	15	0	0	33
		% within age group	9.8%	6.6%	0.0%	0.0%	5.8%
	Other	Count	3	0	0	0	3
		% within age group	1.6%	0.0%	0.0%	0.0%	0.5%
	Total	Count	183	226	132	29	570
		% within age group	100.0%	100.0%	100.0%	100.0%	100.0%

**Household member main activity by gender Crosstabulation**

			Household member gender		Total
			male	female	
Household member main activity	Income generating	Count	198	176	374
		% within gender	64.3%	52.7%	58.3%
	School	Count	75	85	160
		% within gender	24.4%	25.4%	24.9%
	Unemployed	Count	3	17	20
		% within gender	1.0%	5.1%	3.1%
	Disabled	Count	2	6	8
		% within gender	0.6%	1.8%	1.2%
	Subsistence production	Count	16	23	39
		% within gender	5.2%	6.9%	6.1%
	Domestic work	Count	11	26	37
		% within gender	3.6%	7.8%	5.8%
	Other	Count	3	1	4
		% within gender	1.0%	0.3%	0.6%
Total	Count		308	334	642
	% within gender		100.0%	100.0%	100.0%

The data shows a higher percentage of males - 64% vs. 53% - to be engaged in income generating activities, while more women – 7% vs. 5 % - are engaged in subsistence production and domestic work (8% vs. 4%). Women are also more likely to be unemployed (5% vs. 1%).

**5.13-5.14 % of Population born in same place/area and elsewhere**

This can be done on both a district and village level. The whole population sample is from Lindi, Kilwa. The data shows 45% of people to have moved to a different village within the district, while only 8% have migrated from other districts.

**Does Hm live in same district as he/she was born?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	77	8.4	8.4	8.4
	Yes	838	91.3	91.3	99.7
	Don't Know	3	.3	.3	100.0
	Total	918	100.0	100.0	

**Does Hm live in same village as he/she was born?**

	Frequency	Percent	Valid Percent	Cumulative Percent
No	502	54.7	54.7	54.7
Valid Yes	416	45.3	45.3	100.0
Total	918	100.0	100.0	

**5.15 for immigrants: top-3 main places/areas of previous residence**

Immigrants are defined as those that have not been born in the same district. Most immigrants come from Dar es Salaam, Mtwara or Pwani.

**Name of the birthplace district**

	Frequency	Percent	Valid Percent	Cumulative Percent
bunda	1	1.3	1.3	1.3
dar es salaam	10	13.0	13.0	14.3
kagera	1	1.3	1.3	15.6
kinondoni	1	1.3	1.3	16.9
liwale	3	3.9	3.9	20.8
masasi	2	2.6	2.6	23.4
msumbiji	2	2.6	2.6	26.0
Validmtwara	32	41.6	41.6	67.5
muhoro	1	1.3	1.3	68.8
pwani	14	18.2	18.2	87.0
rufiji	6	7.8	7.8	94.8
tandahimba	1	1.3	1.3	96.1
temeke	2	2.6	2.6	98.7
utete	1	1.3	1.3	100.0
Total	77	100.0	100.0	

**5.16 Importance of subsistence production**

In the table below you see a breakdown of the data on subsistence production. 10 HH, or 5% of households have heads engaged in subsistence production. For those households, the subsistence production is possibly of great importance.

**Household member main activity \* Household member relation to the head of the HH**  
**Crosstabulation**



		Household member relation to the head of the HH						Total	
		Head	Spouse	Child	Father/ mother	Brother/ sister	Grandparent		Grandchild
Subsistence production	Count	10	9	20	0	0	1	0	40

### On Subsistence production

In Kinjumbi ward, the majority of households are engaged in farming activities, which are in their essence subsistence production as well as income-generating production. As shown later, farming households cultivate a broad range of crops, out of which some serve the main purpose of generating cash, most serve the main purpose of feeding the household and some both. For example, maize and millet are mostly cultivated for subsistence, but surplus production might be sold. Hence, there is no sharp division between subsistence and income generating production.

In our questionnaire survey team we discussed this issue a lot, and agreed that we would only categorize household members who had absolutely no income generating activity such as selling crops as members with the main activity being subsistence production. Enumerators were instructed to ask a second time: “do you really not sell anything/earn any money throughout the year?” Only if this was confirmed, they were considered to be engaged in subsistence production.

Hence, it should be stressed that the number of household members/household heads under the category of “subsistence production” is not a good indicator for the importance of subsistence production. Subsistence production is very important in Kinjumbi, if understood in the sense that the majority of households rely on home production of food. Qualitative interviews with individuals in Kinjumbi indicated that it is considered of great importance to be able to grow your own food / most of your own food. Subsistence production brings security and stability, and is often considered as the first priority over the production of cash crops / other income generating activities.

## 6. LIVELIHOOD CHARACTERISTICS

### 6.1 Economically active population as % of total population (female and male)

If we take economically active, to mean “engaged in income generating activity as main activity”, 378 persons, or 41.1% of the population are economically active. However, the exact percentage will depend on the definition, but also the variable you use. The variables from form A-3, all show around 378-392 persons to be involved in a “main income generating activity”.

However, when you cross-tab with gender, you run into the problem of “missing values” in both the gender variable and the main activity variable. Thus, in the following table, the percentage of economically active have risen to 58% (as all the children were coded as missing). 64% of Males are economically active, while 53% of females are the same.

**Household member main activity by gender Crosstabulation**

			Household member gender		Total
			Male	Female	
Household member main activity	Income generating	Count	198	176	374
		% within gender	64.3%	52.7%	58.3%
	School	Count	75	85	160
		% within gender	24.4%	25.4%	24.9%
	Unemployed	Count	3	17	20
		% within gender	1.0%	5.1%	3.1%
	Disabled	Count	2	6	8
		% within gender	0.6%	1.8%	1.2%
	Subsistence production	Count	16	23	39
		% within gender	5.2%	6.9%	6.1%
	Domestic work	Count	11	26	37
		% within gender	3.6%	7.8%	5.8%
	Other	Count	3	1	4
		% within gender	1.0%	0.3%	0.6%
Total		Count	308	334	642
		% within gender	100.0%	100.0%	100.0%

**Specify household member main income generating activity (categories)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	farmers	305	33.2	78.2	78.2
	fishermen	39	4.2	10.0	88.2
	market vendors	18	2.0	4.6	92.8
	shop vendors	5	.5	1.3	94.1
	waiters and other jobs in restaurants, bars, hotels	5	.5	1.3	95.4
	other occupations in commerce	1	.1	.3	95.6
	teachers	5	.5	1.3	96.9
	nurses, doctors and other medical jobs	3	.3	.8	97.7
	hairdressers, barbers	1	.1	.3	97.9
	taxi driver (motorcycle)	2	.2	.5	98.5
	truck driver	1	.1	.3	98.7
	craft workers in textiles/leather	1	.1	.3	99.0
	tailors/dressmakers	1	.1	.3	99.2
	bakers	1	.1	.3	99.5
	technicians	1	.1	.3	99.7
	government security personnel	1	.1	.3	100.0
	Total	390	42.5	100.0	
	don't know / no answer	2	.2		
	not applicable	16	1.7		
	System Total	510	55.6		
	Total	528	57.5		
Total		918	100.0		

### Describe household member main income activity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agriculture	303	33.0	78.5	78.5
	Business	31	3.4	8.0	86.5
	Others	52	5.7	13.5	100.0
	Total	386	42.0	100.0	
Missing	Don't know/No answer	2	.2		
	Not applicable	530	57.7		
	Total	532	58.0		
Total		918	100.0		

Thus, we have 41% (378/918) of the population with income generating activities as their main activity, and between 42-43% (386-392/918) of the population involved in "main income generating

activities". The percentage of males and females can be read of the first cross-tab, but also the following tables. 64% of males have income generating activities as their main activity, the percentage is 53% for females.

## 6.2 Economically active population: % distribution over occupational groups

Again, it is important to be aware that the economically active population is more than 381 (its; 386-392). However, we have missing values in the gender variable.

### Describe household member main income activity \* Household member gender Cross tabulation

			Household member gender		Total
			Male	Female	
Describe household member main income activity	Agriculture	Count	136	162	298
		%	45.6%	54.4%	100.0%
	Business	Count	9	22	31
		%	29.0%	71.0%	100.0%
	Others	Count	49	3	52
		%	94.2%	5.8%	100.0%
	Total	Count	194	187	381
		%	50.9%	49.1%	100.0%

## 6.3 Labour position in main occupation

I show the variable as frequency table, and as cross-tabulation with gender.

### Household member labour position (categories)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Self-employed	380	41.4	98.2	98.2
	Long term contract (one year and above)	6	.7	1.6	99.7
	Short term contract (less than one year)	1	.1	.3	100.0
	Total	387	42.2	100.0	
Missing	Don't know / no answer	2	.2		
	Not applicable	529	57.6		
	Total	531	57.8		
Total		918	100.0		

**Household member labour position (categories) by gender - Crosstabulation**

			Household member gender		Total
			male	female	
Household member labour position (categories)	Self-employed	Count	189	186	375
		% within gender	96.9%	99.5%	98.2%
	Long term contract (one year and above)	Count	5	1	6
		% within gender	2.6%	0.5%	1.6%
	Short term contract (less than one year)	Count	1	0	1
		% within gender	0.5%	0.0%	0.3%
	Total	Count	195	187	382
		% within gender	100.0%	100.0%	100.0%

(Be aware that 5 ppl holding a labour position are 'missing' due to gender)

It seems a higher percentage of males than females hold long and short term contracts, though the observations are very few. Furthermore, there is a close to equal percentage self-employed.

#### 6.4 Cross-tab Var 37 by Var 38 (Male/female)

Cross-tab with males and females doesn't make sense since there are so few (only 7) respondents that are not self-employed. Instead, we cross-tab variable 37 by gender;

**Specify household member main income generating activity (categories) \* Household member gender Crosstabulation**

			Household member gender		Total
			male	female	
Specify household member main income generating activity (categories)	Farmers	Count	139	161	300
		% Within gender	71.3%	84.7%	77.9%
	Fishermen	Count	38	1	39
		% Within gender	19.5%	0.5%	10.1%
	Market vendors	Count	5	13	18
		% Within gender	2.6%	6.8%	4.7%
	Shop vendors	Count	3	2	5
		% Within gender	1.5%	1.1%	1.3%
	Waiters and other jobs in restaurants, bars, hotels	Count	0	5	5
		% Within gender	0.0%	2.6%	1.3%
	Other occupations in commerce	Count	0	1	1
		% Within gender	0.0%	0.5%	0.3%
	Teachers	Count	4	1	5
		% Within gender	2.1%	0.5%	1.3%
	Nurses, doctors and other medical jobs	Count	0	3	3
		% Within gender	0.0%	1.6%	0.8%
	Hairdressers, barbers	Count	0	1	1
		% Within gender	0.0%	0.5%	0.3%
	Taxi driver (motorcycle)	Count	2	0	2
		% Within gender	1.0%	0.0%	0.5%
	Truck driver	Count	1	0	1
		% Within gender	0.5%	0.0%	0.3%
	Craft workers in textiles/leather	Count	0	1	1
		% Within gender	0.0%	0.5%	0.3%
	Tailors/dressmakers	Count	1	0	1
		% Within gender	0.5%	0.0%	0.3%
	Bakers	Count	0	1	1
		% Within gender	0.0%	0.5%	0.3%
	Technicians	Count	1	0	1
		% Within gender	0.5%	0.0%	0.3%
	Government security personnel	Count	1	0	1
		% Within gender	0.5%	0.0%	0.3%
	Total	Count	195	190	385
		% Within gender	100.0%	100.0%	100.0%

It makes most sense to look at the top 3 occupations, since they are the only ones with a substantial amount of respondents. From this we see that "fisherman" is a male dominated occupation, while "Market vendors" are primarily female. Furthermore, there are slightly more females than males in farming.

## 6.5 Crosstab: var 24 by var 37 (male/female)

Due to the very low number of respondents, one should be careful using the data across categories, which counts for most occupations other than farmers and fishermen.

**If male: Specify household member main income generating activity (categories) \* Highest educational attainment level (categories) Cross tabulation**

		Highest educational attainment level (categories)					Total
		No formal education	Too young for school	Primary School	Secondary education	Other types of education	
farmers	Count	36	1	94	6	1	138
	%act	26.1%	0.7%	68.1%	4.3%	0.7%	100.0%
	%edu	76.6%	100.0%	74.6%	46.2%	33.3%	72.6%
fishermen	Count	9	0	23	2	1	35
	%act	25.7%	0.0%	65.7%	5.7%	2.9%	100.0%
	%edu	19.1%	0.0%	18.3%	15.4%	33.3%	18.4%
market vendors	Count	1	0	4	0	0	5
	%act	20.0%	0.0%	80.0%	0.0%	0.0%	100.0%
	%edu	2.1%	0.0%	3.2%	0.0%	0.0%	2.6%
shop vendors	Count	0	0	1	1	1	3
	%act	0.0%	0.0%	33.3%	33.3%	33.3%	100.0%
	%edu	0.0%	0.0%	0.8%	7.7%	33.3%	1.6%
teachers	Count	0	0	0	3	0	3
	%act	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	%edu	0.0%	0.0%	0.0%	23.1%	0.0%	1.6%
taxi driver (motorcycle)	Count	0	0	2	0	0	2
	%act	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
	%edu	0.0%	0.0%	1.6%	0.0%	0.0%	1.1%
truck driver	Count	0	0	1	0	0	1
	%act	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
	%edu	0.0%	0.0%	0.8%	0.0%	0.0%	0.5%
tailors/dressmakers	Count	1	0	0	0	0	1
	%act	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	%edu	2.1%	0.0%	0.0%	0.0%	0.0%	0.5%
technicians	Count	0	0	1	0	0	1
	%act	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
	%edu	0.0%	0.0%	0.8%	0.0%	0.0%	0.5%
government security personnel	Count	0	0	0	1	0	1
	%act	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	%edu	0.0%	0.0%	0.0%	7.7%	0.0%	0.5%
Total	Count	47	1	126	13	3	190
	%edu	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

**If female: Specify household member main income generating activity (categories) \* Highest educational attainment level (categories) Cross tabulation**

		Highest educational attainment level (categories)					Total
		No formal education	Too young for school	Primary School	Secondary education	Other types of education	
farmers	Count	85	0	71	1	3	160
	% Act.	53.1%	0.0%	44.4%	0.6%	1.9%	100.0%
	% Edu.	93.4%	0.0%	81.6%	16.7%	75.0%	84.7%
fishermen	Count	0	1	0	0	0	1
	% Act.	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%
	% Edu.	0.0%	100.0%	0.0%	0.0%	0.0%	0.5%
market vendors	Count	2	0	9	2	0	13
	% Act.	15.4%	0.0%	69.2%	15.4%	0.0%	100.0%
	% Edu.	2.2%	0.0%	10.3%	33.3%	0.0%	6.9%
shop vendors	Count	0	0	0	1	1	2
	% Act.	0.0%	0.0%	0.0%	50.0%	50.0%	100.0%
	% Edu.	0.0%	0.0%	0.0%	16.7%	25.0%	1.1%
waiters and other jobs in restaurants, bars, hotels	Count	1	0	4	0	0	5
	% Act.	20.0%	0.0%	80.0%	0.0%	0.0%	100.0%
	% Edu.	1.1%	0.0%	4.6%	0.0%	0.0%	2.6%
other occupations in commerce	Count	1	0	0	0	0	1
	% Act.	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	% Edu.	1.1%	0.0%	0.0%	0.0%	0.0%	0.5%
teachers	Count	0	0	0	1	0	1
	% Act.	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	% Edu.	0.0%	0.0%	0.0%	16.7%	0.0%	0.5%
nurses, doctors and other medical jobs	Count	0	0	2	1	0	3
	% Act.	0.0%	0.0%	66.7%	33.3%	0.0%	100.0%
	% Edu.	0.0%	0.0%	2.3%	16.7%	0.0%	1.6%
hairdressers, barbers	Count	0	0	1	0	0	1
	% Act.	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
	% Edu.	0.0%	0.0%	1.1%	0.0%	0.0%	0.5%
craft workers in textiles/leather	Count	1	0	0	0	0	1
	% Act.	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	% Edu.	1.1%	0.0%	0.0%	0.0%	0.0%	0.5%
bakers	Count	1	0	0	0	0	1
	% Act.	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	% Edu.	1.1%	0.0%	0.0%	0.0%	0.0%	0.5%
Total	Count	91	1	87	6	4	189
	% Act.	48.1%	0.5%	46.0%	3.2%	2.1%	100.0%
	% Edu.	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%



## 6.6 Crosstab: var 24 by var 38 (male/female)

If male: Household member labour position (categories) \* Highest educational attainment level (categories) Cross tabulation

		Highest educational attainment level (categories)					Total
		No formal education	Too young for school	Primary School	Secondary education	Other types of education	
Self-employed	Count	47	1	125	9	3	185
	% Pos.	25.4%	0.5%	67.6%	4.9%	1.6%	100.0%
	% Edu.	100.0%	100.0%	99.2%	69.2%	100.0%	97.4%
Long term contract (one year and above)	Count	0	0	0	4	0	4
	% Pos.	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	% Edu.	0.0%	0.0%	0.0%	30.8%	0.0%	2.1%
Short term contract (less than one year)	Count	0	0	1	0	0	1
	% Pos.	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
	% Edu.	0.0%	0.0%	0.8%	0.0%	0.0%	0.5%
Total	Count	47	1	126	13	3	190
	% Pos.	24.7%	0.5%	66.3%	6.8%	1.6%	100.0%
	% Edu.	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

If female: Household member labour position (categories) \* Highest educational attainment level (categories) Crosstabulation

		Highest educational attainment level (categories)					Total
		No formal education	Too young for school	Primary School	Secondary education	Other types of education	
Self-employed	Count	91	1	85	4	4	185
	% Pos.	49.2%	0.5%	45.9%	2.2%	2.2%	100.0%
	% Edu.	100.0%	100.0%	100.0%	80.0%	100.0%	99.5%
Long term contract (one year and above)	Count	0	0	0	1	0	1
	% Pos.	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	% Edu.	0.0%	0.0%	0.0%	20.0%	0.0%	0.5%
Total	Count	91	1	85	5	4	186
	% Pos.	48.9%	0.5%	45.7%	2.7%	2.2%	100.0%
	% Edu.	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

## 6.7 Non-agriculturally employed: distance to work (in time and/or km's)

I use the variable Hm\_main\_occ1 as sorting variable. 1="agriculture", so these are sorted out. However, there seems to be issues with the variables having answers, even for people that **are** working in agriculture. Thus, we have "agriculturally employed" who have given a distance to their non-agricultural employment. It has been reported that the enumerators had difficulties understanding this question and (in the beginning of the survey mainly) often included answers on distance even for household members with agricultural employment. In these cases, the distance is the approx. distance to the farms.

### Distance of non-agricultural employment in time (minutes)

	Frequency	Percent	Valid Percent	Cumulative Percent
.0	5	6.0	8.8	8.8
2.0	2	2.4	3.5	12.3
4.0	1	1.2	1.8	14.0
5.0	8	9.6	14.0	28.1
10.0	15	18.1	26.3	54.4
15.0	9	10.8	15.8	70.2
Valid 20.0	5	6.0	8.8	78.9
30.0	6	7.2	10.5	89.5
60.0	2	2.4	3.5	93.0
120.0	1	1.2	1.8	94.7
300.0	2	2.4	3.5	98.2
360.0	1	1.2	1.8	100.0
Total	57	68.7	100.0	
Missing don't know / no answer	26	31.3		
Total	83	100.0		

### Distance of non-agricultural employment in space (km)

	Frequency	Percent	Valid Percent	Cumulative Percent
2.0	1	1.2	1.2	1.2
5.0	1	1.2	1.2	2.4
Valid Don't know / no answer	75	90.4	90.4	92.8
Not applicable	6	7.2	7.2	100.0
Total	83	100.0	100.0	

The most significant result seems to be that 97% are unaware of the distance in km, compared to only 31% in time. The reason being that enumerators were instructed to ask the informant to state the distance in EITHER minutes OR km, and most informants chose to state the distance in minutes.

## **6.8 Number of (different) income generating activities per household**

It is the impression of the coordinator of the data collection (Nina Tofte Hansen) that the questionnaire survey gives a very poor indication of the actual number of different income generating activities per household. Even though the survey team really tried to remind informants to state all their different income generating activities, they often forgot or overlooked several activities. When comparing the questionnaire survey information to the information gathered through qualitative interviews it becomes apparent that small activities such as handicraft, petty trade and minor jobs were not mentioned, because the informants apparently did not find them worth mentioning.

From the qualitative interviews it seems to be common for households in Kinjumbi Ward to be engaged in 1-4 different income generating activities, including:

- Sale of crops, eggs and other farm-products.
- Sale of handicraft, including mats.
- Sale of labour, typically farm labour or fishing
- Trade of farm produce or fish

## **6.9 Average number of economically active household members per household**

No clear, common definition of "economically active" has not been given – however, if we decide on those that have "income generating activity" as their main activity (see 6.1), 378 persons are economically active. If we divide this by number of households (201), we find that on average 1.88 persons are economically active per household.

## **6.10 Importance of non-farming income relative to household income**

This information would seem to come from variable set D-2, and is explored in section 18.

As shown in question 18.3, 49-55 % of households rely on farming as their main source of income. Thus, 45-51 % relies on other means than farming, as their main source of income.

## 7. LIVELIHOOD DIVERSIFICATION AND TRANSFORMATION (FORM A-4)

### 7.1 Describe relevant changes in activity/income (What changes + why to what effect for purchasing power)

To answer this question we have five relevant variables. Change\_act tells if people have changed their activity or not, while change\_act\_spec gives a "string answer". Change\_inc tells if people have experience an improvement, deterioration or no change in income, while change\_inc\_spec specifies the reason for these changes. Change\_purch.pow tells if people can buy less, same or more goods. We begin by showing frequency tables for all ordinal variables. In order to give an idea and the reasons behind changes, we present lists of the reasons people specify according to their response on the first variables. Finally, we do crosstabs on change in activity by change in income, and change in income by change in purchasing power.

Only 15 of the "not applicable" responses refer to households that have first year of residence less than 10 years ago, thus I am unsure of the possible reason behind a "not applicable" answer to these questions.

#### Change in activity in the HH (categories)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Same	40	19.9	24.2	24.2
	Changed	125	62.2	75.8	100.0
	Total	165	82.1	100.0	
Missing	don't know / no answer	3	1.5		
	not applicable	33	16.4		
	Total	36	17.9		
Total		201	100.0		

#### Change in income in the HH (categories)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Deteriorated	89	44.3	53.3	53.3
	Same	38	18.9	22.8	76.0
	Improved	40	19.9	24.0	100.0
	Total	167	83.1	100.0	
Missing	Don't know / no answer	1	.5		
	Not applicable	33	16.4		
Total		34	16.9		
Total		201	100.0		

**Change in purchasing power (categories)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less goods	95	47.3	57.9	57.9
	Same goods	43	21.4	26.2	84.1
	More goods	26	12.9	15.9	100.0
	Total	164	81.6	100.0	
Missing	Don't know / no answer	2	1.0		
	Not applicable	35	17.4		
	Total	37	18.4		
Total		201	100.0		

**Reasons for changing activity, when activity = Same as 10 years ago**

		Frequency	Percent
	No Change	13	32.5
	Same equipment	2	5
	"We depend much on one or two people in a family"	1	2.5
	"We had no job ten years ago but now we have it"	1	2.5
	"Because only husband is working"	1	2.5
	"Due to climate change"	1	2.5
	"I was a fisherman but now I've quitted"	1	2.5
	Total	20	50
	don't know / no answer	11	27.5
	not applicable	9	22.5
Missing	Total	20	50.0
Total		40	100.0

**Reasons for changing activity, when activity = changed from 10 years ago**

		Frequency	Percent
Valid	Old age	11	8.8
	Climate change	28	21.9
	Lack of capital or equipment	6	4.8
	Worse fishing opportunities (Condition of ocean/poaching/bombing/competition/illegal fishing)	6	4.8
	Better fishing (Own boat and/or better equipment)	5	4
	Got a job	2	1.6
	Has changed (no explanation)	5	4
	Decreased farming output or lack of crops	7	5.6
	Increased farming output	5	4
	Change to sesame production	3	2.4

Money has lost value	2	1.6
Unemployment / Low income	4	3.2
Starting family ("growing up")	4	3.2
More easy access to equipment or inputs	3	2.4
Better climate	1	.8
"because now I have permanent agriculture base here"	1	.8
"Change because mobility of people is fewer than other places"	1	.8
"Now wife works for money"	1	.8
"From agriculture to motorcycle driver"	1	.8
"I was selling coconut, now I have ship"	1	.8
"Life is hard now compared to ten years ago because he gets small profit from business"	1	.8
"Now she sells stones"	1	.8
"There is change because now he takes care of his parents (disabled)"	1	.8
"We have our plan in life"	1	.8
Total	105	84.0
MissingDon't know / no answer	20	16.0
Total	125	100.0

In general this information is unclear; demonstrating the challenge of capturing complex changes of livelihood in a questionnaire question. However, statements has been marked with colours indicating 'a better livelihood (green); 'worse LH' (red).

#### Reasons for change in income if income = deteriorated compared to 10 years ago

	Frequency	Percent
Pests or droughts	12	13.5
Climate change	17	19.8
"Hard life"	5	5.6
Worse fishing conditions (due to bombing and illegal fishing /over fishing)	10	11.2
Lack of capital/equipment	3	3.4
Old age	17	19.1
Bad health / sickness	3	3.4
Single mother	2	2.2
Valid "Government restriction on illegal fishing"	1	1.1
"I am depending on my children now"	1	1.1
"Lack of market for our goods"	1	1.1
"Lack of mobility of people"	1	1.1
"My parents helped more back then"	1	1.1
"only one person contribute"	1	1.1
"Taking care of parents"	1	1.1
"We are using good fishing tools so we are getting more fish"	1	1.1
"We depend on friends and neighbours"	1	1.1
Total	83	93.3
Missingdon't know / no answer	5	5.6

not applicable	1	1.1
Total	6	6.7
Total	89	100.0

#### Reasons for change in income if income = same compared to 10 years ago

	Frequency	Percent
Bad health / Sickness	4	10.5
Same harvest / same farming output (lack of means)	6	15.7
Same fishing methods / tools (eg: rope and hook)	5	13.1
"No changes"	7	18.4
Old age	1	2.6
"Life is hard"	4	10.5
Valid "a lot of time wish used to care of grandmother"	1	2.6
"Business is not good"	1	2.6
"due to animals, especially monkey"	1	2.6
"Due to climate condition change"	1	2.6
"Somehow life is good than previous years"	1	2.6
"We highly depend on parents to contribute to the whole family"	1	2.6
Total	35	92.1
Missing don't know / no answer	4	7.9
Total	38	100.0

Comment: When informants are asked to why their conditions are the same, this question is understood as an indirect blame ("Why have you not been able to do better?") and the answers they provided were their justifications.

#### Reasons for change in income if income = improved compared to 10 years ago

	Frequency	Percent
Improved farming output (eg: better equipment/techniques/inputs)	12	30.0
Better fishing equipment (eg: Nets or boat)	5	12.5
Climate change	7	17.5
Better salaries	2	5.0
"No explanation"	4	10.0
"Availability of fish"	1	2.5
"Because now days land has no fertile"	1	2.5
"Because of the stones selling business"	1	2.5
Valid "He started to grow sesame plus has fishing nets"	1	2.5
"I decide on my own what to do"	1	2.5
"Now I get income from badoboda"	1	2.5
"She started her own business"	1	2.5
"Started to grow sesame"	1	2.5
"We earn more money by selling the fishes to districts like Masasi"	1	2.5
"Wife has her own business now a days"	1	2.5
we earn more money by selling fishes to other district like Masasi	1	2.5
we get more profits from crop production	1	2.5
wife has her own business now days	1	2.5

Total	40	100.0
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The responses seem to primarily revolve around improved climate and equipment, as well as improved crop production and business.

#### Change in income in the HH (categories) \* Change in activity in the HH (categories) Cross tabulation

			Change in activity		Total
			Same	Changed	
Change in income	Deteriorated	Count	7	80 (64%)	87
		%	8.0%	92.0%	100.0%
	Same	Count	30	8 (6%)	38
		%	78.9%	21.1%	100.0%
	Improved	Count	3	37 (30%)	40
		%	7.5%	92.5%	100.0%
Total	Count		40	125 (100%)	165
	%		24.2%	75.8%	100.0%

It seems quite clear, that changes in income (deterioration or improvement) are related to changes in activities. Few people have experienced improving or deteriorating income as a result of the same activities. [You have 36 'missing' households]. It is surprising that 64% experienced a decrease in income – however, it may include households where age, climate change or loss of job caused the changes. Furthermore, it was the impression of the enumerators that it is likely that some informants state their conditions as worse than they are. Despite thorough introduction about the purpose of the survey, many informants believe that presenting their household as worse off will give them a higher chance to be included in future aid/development projects.

#### Cross-tabulation, change in income\*change in purchasing power

#### Change in income in the HH (categories) \* Change in purchasing power (categories) Cross tabulation

			Change in purchasing power			Total
			less goods	same goods	more goods	
Change in income	Deteriorated	Count	83	4	1	88
		%	94.3%	4.5%	1.1%	100.0%
	Same	Count	10	27	0	37
		%	27.0%	73.0%	0.0%	100.0%
	Improved	Count	2	12	25	39
		%	5.1%	30.8%	64.1%	100.0%
Total	Count		95	43	26	164
	%		57.9%	26.2%	15.9%	100.0%

There seems to have been a general decrease in experienced purchasing power regardless of experienced changing income. Thus 27% have experienced a fall in purchasing power with constant income. Furthermore 31% have not experienced an increase in purchasing power despite increased income. Apart from this, there seems to be a substantial relation between changing



income and changing purchasing power.

## 7.2 If there have been shifts in income generating activities during the past 10 years; is it predominantly changes from farming to non-agricultural employment? Or is non-farming activity mainly to be considered as additional occupation?

According to the coordinator of the survey (Tofte Hansen), it is not possible to answer this question on the basis of the questionnaire survey data. On the basis of the general survey data, there are no indications of a trend towards more non-agricultural employment. Neither is non-farming activities to be considered as an additional occupations; e.g. not for those households where fishing and trade is the main activities. Overall, there are no clear trends observed in this survey other than an increased adoption of sesame cultivation.

## 7.3 Connect changing land ownership (C-2) to livelihood diversification and diversification from farming. Is there a relationship between decreasing or increasing land ownership and changes in occupation/additional activities?

It seems straight forward to use the Change\_own variable to record changes in land ownership. There might be a theoretical point in also looking at rented and borrowed land, but from data it seems clear that there are very few applicable households for all the alternative forms of land; Rented land (1,5%), Borrowed land (3%), Community land (1%), Cooperative land (1%), Clan land (2%).

### Change in owned land over last 10 years (categories)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decreased	35	17.4	31.0	31.0
	Same	44	21.9	38.9	69.9
	Increased	34	16.9	30.1	100.0
	Total	113	56.2	100.0	
Missing	don't know / no answer	2	1.0		
	not applicable	86	42.8		
	Total	88	43.8		
Total		201	100.0		

### Change in owned land over last 10 years (categories) \* Change in activity in the HH (categories) Cross tabulation

	Change in activity in the HH (categories)	Total
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			Same	Changed	
Change in owned land over last 10 years (categories)	Decreased	Count	1	34 (39%)	35
		%	2.9%	97.1%	100.0%
	Same	Count	12	32 (37%)	44
		%	27.3%	72.7%	100.0%
	Increased	Count	11	21 (24%)	32
		%	34.4%	65.6%	100.0%
Total		Count	24	87 (100%)	111
		%	21.6%	78.4%	100.0%

No clear tendency in changing land ownership and changing activity can be identified, perhaps because the type of change in activity is not identified.

#### Change in owned land over last 10 years (categories) \* Change in income in the HH (categories) Crosstabulation

			Change in income in the HH (categories)			Total
			Deteriorated	Same	Improved	
Change in owned land over last 10 years	Decreased	Count	27	3	5	35
		%	77.1%	8.6%	14.3%	100.0%
	Same	Count	26	13	5	44
		%	59.1%	29.5%	11.4%	100.0%
	Increased	Count	13	8	12	33
		%	39.4%	24.2%	36.4%	100.0%
Total		Count	66	24	22	112
		%	58.9%	21.4%	19.6%	100.0%

From this data there seems to be a tendency for the percentage of HH's whose income to have deteriorated to have also either lost or have the same land as 10 years ago. However, there is no clear tendency for an increase in owned land to have led to improved income.

#### 7.4 Connect entrepreneurship (having small or bigger business/shop) with land ownership (number of plots and size of land)

It is likely that the sample of owners of businesses is so small that there will be no significant correlations with land ownership.

**7.5 Changes over time in labour position? Eg. a change from self-employed to wage-labour?**

No information collected on this

**7.6 What is the difference in livelihood diversification between female headed households (or single parent households) and male headed households? (eg; does being/becoming a single parent household demand the parent to look for multiple activities next to their main activity?)**

## 8. MULTI-LOCALITY AND MOBILITY

### 8.1 Difference between the type of occupation (Hm\_main\_occ) for households members resident and household members "usually absent" (implying: differences between the occupation locally and occupation in other locations)

There seems to be a problem when recording of absent household members. 21 members are recorded as "Usually absent", of these only 20 are recorded as applicable for abs.Hm\_res (their reasons for leaving). However, 22 people have answered the question abs.Hm\_res => meaning two of these are missing from the Hm\_res variable, while one from the Hm\_res variable is missing from the abs.Hm\_res variable. It seems between 1-4 people have answered Hm\_abs=1, but have still answered the questions in the absent household member section.

Because of the very low number of respondents for these questions it does not make much sense to analyse this data in further detail.

Type of occupation for usually absent household members:

#### Household member main income activity for usually absent household members

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Agriculture	9	42.9	100.0	100.0
Missing Not applicable	12	57.1		
Total	21	100.0		

Type of occupation for non-absent household members:

#### Household member main income activity for non-usually absent household members

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Agriculture	294	32.8	78.0	78.0
Valid Business	31	3.5	8.2	86.2
Valid Others	52	5.8	13.8	100.0
Valid Total	377	42.0	100.0	
Missing Don't know/No answer	2	.2		
Missing Not applicable	518	57.7		
Missing Total	520	58.0		
Total	897	100.0		

Since there are so many "Not applicable", it's difficult to say anything definite about the differences in occupation. Respondents were reluctant to share economic details of absent HH-members and therefore often answered "don't know" to these particular questions. Hence, many of the "not applicable" should have been "don't know"/ "no answer". However - those absent household members who have answered are primarily engaged in agriculture.

## 8.2 Importance of household members who are "usually absent", that is, medium- or long term migrants?

These are the percentages of each household that are "usually absent". As we see, 9 households, or 4% of all households have any members that are usually absent. Furthermore, only three of these households have more than 25% of their members usually absent. This low percentage of absent household members per household could indicate a relatively lower importance of the migrants. You should probably compare this to the activities and Hm relation of those usually absent.

**Table showing the percentage of household members in household that are usually absent**

	Frequency	Percent	Valid Percent	Cumulative Percent
.0	192	95.5	95.5	95.5
11.1	1	.5	.5	96.0
12.5	2	1.0	1.0	97.0
14.3	1	.5	.5	97.5
22.2	1	.5	.5	98.0
25.0	1	.5	.5	98.5
50.0	1	.5	.5	99.0
62.5	1	.5	.5	99.5
83.3	1	.5	.5	100.0
Total	201	100.0	100.0	

## 8.3 Who are these medium- and long-term migrants? Why have they left? How much time since they left? Where have they gone to? Frequency and reasons for these migrants to visit their rural household?

This question is basically just frequency tables of the variables in form A-2. For each variable, I will show only those members that have Hm\_res=2 (usually absent), but will comment if there are more who have answered than those designated by the filter.

**Absent resident HH member reason for leaving (categories)**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Education	3	14.3	15.0	15.0
Valid Other	17	81.0	85.0	100.0
Total	20	95.2	100.0	
Missing Not applicable	1	4.8		
Total	21	100.0		

**Specify absent resident HH member reason for leaving**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	3	14.3	14.3	14.3
	Agriculture and marriage	5	23.8	23.8	38.1
	In struggling for a life	1	4.8	4.8	47.6
	Married	9	42.9	38.1	85.7
	School	1	4.8	4.8	90.5
	To visit friends	1	4.8	4.8	95.2
	Visiting relatives	1	4.8	4.8	100.0
	Total	21	100.0	100.0	

**Absent resident HH member current location (categories)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nearby village	8	38.1	40.0	40.0
	Town/city in other district	12	57.1	60.0	100.0
	Total	20	95.2	100.0	
Missing	System	1	4.8		
Total		21	100.0		

You could do a cross-tab with household location and absent resident HH member if you wanted precise information on the distances migrated and places.

**Absent resident HH member duration since leaving in months**

		Frequency	Percent	Valid Percent	Cumulative Percent
	3	1	4.8	7.7	7.7
	4	1	4.8	7.7	15.4
	6	1	4.8	7.7	23.1
	11	1	4.8	7.7	30.8
	30	1	4.8	7.7	38.5
	36	2	9.6	14.1	53.9
	4 years	2	9.6	14.1	69.3
	5 years	1	4.8	7.7	77.0
	6 years	1	4.8	7.7	84.7
	7 years 6 months	1	4.8	7.7	92.4
	10 years	1	4.8	7.7	100.0
	Total	13	61.9	100.0	
Missing	don't know / no answer	8	38.0		
Total		21	100.0		

It's difficult to make anything meaningful out of the data provided, since the units have not been consistent, leading to a danger of erroneous data. (There are two more answers to this question; 1 x 14 years and 1 x 3 years)

#### Absent resident HH member number of visits last 12 months

	Frequency	Percent	Valid Percent	Cumulative Percent
1	8	38.1	47.1	47.1
2	1	4.8	5.9	52.9
Valid 360	5	23.8	29.4	82.4
365	3	14.3	17.6	100.0
Total	17	81.0	100.0	
don't know / no answer	3	14.3		
Missing System	1	4.8		
Total	4	19.0		
Total	21	100.0		

(There are two more answers to this question; 1 x 1 visit, 1 x 2 visits)

You have 8 "Usually absent" household members that visits "every day". This may mean that the question has been understood differently. It is those eight that have moved to a nearby village (Abs.Hm\_loc = 1). All these eight migrants moved because of "marriage". Thus, I would discuss whether this fits your definition of "long term migrants"?

#### Specify reason of absent resident HH member visits

	Frequency	Percent	Valid Percent	Cumulative Percent
No answer	1	4.8	4.8	4.8
Agriculture	2	9.5	9.5	14.3
He is coming back home	1	4.8	4.8	19.0
Holiday	8	38.1	38.1	57.1
Valid Just to pay a visit	1	4.8	4.8	61.9
Treatment and to pay a visit	5	23.8	23.8	85.7
Visiting parents	2	9.5	9.5	95.2
Wedding celebration	1	4.8	4.8	100.0
Total	21	100.0	100.0	

(There are two more answers to this question 1 x "holiday" and 1 x "to help in harvesting")

I'm not sure whether these "reasons" for visits show any significant trend. 7 are there for other reasons than "just" paying a visit. Two come to help with agriculture, while it is unspecified whether the "treatment" for the 5 are for themselves or their families.

#### 8.4 Who are the temporary migrants (form B)? Where do they go? How often? What means of transport? For what purpose?

In total there are 20 temporary migrants, or 2% of population

**Main destination of work-related migration (district name)**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Dar es salaam	4	.4	22.2	22.2
Ilala	1	.1	5.6	27.8
Kilwa	5	.5	27.8	55.6
Lindi	1	.1	5.6	61.1
Masasi	1	.1	5.6	66.7
Morogoro	1	.1	5.6	72.2
Mtwara	2	.2	11.1	83.3
Shinyanga	1	.1	5.6	88.9
Temeke	2	.2	11.1	100.0
Total	18	2.0	100.0	
Missing Don't know / no answer	2	.2		
Missing Not applicable	898	97.8		
Missing Total	900	98.0		
Total	918	100.0		

**Main destination of work-related migration (settlement name)**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid bariadi	1	.1	6.3	6.3
kariakoo	2	.2	12.5	18.8
luokwe	1	.1	6.3	25.0
mang'ula	1	.1	6.3	31.3
masasi	2	.2	12.5	43.8
matumbi	1	.1	6.3	50.0
mbagala rangi tatu	1	.1	6.3	56.3
ngwanga	1	.1	6.3	62.5
somanga	3	.3	18.8	81.3
stereo	1	.1	6.3	87.5
temeke	2	.2	12.5	100.0
Total	16	1.7	100.0	
Missing don't know / no answer	4	.4		
Missing not applicable	898	97.8		
Missing Total	902	98.3		
Total	918	100.0		

**Area of main destination of work related migration**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Rural	6	.7	33.3	33.3
Valid Urban	12	1.3	66.7	100.0
Total	18	2.0	100.0	
Missing Don't know / no answer	2	.2		
Missing Not applicable	182	19.8		
Missing System	716	78.0		
Missing Total	900	98.0		
Total	918	100.0		



**Migration frequency of trips away from HH (categories)**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Every week	4	.4	22.2
	Every month	3	.3	16.7
	A few times a year	6	.7	33.3
	Seasonally	5	.5	27.8
	Total	18	2.0	100.0
Missing	Don't know / no answer	2	.2	
	Not applicable	182	19.8	
	System	716	78.0	
	Total	900	98.0	
Total		918	100.0	

**Migration most used means of transport (categories)**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bus	11	1.2	61.1
	Truck	3	.3	16.7
	Motorbike	3	.3	16.7
	Other	1	.1	5.6
	Total	18	2.0	100.0
Missing	Don't know / no answer	2	.2	
	Not applicable	182	19.8	
	System	716	78.0	
	Total	900	98.0	
Total		918	100.0	

**Specify main purpose of trips away from HH**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Business, (eg: buying and selling goods)	10	1.0	55.6
	Selling fish	4	.4	22.2
	See family	2	.2	11.1
	For treatment	1	.1	5.6
	Holidays	1	.1	5.6
	Total	18	2.0	100.0
Missing	don't know / no answer	2	.2	
	not applicable	898	97.8	
	Total	900	98.0	
Total		918	100.0	

### 8.5 How much time do mobile/migrant household members spend in urban and/or other rural areas?

The questions on time spent in urban/rural areas have been answered by other household members than just those who migrate. Thus I have created a filter on the basis of the migr\_des\_area to not equal 99. I use this and the filter for absent household members to show their time in either rural or urban areas.

First “absent” household members:

#### Time spent in rural locations over last 12 months (%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	100.0	1	4.8	100.0	100.0
Missing	System	20	95.2		
Total		21	100.0		

#### Time spent in urban locations over last 12 months (%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.0	1	4.8	100.0	100.0
Missing	System	20	95.2		
Total		21	100.0		

That one person has answered, might illustrate that the answers to the question are somehow inconsistent.

Then temporary migrants:

#### Time spent in rural locations over last 12 months (%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	30.0	1	5.0	5.0	5.0
	50.0	2	10.0	10.0	15.0
	60.0	1	5.0	5.0	20.0
	70.0	1	5.0	5.0	25.0
	75.0	1	5.0	5.0	30.0
	80.0	2	10.0	10.0	40.0
	90.0	4	20.0	20.0	60.0
	95.0	2	10.0	10.0	70.0
	100.0	6	30.0	30.0	100.0
Total		20	100.0	100.0	

#### Time spent in urban locations over last 12 months (%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.0	6	30.0	30.0	30.0
	5.0	2	10.0	10.0	40.0
	10.0	4	20.0	20.0	60.0
	20.0	2	10.0	10.0	70.0

25.0	1	5.0	5.0	75.0
30.0	1	5.0	5.0	80.0
40.0	1	5.0	5.0	85.0
50.0	2	10.0	10.0	95.0
70.0	1	5.0	5.0	100.0
Total	20	100.0	100.0	

These results seem to indicate that a majority of migrants spend the majority of their time in rural locations. Only 3 migrants spend more than 50% of their time in urban locations.

### 8.6 What is the difference (if any) in household member mobility between female-headed households (or single parent households) and male-headed households?

The low percentage of the sample being migrant households and the poor quality of the data means that we cannot answer this question.

### 8.7 What is the difference (if any) in household member mobility between households with a head of household aged under 35 years and those with a head of household aged 35 years and above?

In the following 0=Head of household is below 35 years, and 1=Head of household 35 and above. As shown in section 5, 47 heads of household have not provided their age. In this question these have been coded as below 35 years – this is a mistake and should be fixed!

#### HH\_over35\_max \* Household member resident of the HH Crosstabulation

			Household member resident of the HH		Total
			Resident	Usually absent	
HH is below 35 years old	Count		398	9	407
	%		97.8%	2.2%	100.0%
HH is 35 or older	Count		499	12	511
	%		97.7%	2.3%	100.0%
Total	Count		897	21	918
	%		97.7%	2.3%	100.0%

Here we see that there is virtually no difference in the percentage of usually absent residents regardless of HH being above or below 35.

I create a new variable distinguishing between short-term and non-short term migrants. The 20 ppl who have answered section B are coded as short term migrants.

**HH age by “is Hm short term migrant?” Crosstabulation**

		Is Hm short-term migrant?		Total
		Is not short-term migrant	Is short-term migrant	
HH is below 35 years old	Count	397	10	407
	%	97.5%	2.5%	100.0%
HH is 35 or older	Count	501	10	511
	%	98.0%	2.0%	100.0%
Total	Count	898	20	918
	%	97.8%	2.2%	100.0%

Again we see that there is little difference in the percentage of migrants independent of the age of the head of household.

**8.8 Compare frequency and purpose of mobility to urban areas with frequency and purpose to other rural areas****Area of main destination of work related migration \* Migration frequency of trips away from HH (categories) Crosstabulation**

		Migration frequency of trips away from HH (categories)				Total
		every week	every month	a few times a year	seasonally	
Area of main destination of work related migration	Rural	Count 2	Count 2	Count 1	Count 1	Count 6
	%	33.3%	33.3%	16.7%	16.7%	100.0%
	Urban	Count 2	Count 1	Count 5	Count 4	Count 12
	%	16.7%	8.3%	41.7%	33.3%	100.0%
Total	Count	4	3	6	5	18
	%	22.2%	16.7%	33.3%	27.8%	100.0%

In terms of percentage, migration to rural areas is much more likely to be weekly or monthly, whereas migration to urban areas is more dominantly limited to “a few times a year” or “Seasonally”. Remember there are few observations + 2 who have not answered.

Purpose if rural area:

**Specify main purpose of trips away from HH if to rural areas**

	Frequency	Percent	Valid Percent	Cumulative Percent
Doing business and buying goods	2	33.3	33.3	33.3
Fishing business	3	50.0	50.0	83.3
To see parents	1	16.7	16.7	100.0

Total	6	100.0	100.0
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Purpose if urban area:

**Specify main purpose of trips away from HH if to urban areas**

	Frequency	Percent	Valid Percent	Cumulative Percent
Business; buying/selling goods	8	66.7	66.7	66.7
For treatment	1	8.3	8.3	75.0
Holidays	1	8.3	8.3	83.3
See family	1	8.3	8.3	91.7
To sell fish	1	8.3	8.3	100.0
Total	12	100.0	100.0	

## 8.9 Compose two maps

Due to the very low numbers of responses to the mobility questions, it is not applicable to produce maps.

## 8.10 In what respect and for what reasons has mobility changed during the past 10 years? (form B). Are more households members than before moving away or commuting to other places? Or less? Why?

To make sense of these last data, or to spot a trend, you would need to group them in sensible categories. There might be some questions as to how these questions have been understood. Some HOW questions, seems to be answered by a WHY.

### How has mobility changed compared to 10 years ago for household?

	Frequency	Percent	Valid Percent
"Changes"	5	2.4	5.9
No changes	65	32.3	76.4
Improved transport	4	2.0	4.7
Increase due to business	3	1.5	3.5
Decrease	4	2.0	4.7
"Ten years ago we were under parents care now days we are living on our own so we can move here to there"	1	.5	1.2
"I have been going to Morogor"	1	.5	1.2
"We were young with no responsibilities but now we have"	1	.5	1.2
Total	85	42.3	100.0
don't know / no answer	8	4.0	
Missingnot applicable	108	53.7	
Total	116	57.7	
Total	201	100.0	

**Why has mobility changed compared to 10 years ago?**

		Frequency	Percent
Valid	Has access to / owns motorbike	3	1.5
	Better infrastructure/transport	5	2.5
	Has to travel for business	3	1.5
	Health problems	2	1.0
	No money	2	1.0
	Go to find work	2	1.0
	No change	14	7.0
	Agriculture (No explanation)	3	1.5
	Error	2	1.0
	"He uses a lot of time staying home"	1	.5
	"I am free because I am on my own now"	1	.5
	"I cant move anywhere because my activities are on the beach"	1	.5
	Total	39	19.4
	Don't know / no answer	7	3.5
Missing	not applicable	155	77.1
	Total	162	80.6
Total		201	100.0

## 9. TYPOLOGY OF MOBILITY

In our survey in Kilwa Districts, we have mainly covered issues of mobility through the questionnaire survey, and as shown above the data on this is of poor quality and shows no clear trends.

Qualitative interviews indicated that seasonal and other temporal migration is relatively uncommon in the Ward of Kinjumbi (covered by the survey), whereas in the Ward of Nanjirinji in the southern part of Kilwa District, rural-rural seasonal migration plays an important role. During the last decade, an increasing number of households from the rural parts of the neighbouring districts have begun migrating to the rural parts of Nanjirinji Ward during the sesame cultivation season January-June.

The seasonal Migrants come mainly from Mtwara Region. Apparently some, people struggle to find fertile land in Mtwara Region partly because the cashew trees there is covering a large area and therefor they move to Kilwa. Most of them come to grow sesame, but some also grow maize. This in-flow of people is sometime creating conflicts. For example the new-comers prefer to settle some distance from the village and agricultural land and clear new land in the forest. In order to reduce the number of seasonal migrants, a tax of land (25,000 Tanzanian shillings/acre) has been introduced in 2013 in parts of Nanjirinji Ward. Permanent farmers (including new-comers) should not pay anything, since the permanent farmers are believed to be likely to spend their money within the area and this will give development to the ward.

## 10. PLOTS (FORM C-1)

### Introduction to part 10 to 16 (included)

For this exercise, there are two very important specifications to how the total population and group of respondents are defined. The dataset has a key characteristic that several households rely solely on fishing as livelihood. We thus have several households with no land at all. In order for this not to skew our results on these sections, we have to remove these observations from the population. I have constructed a sorting variable `Is_farmer` as seen below;

#### Does household cultivate any land?

	Frequency	Percent	Valid Percent	Cumulative Percent
No	36	17.9	17.9	17.9
Valid Yes	165	82.1	82.1	100.0
Total	201	100.0	100.0	

We have thus reduced our population to 165 households. Furthermore, we need to identify a separation between households that grow the booming crop of sesame. This is done on the basis of information on main crops. Any household that has listed Sesame as one of their five possible main crops are said to be growing sesame, whereas all others are grouped oppositely. The variable; `grow_sesame` can be seen below:

#### Does household grow sesame?

	Frequency	Percent	Valid Percent	Cumulative Percent
No	48	29.1	29.1	29.1
Valid Yes	117	70.9	70.9	100.0
Total	165	100.0	100.0	

### 10.1 What is the average size of landholdings per household (indicate max and min size)?

#### Descriptive Statistics

Does household grow sesame?		N	Minimum	Maximum	Mean
No	Total size of HH landholdings (Acres)	48	.50	13.00	4.4496
	Valid N (listwise)	48			
Yes	Total size of HH landholdings (Acres)	117	1.00	46.00	6.6225
	Valid N (listwise)	117			



**10.2 Make a frequency diagram or a table of total estimated land (acres) per household divided in 0<1, 1<2, 2<3,.....9<10, 10<15, 15<20, 20<25, 25<30,.....**

**Total esstimated land (acres) per household \* Does household grow sesame?**

**Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Total esstimated land (acres) per household	0<1	Count	6	5	11
		% within sesame?	12.5%	4.3%	6.7%
	1<2	Count	9	12	21
		% within sesame?	18.8%	10.3%	12.8%
	2<3	Count	8	18	26
		% within sesame?	16.7%	15.5%	15.9%
	3<4	Count	4	14	18
		% within sesame?	8.3%	12.1%	11.0%
	4<5	Count	6	14	20
		% within sesame?	12.5%	12.1%	12.2%
	5<6	Count	6	8	14
		% within sesame?	12.5%	6.9%	8.5%
	6<7	Count	0	11	11
		% within sesame?	0.0%	9.5%	6.7%
	7<8	Count	3	5	8
		% within sesame?	6.2%	4.3%	4.9%
	8<9	Count	1	7	8
		% within sesame?	2.1%	6.0%	4.9%
	9<10	Count	2	6	8
		% within sesame?	4.2%	5.2%	4.9%
	10<15	Count	3	10	13
		% within sesame?	6.2%	8.6%	7.9%
	15<20	Count	0	4	4
		% within sesame?	0.0%	3.4%	2.4%
	20<25	Count	0	2	2
		% within sesame?	0.0%	1.7%	1.2%
Total		Count	48	116	164
		% within sesame?	100.0%	100.0%	100.0%

**10.3 What is the average number of plots (indicate max and min number)?****10.4 What is the average size and share of cultivated land in total land use?**

These two questions are answered together in the following table:

**Descriptive Statistics**

Does household grow sesame?		N	Minimum	Maximum	Mean	Std. Deviation
No	Total number of plots per HH	48	1.00	5.00	2.2500	1.08176
	Total size of HH cultivated landholdings (Acres)	48	.50	7.00	2.7048	1.71263
	Share of cultivated land in total land use (%)	48	13.88	100.00	72.7951	29.39381
	Valid N (listwise)	48				
Yes	Total number of plots per HH	117	1.00	5.00	2.9573	1.11721
	Total size of HH cultivated landholdings (Acres)	117	1.00	15.00	4.0349	2.74098
	Share of cultivated land in total land use (%)	117	4.35	100.00	73.6851	28.32950
	Valid N (listwise)	117				

**10.5 Describe in your own words the data on the perceived distance to plots**

Difficult to describe meaningfully. Also the N for each question is quite low, meaning we have a lot of undefined answers.

**Descriptive Statistics**

Does household grow sesame?		N	Minimum	Maximum	Mean	Std. Deviation
No	Distance of plot1 in time (minutes)	32	0	180	28.58	40.292
	Distance of plot2 in time (minutes)	20	0	180	27.40	43.931

Yes	Distance of plot3 in time (minutes)	10	0	90	16.00	28.655
	Distance of plot4 in time (minutes)	4	0	30	8.75	14.361
	Distance of plot5 in time (minutes)	1	0	0	.00	.
	Valid N (listwise)	1				
	Distance of plot1 in time (minutes)	73	0	480	34.32	63.087
	Distance of plot2 in time (minutes)	62	0	90	18.42	22.064
	Distance of plot3 in time (minutes)	39	0	120	21.26	26.463
	Distance of plot4 in time (minutes)	16	0	60	25.12	23.810
	Distance of plot5 in time (minutes)	8	0	60	20.00	20.000
	Valid N (listwise)	6				

**10.6 What is the dominant form of land tenure (calculate the shares on aggregate level and list notable 'outliers' at household level)?**

**Descriptive Statistics**

Does household grow sesame?		N	Minimum	Maximum	Mean	Std. Deviation
No	Percentage of plot which owned by household	48	.00	100.00	79.3403	37.85742
	Percentage of plot which rented by household	48	.00	.00	.0000	.00000
	Percentage of plot which borrowed by household	48	.00	100.00	11.4583	31.35178
	Percentage of plot which owned by community	48	.00	66.67	1.3889	9.62250

Yes	Percentage of plot which owned by cooperatives	48	.00	.00	.0000	.00000
	Percentage of plot which owed by clan	48	.00	20.00	.4167	2.88675
	Valid N (listwise)	48				
	Percentage of plot which owned by household	117	.00	133.33 <sup>1</sup>	80.8120	37.14269
	Percentage of plot which rented by household	117	.00	100.00	1.7094	13.01793
	Percentage of plot which borrowed by household	117	.00	100.00	7.7635	25.79499
	Percentage of plot which owned by community	117	.00	100.00	2.5641	15.87417
	Percentage of plot which owned by cooperatives	117	.00	.00	.0000	.00000
	Percentage of plot which owed by clan	117	.00	100.00	1.9943	13.34094
	Valid N (listwise)	117				

### 10.7 What is the proportion of plots with only family labour? Is there any connection between use of cultivated plot and use of only family labour?

In the table below we are first presented with the total number of plots per household. We see that Sesame growers have a slightly higher number of plots on average. Secondly we are presented with the total number of plots per household where family labour is used. We see that for both sesame and non-sesame growers, not all households use family labour at all. However, within those that do, Sesame growers use family labour on a slightly higher number of plots on average (which may just reflect that they have more plots). Thirdly we see that sesame and non-sesame growers use family labour on approximately the same percentage of their cultivated plots. Thus we

<sup>1</sup> Since there is no question specifying whether you have a certain plot or not, the only way to calculate the number of plots is by counting the number of answers to the individual questions on each plot. Since people throughout the questionnaire may have answered on one part of the question on plots, but not on another, the total number of plots varies slightly depending on how it's done. There is no failsafe way of doing it, but in this case, we have three households that have specified that they own 4 plots, but only given information on 3 (in others its the other way around).

could be inclined to conclude that the reason why sesame growers use family labour on more plots is directly related to the fact that they have more plots on average. Thus it is not tied to a higher intensity of family labour usage.

### Descriptive Statistics

Does household grow sesame?		N	Minimum	Maximum	Mean	Std. Deviation
No	Total number of plots per HH	48	1.00	5.00	2.2500	1.08176
	Total number of plots per HH use family labour	40	1.00	4.00	1.6250	.77418
	Percentage of cultivated plot which family labour used	48	.00	100.00	59.8264	33.31602
	Valid N (listwise)	40				
Yes	Total number of plots per HH	117	1.00	5.00	2.9573	1.11721
	Total number of plots per HH use family labour	92	1.00	4.00	2.2500	.89719
	Percentage of cultivated plot which family labour used	117	.00	100.00	61.5954	36.47704
	Valid N (listwise)	92				

## 11. Livestock (Form C-1)

### 11.1 What is the average number of different types of livestock per household (indicate max and min number)?

*If sesame grower:*

**Descriptive Statistics**

	N	Minimum	Maximum	Mean
Livestock oxen amount	102	0	0	.00
Livestock cattle amount	103	0	9	.09
Livestock pigs amount	103	0	0	.00
Livestock sheep amount	103	0	0	.00
Livestock goats amount	103	0	50	1.16
Livestock chicken amount	103	0	60	10.26
Livestock other animals amount	103	0	20	.29
Valid N (listwise)	102			

\*it should be noted that our N is below the 117 that grow sesame, thus the means are somewhat skewed. This is because some have answered the question as irrelevant.

*If not sesame grower:*

**Descriptive Statistics**

	N	Minimum	Maximum	Mean
Livestock oxen amount	43	0	0	.00
Livestock cattle amount	43	0	0	.00
Livestock pigs amount	43	0	0	.00
Livestock sheep amount	43	0	0	.00
Livestock goats amount	43	0	0	.00
Livestock chicken amount	43	0	30	6.84
Livestock other animals amount	43	0	0	.00
Valid N (listwise)	43			

\*A similar issue to the one above – our N of 43 is below the 48 that do not grow sesame.

### 11.2 How is the use of animal products distributed per type of livestock (describe in your own words the importance of subsistence relative to market production for the different types of livestock)?

Since our farmers only have cattle, goats, chickens and others we focus on these types of livestock only. For the cattle there has been no specification at all.

Since those farmers that do not grow sesame only have chickens, it is most interesting to look at this crosstabulation. From it we can see that a slightly higher percentage of non-sesame farmers

rely on chickens for subsistence than sesame farmers. However, no livestock are solely used for sale.

### Use of goats products (categories) \* Does household grow sesame?

#### Crosstabulation

			Does household grow sesame?	Total
			Yes	
Use of goats products (categories)	both	Count	4	4
		% within Does household grow sesame?	100.0%	100.0%
Total		Count	4	4
		% within Does household grow sesame?	100.0%	100.0%

### Use of chicken products (categories) \* Does household grow sesame?

#### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Use of chicken products (categories)	subsistence	Count	6	10	16
		% within Does household grow sesame?	19.4%	13.2%	15.0%
	both	Count	25	66	91
		% within Does household grow sesame?	80.6%	86.8%	85.0%
Total		Count	31	76	107
		% within Does household grow sesame?	100.0%	100.0%	100.0%

**Use of other animal products (categories) \* Does household grow sesame?**

**Crosstabulation**

			Does household grow sesame?	Total
			Yes	
Use of other animal products (categories)	subsistence	Count	1	1
		% within Does household grow sesame?	50.0%	50.0%
	both	Count	1	1
		% within Does household grow sesame?	50.0%	50.0%
Total	Count		2	2
	% within Does household grow sesame?		100.0%	100.0%



## 12. Changes in size and tenure of land (Form C-2)

**12.1 What is the proportion of households that have experienced overall increase in the size of their landholdings?**

**12.2 What is the proportion of households that have experienced overall decrease in the size of their landholdings?**

I answer 12.1 and 12.2 together. There have only been changes in owned and clan owned land in the past 10-years. Since there are only 2 households with changes in clan owned land it does not make sense to look at these either. The few people renting or borrowing land have not recorded any increase or decrease in their land. It is worth noting that at least 137 households have owned land, wherefore there seems to be a few lacking responses to the question.

### Change in owned land over last 10 years (categories) \* Does household grow sesame? Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Change in owned land over last 10 years (categories)	Decreased	Count	11	24	35
		% within sesame?	31.4%	30.8%	31.0%
	Same	Count	16	28	44
		% within sesame?	45.7%	35.9%	38.9%
	Increased	Count	8	26	34
		% within sesame?	22.9%	33.3%	30.1%
	Total	Count	35	78	113
		% within sesame?	100.0%	100.0%	100.0%

- We see a similar percentage having experienced a decreased in their owned land. However, the percentage of sesame growers that have experienced increases in owned land is 10 percentage points higher than non-sesame-growers.

**12.3 What is the average size of the increase (list notable 'outliers')?**

**12.4 What is the average size of the decrease (list notable 'outliers')?**

These two questions can be combined as well. However, you have to question the reliability of these data, since few households have answered the question.

*For Sesame growers:*

#### Descriptive Statistics

	N	Minimum	Maximum	Mean
Size of Increase in owned land (acres)	18	.25	4.00	1.3472
Size of decrease in owned land (acres)	16	.50	6.00	1.5000
Valid N (listwise)	0			

*For none-sesame growers*

#### Descriptive Statistics

	N	Minimum	Maximum	Mean
Size of Increase in owned land (acres)	4	1.00	1.50	1.1250
Size of decrease in owned land (acres)	5	1.00	3.00	1.8000
Valid N (listwise)	0			

**12.5 Describe in your own words the distribution of the increase and decrease per type of tenure. Are there any general reasons for either increase or decrease of landholdings under different types of tenure – please gather responses in categories (e.g. old age, illness in family, expansion of production, etc.)? Or is it highly individualized? Give examples.**

We can only look at this question specifically on owned land. I have given the answers below sorted by increase and decrease and sesame and non-sesame growers.

If sesame grower

#### Reasons for increase in owned land (grouped)

Reason specified	Frequency	Percent
Good climatic conditions	8	34.8
Increase in family size	5	21.7
To increase production	5	21.7
"I wanted to have more farm land as an asset"	1	4.3
"Increase in price of sesame and other products gives us some hopes"	1	4.3
"the use of agro inputs (non labour)"	1	4.3
"to get more food so the life can be better"	1	4.3
"To increase profit"	1	4.3
Total	23	100

**Reasons for decrease in owned land**

Reason specified	Frequency	Percent
Bad climatic conditions	7	30.4
Sickness or old age	7	30.4
Because of Ba river	2	8.7
"i could not cultivate all of that so i decided to reduce it"	1	4.3
"lack of agricultural inputs and capital"	1	4.3
"life is hard since no changes"	1	4.3
"no enough money to generate farming"	1	4.3
"others are taking some pieces of land for cultivation"	1	4.3
"some problems into our family"	1	4.3
"splited for inheritance"	1	4.3
Total	23	100

*If non-sesame grower:*

Reason specified	Frequency	Percent
Good climatic conditions	2	28.6
In order to get more crops/increase farm	2	28.6
according to life now days i have to increase land	1	14.3
because of the natural fertile of the land	1	14.3
we want more harvest and profit due to the largeness of our family	1	14.3
Total	7	100

Reason specified	Frequency	Percent
Sickness or old age	7	63.6
Have to take care of sick/disabled relative	2	18.2
Cut across by Ba river	1	9.1
"Part of the land was sold to another person"	1	9.1
Total	11	100

### 13. Crop output (Form C-3)

**13.1 What is the average size of planted area (household level) of the specific (booming) crop and other crops (select what is most relevant). List also min and max size.**

Remember that the means are the means of the people who grow that particular crop.

*If sesame grower*

**Descriptive Statistics**

	N	Minimum	Maximum	Mean
Area planted with cassava (acres)	21	.33	3.00	.9443
Area planted with maize (acres)	80	.50	5.00	1.2063
Area planted with millet (acres)	68	.25	5.00	1.2328
Area planted with pigeonpeas (acres)	48	.25	5.00	1.1667
Area planted with rice (acres)	21	.50	5.00	1.2857
Area planted with sesame (acres)	117	.25	8.00	1.5498
Valid N (listwise)	0			

*If non-sesame grower*

**Descriptive Statistics**

	N	Minimum	Maximum	Mean
Area planted with cassava (acres)	9	.50	2.00	.8889
Area planted with maize (acres)	19	.50	2.00	.9605
Area planted with millet (acres)	26	.33	5.00	1.3108
Area planted with pigeonpeas (acres)	17	.33	5.00	1.1371
Area planted with rice (acres)	14	.25	4.00	1.3271
Area planted with sesame (acres)	0			
Valid N (listwise)	0			

**13.2 How much varies the productivity between households and what is the average productivity for the specific (booming crop) and those selected as most relevant (see above) (combine data for area planted and production per year)?**

It is difficult to answer this question on the dataset, because the production has not been given in the same units.

In order to compare the productivity between households, a common unit of production for each crop is needed. A specific conversion rates for different crops will have to be added. It can be done, if it is really important (NTH).

### 13.3 Describe in your own words the differences (per crop) in the importance of subsistence production and production for the market. Does the data allow for a sensible quantitative statement of the importance?

For each crop we establish the percentage of the crop that is sold in share of total production of said crop. One interesting finding is probably that sesame is primarily a cash

*If sesame growers:*

#### Descriptive Statistics

	N	Minimum	Maximum	Mean
Percentage of cassava production sold	19	.00	100.00	48.9474
Percentage of maize production sold	75	.00	100.00	25.8000
Percentage of Millet production sold	66	.00	100.00	30.7879
Percentage of pea production sold	43	.00	100.00	28.2558
Percentage of rice production sold	20	.00	100.00	21.0000
Percentage of sesame production sold	110	.00	100.00	83.3455
Valid N (listwise)	0			

*If non-sesame growers*

#### Descriptive Statistics

	N	Minimum	Maximum	Mean
Percentage of cassava production sold	9	.00	90.00	61.6667
Percentage of maize production sold	21	.00	100.00	33.8095
Percentage of Millet production sold	25	.00	100.00	27.8000
Percentage of pea production sold	18	.00	80.00	21.9444
Percentage of rice production sold	13	.00	60.00	17.6923
Percentage of sesame production sold	2	.00	100.00	50.0000
Valid N (listwise)	0			

### 13.4 What is the span between max and min price (listed per crop)? Does the span between highest and lowest price differ substantially among the respondents?

The unit is indicated in the data set. The used unit varies from crop to crop, hence the calculation per crop could be made if necessary.

### 13.5 Is the use of hired labour prevalent in the production of the specific (booming) crop and the other selected crops? Do not distinguish between different tasks, simply include any use of labour.

An important note is that the dataset only contains local labor and no immigration labour. There is a clear tendency in all tables for a higher percentage sesame growers to use labour on the given crop, than non-sesame growers do.

#### Is local labour used on cassava crops \* Does household grow sesame?

##### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Is local labour used on cassava crops	No	Count	8	18	26
		% within sesame?	88.9%	85.7%	86.7%
	Yes	Count	1	3	4
		% within sesame?	11.1%	14.3%	13.3%
Total	Count		9	21	30
	% within sesame?		100.0%	100.0%	100.0%

#### Is local labour used on maize crops \* Does household grow sesame?

##### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Is local labour used on maize crops	No	Count	16	65	81
		% within sesame?	84.2%	81.2%	81.8%
	Yes	Count	3	15	18
		% within sesame?	15.8%	18.8%	18.2%
Total	Count		19	80	99
	% within sesame?		100.0%	100.0%	100.0%

#### Is local labour used on millet crops \* Does household grow sesame?

##### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Is local labour used on millet crops	No	Count	25	56	81
		% within sesame?	96.2%	82.4%	86.2%
	Yes	Count	1	12	13
		% within sesame?	3.8%	17.6%	13.8%
Total	Count		26	68	94
	% within sesame?		100.0%	100.0%	100.0%

**Is local labour used on pigeon pea crops \* Does household grow sesame?**  
**Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Is local labour used on pigeon pea crops	No	Count	17	42	59
		% within sesame?	100.0%	87.5%	90.8%
	Yes	Count	0	6	6
		% within sesame?	0.0%	12.5%	9.2%
Total	Count		17	48	65
	% within sesame?		100.0%	100.0%	100.0%

**Is local labour used on rice crops \* Does household grow sesame?**  
**Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Is local labour used on rice crops	No	Count	12	16	28
		% within sesame?	85.7%	76.2%	80.0%
	Yes	Count	2	5	7
		% within sesame?	14.3%	23.8%	20.0%
Total	Count		14	21	35
	% within sesame?		100.0%	100.0%	100.0%

**Is local labour used on sesame crops \* Does household grow sesame?**  
**Crosstabulation**

			Does household grow sesame?	Total
			Yes	
Is local labour used on sesame crops	No	Count	86	86
		% within sesame?	73.5%	73.5%
	Yes	Count	31	31
		% within sesame?	26.5%	26.5%
Total	Count		117	117
	% within sesame?		100.0%	100.0%

**13.6 For the specific (booming) crop: is there an identifiable pattern in the 'location' of the crop purchase?**

**Is the sesame sold at farm?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	20	17.1	17.1	17.1
	Yes	97	82.9	82.9	100.0
	Total	117	100.0	100.0	

**Is the sesame sold at Market?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	117	100.0	100.0	100.0

**Is the sesame sold at company gate?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	115	98.3	98.3	98.3
	Yes	2	1.7	1.7	100.0
	Total	117	100.0	100.0	

**Is the sesame sold at farmers organisation/cooperative?**

		Frequency	Percent	Valid Percent	Cumulative Percent
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	No	115	98.3	98.3	98.3
Valid	Yes	2	1.7	1.7	100.0
	Total	117	100.0	100.0	

### 13.7 For the specific (booming) crop: is there an identifiable pattern in the buyer type?

Here the farmers have the possibility of specifying a buyer over several variables dependent on location, thus you could for each household have several different buyers. My best guess however, looking at the number of answers, is that most people only have one type of buyer.

#### Is the sesame bought by other farmers/villagers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	117	100.0	100.0	100.0

#### Is the sesame bought by other farmers organisations?

		Frequency	Percent	Valid Percent	Cumulative Percent
	No	116	99.1	99.1	99.1
Valid	Yes	1	.9	.9	100.0
	Total	117	100.0	100.0	

#### Is the sesame bought by cooperatives?

		Frequency	Percent	Valid Percent	Cumulative Percent
	No	115	98.3	98.3	98.3
Valid	Yes	2	1.7	1.7	100.0
	Total	117	100.0	100.0	

#### Is the sesame bought by local traders?

		Frequency	Percent	Valid Percent	Cumulative Percent
	No	20	17.1	17.1	17.1
Valid	Yes	97	82.9	82.9	100.0
	Total	117	100.0	100.0	

#### Is the sesame bought by company (agent)?

		Frequency	Percent	Valid Percent	Cumulative Percent

	No	116	99.1	99.1	99.1
Valid	Yes	1	.9	.9	100.0
	Total	117	100.0	100.0	

**Is the sesame bought by 'others'**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	117	100.0	100.0	100.0

Sesame is the major cash crop of this area. There is a clear pattern in that, almost all households within the ward of Kinjumbi sell sesame to an agent of a private buyer at the farm gate.

## 14. Changes in crops (Form C-4)

**14.1 What is the proportion of households that have experienced overall increase in the land allocated for each of the main crops?**

**14.2 What is the proportion of households that have experienced overall decrease in the land allocated for each of the main crops?**

I answer these two questions together. The changing N for the crosstabs simply reflect number of valid answers to the questions. Again, there are some issues with inconsistent answers.

### Changes in land allocated for Cassava \* Does household grow sesame?

#### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Changes in land allocated for Cassava	Decreased	Count	1	1	2
		% within sesame?	14.3%	7.7%	10.0%
	Same	Count	6	9	15
		% within sesame?	85.7%	69.2%	75.0%
	Increased	Count	0	3	3
		% within sesame?	0.0%	23.1%	15.0%
Total	Count	7	13	20	
	% within sesame?	100.0%	100.0%	100.0%	

### Changes in land allocated for maize \* Does household grow sesame?

#### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Changes in land allocated for maize	Decreased	Count	5	7	12
		% within sesame?	33.3%	13.2%	17.6%
	Same	Count	6	33	39
		% within sesame?	40.0%	62.3%	57.4%
	Increased	Count	4	13	17
		% within sesame?	26.7%	24.5%	25.0%
Total	Count	15	53	68	
	% within sesame?	100.0%	100.0%	100.0%	

**Changes in land allocated for millet \* Does household grow sesame?****Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Changes in land allocated for millet	Decreased	Count	6	5	11
		% within sesame?	30.0%	10.4%	16.2%
	Same	Count	9	27	36
		% within sesame?	45.0%	56.2%	52.9%
	Increased	Count	5	16	21
		% within sesame?	25.0%	33.3%	30.9%
Total	Count		20	48	68
	% within sesame?		100.0%	100.0%	100.0%

**Changes in land allocated for pigeon pea \* Does household grow sesame?****Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Changes in land allocated for pigeon pea	Decreased	Count	4	3	7
		% within sesame?	28.6%	10.3%	16.3%
	Same	Count	6	20	26
		% within sesame?	42.9%	69.0%	60.5%
	Increased	Count	4	6	10
		% within sesame?	28.6%	20.7%	23.3%
Total	Count		14	29	43
	% within sesame?		100.0%	100.0%	100.0%

**Changes in land allocated for rice \* Does household grow sesame?****Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Changes in land allocated for rice	Decreased	Count	5	1	6
		% within sesame?	45.5%	6.2%	22.2%
	Same	Count	4	11	15
		% within sesame?	36.4%	68.8%	55.6%
	Increased	Count	2	4	6
		% within sesame?	18.2%	25.0%	22.2%
Total	Count		11	16	27
	% within sesame?		100.0%	100.0%	100.0%

**Changes in land allocated for sesame \* Does household grow sesame?****Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Changes in land allocated for sesame	Decreased	Count	0	11	11
		% within sesame?	0.0%	14.3%	14.1%
	Same	Count	1	33	34
		% within sesame?	100.0%	42.9%	43.6%
	Increased	Count	0	33	33
		% within sesame?	0.0%	42.9%	42.3%
Total	Count		1	77	78
	% within sesame?		100.0%	100.0%	100.0%

**14.3 For each crop, what is the share of households who now have higher (or lower) expenditures on labour? Same question for non-labour inputs.**

**14.3.1 For labour inputs**

So few people actually use labour inputs that this question almost doesn't make sense.

**Changes in labour input for Cassava \* Does household grow sesame?****Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Changes in labour input for Cassava	Decreased	Count	1	0	1
		% within sesame?	100.0%	0.0%	25.0%
	Same	Count	0	2	2
		% within sesame?	0.0%	66.7%	50.0%
	Increased	Count	0	1	1
		% within sesame?	0.0%	33.3%	25.0%
Total	Count		1	3	4
	% within sesame?		100.0%	100.0%	100.0%

### Changes in labour input for maize \* Does household grow sesame?

#### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Changes in labour input for maize	Decreased	Count	1	3	4
		% within sesame?	33.3%	18.8%	21.1%
	Same	Count	2	10	12
		% within sesame?	66.7%	62.5%	63.2%
	Increased	Count	0	3	3
		% within sesame?	0.0%	18.8%	15.8%
Total	Count		3	16	19
	% within sesame?		100.0%	100.0%	100.0%

### Changes in labour input for millet \* Does household grow sesame?

			Does household grow sesame?		Total
			No	Yes	
Changes in labour input for millet	Decreased	Count	3	3	6
		% within sesame?	100.0%	20.0%	33.3%
	Same	Count	0	8	8
		% within sesame?	0.0%	53.3%	44.4%
	Increased	Count	0	4	4
		% within sesame?	0.0%	26.7%	22.2%
Total	Count		3	15	18

% within sesame?	100.0%	100.0%	100.0%
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### Changes in labour input for pigeon pea \* Does household grow sesame?

			Does household grow sesame?		Total
			No	Yes	
Changes in labour input for pigeon pea	Decreased	Count	1	0	1
		% within sesame?	50.0%	0.0%	16.7%
	Same	Count	1	2	3
		% within sesame?	50.0%	50.0%	50.0%
	Increased	Count	0	2	2
		% within sesame?	0.0%	50.0%	33.3%
	Total	Count	2	4	6
		% within sesame?	100.0%	100.0%	100.0%

### Changes in labour input for rice \* Does household grow sesame? Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Changes in labour input for rice	Decreased	Count	0	1	1
		% within sesame?	0.0%	20.0%	14.3%
	Same	Count	2	3	5
		% within sesame?	100.0%	60.0%	71.4%
	Increased	Count	0	1	1
		% within sesame?	0.0%	20.0%	14.3%
Total		Count	2	5	7
		% within sesame?	100.0%	100.0%	100.0%

**Changes in labour input for sesame \* Does household grow sesame?****Crosstabulation**

			Does household grow sesame?	Total
			Yes	
Changes in labour input for sesame	Decreased	Count	4	4
		% within sesame?	16.0%	16.0%
	Same	Count	10	10
		% within sesame?	40.0%	40.0%
	Increased	Count	11	11
		% within sesame?	44.0%	44.0%
Total		Count	25	25
		% within sesame?	100.0%	100.0%

**14.3.2 For non-labour inputs****Changes in non-labour input for Cassava \* Does household grow sesame?****Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Changes in non-labour input for Cassava	Decreased	Count	1	4	5
		% within sesame?	100.0%	80.0%	83.3%
	Increased	Count	0	1	1
		% within sesame?	0.0%	20.0%	16.7%
Total		Count	1	5	6
		% within sesame?	100.0%	100.0%	100.0%

**Changes in non-labour input for maize \* Does household grow sesame?**

			Does household grow sesame?		Total
			No	Yes	
Changes in non-	Decreased	Count	3	9	12



labour input for maize	Same	% within sesame?	75.0%	40.9%	46.2%
		Count	1	12	13
	Increased	% within sesame?	25.0%	54.5%	50.0%
		Count	0	1	1
		% within sesame?	0.0%	4.5%	3.8%
		Count	4	22	26
Total		% within sesame?	100.0%	100.0%	100.0%

### Changes in non-labour input for millet \* Does household grow sesame?

			Does household grow sesame?		Total	
			No	Yes		
Changes in non-labour input for millet	Decreased	Count	4	7	11	
		% within sesame?	40.0%	35.0%	36.7%	
	Same	Count	4	8	12	
		% within sesame?	40.0%	40.0%	40.0%	
	Increased	Count	2	5	7	
		% within sesame?	20.0%	25.0%	23.3%	
Total			Count	10	20	30
			% within sesame?	100.0%	100.0%	100.0%

### Changes in non-labour input for pigeon pea \* Does household grow sesame?

			Does household grow sesame?		Total	
			No	Yes		
Changes in non-labour input for pigeon pea	Decreased	Count	1	4	5	
		% within sesame?	25.0%	50.0%	41.7%	
	Same	Count	2	3	5	
		% within sesame?	50.0%	37.5%	41.7%	
	Increased	Count	1	1	2	
		% within sesame?	25.0%	12.5%	16.7%	
Total			Count	4	8	12
			% within sesame?	100.0%	100.0%	100.0%

### Changes in non-labour input for rice \* Does household grow sesame?

#### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Changes in non-labour input for rice	Decreased	Count	3	4	7
		% within sesame?	50.0%	57.1%	53.8%
	Same	Count	1	2	3
		% within sesame?	16.7%	28.6%	23.1%
	Increased	Count	2	1	3
		% within sesame?	33.3%	14.3%	23.1%
Total	Count		6	7	13
	% within sesame?		100.0%	100.0%	100.0%

**Changes in non-labour input for sesame \* Does household grow sesame?  
Crosstabulation**

			Does household grow sesame?	Total
			Yes	
Changes in non-labour input for sesame	Decreased	Count	15	15
		% within sesame?	31.2%	31.2%
	Same	Count	11	11
		% within sesame?	22.9%	22.9%
	Increased	Count	22	22
		% within sesame?	45.8%	45.8%
Total	Count		48	48
	% within sesame?		100.0%	100.0%

**14.4 Has subsistence production (own consumption) increased or decreased (list share of households)? Same question for production for sale.**

**14.4.1 Own consumption**

**Changes in own consumption of Cassava \* Does household grow sesame?  
Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Changes in own consumption of Cassava	Decreased	Count	0	2	2
		% within sesame?	0.0%	18.2%	11.8%
	Same	Count	5	5	10
		% within sesame?	83.3%	45.5%	58.8%
	Increased	Count	1	4	5
		% within sesame?	16.7%	36.4%	29.4%
Total	Count		6	11	17
	% within sesame?		100.0%	100.0%	100.0%

**Changes in own consumption of maize \* Does household grow sesame?**  
**Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Changes in own consumption of maize	Decreased	Count	4	4	8
		% within sesame?	30.8%	7.8%	12.5%
	Same	Count	5	25	30
		% within sesame?	38.5%	49.0%	46.9%
	Increased	Count	4	22	26
		% within sesame?	30.8%	43.1%	40.6%
Total	Count		13	51	64
	% within sesame?		100.0%	100.0%	100.0%

**Changes in own consumption of millet \* Does household grow sesame?**  
**Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Changes in own consumption of millet	Decreased	Count	1	7	8
		% within sesame?	5.6%	15.2%	12.5%
	Same	Count	8	19	27
		% within sesame?	44.4%	41.3%	42.2%
	Increased	Count	9	20	29
		% within sesame?			

Total	% within sesame?	50.0%	43.5%	45.3%
	Count	18	46	64
	% within sesame?	100.0%	100.0%	100.0%

**Changes in own consumption of pigeon pea \* Does household grow sesame?**  
**Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Changes in own consumption of pigeon pea	Decreased	Count	3	3	6
		% within sesame?	27.3%	11.5%	16.2%
	Same	Count	5	14	19
		% within sesame?	45.5%	53.8%	51.4%
	Increased	Count	3	9	12
		% within sesame?	27.3%	34.6%	32.4%
	Total	Count	11	26	37
		% within sesame?	100.0%	100.0%	100.0%

**Changes in own consumption of rice \* Does household grow sesame?**  
**Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Changes in own consumption of rice	Decreased	Count	2	3	5
		% within sesame?	18.2%	23.1%	20.8%
	Same	Count	4	4	8
		% within sesame?	36.4%	30.8%	33.3%
	Increased	Count	5	6	11
		% within sesame?	45.5%	46.2%	45.8%
	Total	Count	11	13	24
		% within sesame?	100.0%	100.0%	100.0%

**Changes in own consumption of sesame \* Does household grow sesame?**  
**Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Changes in own consumption of sesame	Decreased	Count	1	28	29
		% within sesame?	100.0%	45.9%	46.8%
	Same	Count	0	17	17
		% within sesame?	0.0%	27.9%	27.4%
	Increased	Count	0	16	16
		% within sesame?	0.0%	26.2%	25.8%
Total	Count		1	61	62
	% within sesame?		100.0%	100.0%	100.0%

#### 14.4.2 Production for sale

##### Changes in sale of Cassava \* Does household grow sesame? Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Changes in sale of Cassava	Decreased	Count	1	0	1
		% within sesame?	20.0%	0.0%	7.1%
	Same	Count	4	5	9
		% within sesame?	80.0%	55.6%	64.3%
	Increased	Count	0	4	4
		% within sesame?	0.0%	44.4%	28.6%
Total	Count		5	9	14
	% within sesame?		100.0%	100.0%	100.0%

##### Changes in sale of maize \* Does household grow sesame? Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Changes in sale of maize	Decreased	Count	2	8	10
		% within sesame?	25.0%	25.8%	25.6%
	Same	Count	5	20	25
		% within sesame?	62.5%	64.5%	64.1%
	Increased	Count	1	3	4
		% within sesame?			

Total	% within sesame?	12.5%	9.7%	10.3%
	Count	8	31	39
	% within sesame?	100.0%	100.0%	100.0%

#### Changes in sale of millet \* Does household grow sesame? Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Changes in sale of millet	Decreased	Count	4	9	13
		% within sesame?	44.4%	32.1%	35.1%
	Same	Count	4	15	19
		% within sesame?	44.4%	53.6%	51.4%
	Increased	Count	1	4	5
		% within sesame?	11.1%	14.3%	13.5%
	Total	Count	9	28	37
		% within sesame?	100.0%	100.0%	100.0%

#### Changes in sale of pigeon pea \* Does household grow sesame? Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Changes in sale of pigeon pea	Decreased	Count	1	4	5
		% within sesame?	14.3%	21.1%	19.2%
	Same	Count	6	11	17
		% within sesame?	85.7%	57.9%	65.4%
	Increased	Count	0	4	4
		% within sesame?	0.0%	21.1%	15.4%
	Total	Count	7	19	26
		% within sesame?	100.0%	100.0%	100.0%

#### Changes in sale of rice \* Does household grow sesame? Crosstabulation

			Does household grow sesame?		Total
			No	Yes	

Changes in sale of rice	Decreased	Count	1	1	2
		% within sesame?	25.0%	20.0%	22.2%
	Same	Count	3	4	7
		% within sesame?	75.0%	80.0%	77.8%
Total		Count	4	5	9
		% within sesame?	100.0%	100.0%	100.0%

#### Changes in sale of sesame \* Does household grow sesame? Crosstabulation

			Does household grow sesame?	Total
			Yes	
Changes in sale of sesame	Decreased	Count	5	5
		% within sesame?	7.1%	7.1%
	Same	Count	7	7
		% within sesame?	10.0%	10.0%
	Increased	Count	58	58
		% within sesame?	82.9%	82.9%
Total		Count	70	70
		% within sesame?	100.0%	100.0%

#### 14.5 What is the pattern of buyers – has it changed over the period?

#### Changes in pattern of buyer for Cassava \* Does household grow sesame?

##### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Changes in pattern of buyer for Cassava	Same	Count	2	2	4
		% within sesame?	40.0%	20.0%	26.7%
	Change	Count	3	8	11
		% within sesame?	60.0%	80.0%	73.3%
Total		Count	5	10	15
		% within sesame?	100.0%	100.0%	100.0%

#### Changes in pattern of buyer for maize \* Does household grow sesame?

##### Crosstabulation

			Does household grow sesame?	Total

			No	Yes	
Changes in pattern of buyer for maize	Same	Count	1	10	11
		% within sesame?	14.3%	33.3%	29.7%
	Change	Count	6	20	26
		% within sesame?	85.7%	66.7%	70.3%
Total	Count		7	30	37
	% within sesame?		100.0%	100.0%	100.0%

### Changes in pattern of buyer for millet \* Does household grow sesame?

#### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Changes in pattern of buyer for millet	Same	Count	3	9	12
		% within sesame?	50.0%	33.3%	36.4%
	Change	Count	3	18	21
		% within sesame?	50.0%	66.7%	63.6%
Total	Count		6	27	33
	% within sesame?		100.0%	100.0%	100.0%

### Changes in pattern of buyer for pigeon pea \* Does household grow sesame?

#### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Changes in pattern of buyer for pigeon pea	Same	Count	4	7	11
		% within sesame?	80.0%	43.8%	52.4%
	Change	Count	1	9	10
		% within sesame?	20.0%	56.2%	47.6%
Total	Count		5	16	21
	% within sesame?		100.0%	100.0%	100.0%

### Changes in pattern of buyer for rice \* Does household grow sesame?

#### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Changes in pattern	Same	Count	1	2	3



of buyer for rice	% within sesame?	33.3%	40.0%	37.5%
	Count	2	3	5
Change	% within sesame?	66.7%	60.0%	62.5%
	Count	3	5	8
Total	% within sesame?	100.0%	100.0%	100.0%

**Changes in pattern of buyer for sesame \* Does household grow sesame?**  
**Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Changes in pattern of buyer for sesame	Same	Count	0	10	10
		% within sesame?	0.0%	14.7%	14.5%
	Change	Count	1	58	59
		% within sesame?	100.0%	85.3%	85.5%
Total		Count	1	68	69
		% within sesame?	100.0%	100.0%	100.0%

If we get two issues out of the way first; a) for all crops, the number of people who have answered the questions on change are very low, wherefore we have several tables with too low frequencies to even count. b) Even for sesame, we have a number of answers oscillating between 25 and 70, depending on the question. It might be due to most of the households being very young?

When this is said, there are few interesting facts regarding the sesame. 85% say the pattern of buyers have changed from 10 years ago. 82% says sale of sesame has increased since 10 years ago. 46% say their own consumption of sesame has decreased since 10 years ago. For both labour and non-labour inputs, sesame farmers also say they have experienced an increase in amount from ten years ago, though the trend is less obvious and there are few answers.

**14.6 Give a narrative account on the general trends for main changes in crops, inputs and outputs? What are the main reasons for these changes?**

*For sesame growers*

**What are the main changes in crops, inputs and outputs in the past 10 years?**

	Frequency	Percent
We work hard but get little output	11	14,5%
Lack of capital	2	2,6%
Farming costs a lot capital but we get less for it	6	7,9%
Change in climatic condition	10	13,2%
change of climatioc condition and lack of capital are what brings changes	1	1,3%

change of climate and change of sesame market	1	1,3%
changes occur due to using poor tools and change in climatic condition	1	1,3%
changes occur due to using poor tools and change in climatic condition	1	1,3%
food crops are now low in production but we get more in cash crops like mangoes	1	1,3%
government support and change in infrastructure	1	1,3%
lack of market due to poor infrastructure	1	1,3%
poor tools and changes in climatic condition	1	1,3%
price is low, market availability is a problem and sometimes climatic condition affects	1	1,3%
they change due to change in infrastructure and climate condition	1	1,3%
we are now very old so we get few crops	1	1,3%
No changes	36	47,4%
Total	76	100,0%
don't know / no answer	3	
not applicable	38	

*For non-sesame growers*

	Frequency	Percent
Climate change	2	6,5%
Change in buyers force change	1	3,2%
Local to modern seeds	1	3,2%
Less cultivated area	1	3,2%
Costs are higher, less output	1	3,2%
Change of equipment	1	3,2%
Work hard, get little	4	12,9%
Too old need help	1	3,2%
No change	19	61,3%
Total	31	100,0%
Not applicable	17	

**14.7 Is there a general trend concerning the crops that have been abandoned over the period, i.e. have many households skipped a particular crop? If so, what are the main reasons?**

*For Sesame growers:*

**Specify any crops that have been abandoned in the last 10 years**

	Frequency	Percent
Banana	5	6,4%
Cassava	10	12,8%
Rice	2	2,6%
coconut and cashew because they are less profitable	1	1,3%

coffee	1	1,3%
groundnuts, due to the size of land	1	1,3%
maize, millet and cassava because of wild animals	1	1,3%
maize, rice due to changes in climatic condition	1	1,3%
mangoes were abandoned	1	1,3%
millet is abandoned due to weather problems	1	1,3%
oranges	1	1,3%
pigeon pea and banana were abandoned since we can not afford to run all the farms	1	1,3%
sesame and rice, because I got nothing from growing it	1	1,3%
we abandoned coconut for millet due to climate condition	1	1,3%
None	50	64,1%
Total	78	100,0%
don't know / no answer	1	
not applicable	38	

#### *Non-sesame growers*

#### **Specify any crops that have been abandoned in the last 10 years**

	Frequency	Percent
banana and coconut	1	3,2%
banana was abandoned because of pests	1	3,2%
cashewnut was abandoned due to pests	1	3,2%
cashewnuts was abandoned	1	3,2%
cassava	4	12,9%
maize and Uswele	1	3,2%
mbaazi	1	3,2%
millet, pigeon pea, maize and rice	1	3,2%
none	18	58,1%
rice was abandoned due to lack of capital and control	1	3,2%
sesame	1	3,2%
Total	31	100,0%
not applicable	17	

#### **14.8 Is it possible to identify a pattern in the composition of livestock on the household level over the period? If so, what are the main reasons?**

##### *For Sesame growers*

	Frequency	Percent
Chickens are easier than other livestock	6	7,9%
Now, we have less livestock	3	3,9%
I had (more) chickens	14	18,4%

I have more chickens now	9	11,8%
Now I have livestock	2	2,6%
I had chickens - died of diseases	3	3,9%
I had chickens - killed by wild animals	2	2,6%
I have more goats now	2	2,6%
I dont have any livestock	34	44,7%
availability of food for animals	1	1,3%
Total	76	100,0%
Not applicable	41	

*For non-sesame growers*

	Frequency	Percent
Chickens have died because of disease	1	3,4%
Less chicken	3	10,3%
More Livestock	1	3,4%
I do not keep livestock	5	17,2%
availability of food for livestock	1	3,4%
now days i dont keep livestock due to diseases	1	3,4%
now i keep chickens only because I am too old to keep too many livestock	1	3,4%
number of chickens have gone down due to diseases and wild animal	1	3,4%
we increased number of chickens because the market price is high now		
days	1	3,4%
No change	14	48,3%
Total	29	100,0%
Not applicable	18	

## 15. Production assets (Form C-5)

### 15.1 What is the share of households that own the four different types of agricultural equipment mentioned?

In the data no households own any of the equipment mentioned.

### 15.2 Give examples of other production assets owned by the households. Is it only few households who own these assets?

The dataset specifies two other types of production assets; hand hoes and pangas.

#### Production asset, number of hand hoes owned \* Does household grow sesame?

##### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Production asset, number of hand hoes owned	0	Count	3	3	6
		% within sesame?	6.2%	2.6%	3.6%
	1	Count	7	10	17
		% within sesame?	14.6%	8.5%	10.3%
	2	Count	19	46	65
		% within sesame?	39.6%	39.3%	39.4%
	3	Count	16	29	45
		% within sesame?	33.3%	24.8%	27.3%
	4	Count	2	17	19
		% within sesame?	4.2%	14.5%	11.5%
	5	Count	0	8	8
		% within sesame?	0.0%	6.8%	4.8%
	6	Count	1	1	2
		% within sesame?	2.1%	0.9%	1.2%
	7	Count	0	1	1
		% within sesame?	0.0%	0.9%	0.6%
	don't know / no answer	Count	0	2	2
		% within sesame?	0.0%	1.7%	1.2%
Total		Count	48	117	165
		% within sesame?	100.0%	100.0%	100.0%

**Production asset, number of pangas owned \* Does household grow sesame?****Crosstabulation**

			Does household grow sesame?		Total
			No	Yes	
Production asset, number of pangas owned	0	Count	7	3	10
		% within sesame?	14.6%	2.6%	6.1%
	1	Count	21	50	71
		% within sesame?	43.8%	42.7%	43.0%
	2	Count	18	48	66
		% within sesame?	37.5%	41.0%	40.0%
	3	Count	2	11	13
		% within sesame?	4.2%	9.4%	7.9%
	4	Count	0	2	2
		% within sesame?	0.0%	1.7%	1.2%
	don't know / no answer	Count	0	3	3
		% within sesame?	0.0%	2.6%	1.8%
	Total	Count	48	117	165
		% within sesame?	100.0%	100.0%	100.0%

**15.3 What is the share of households who have some kind of access to the agricultural equipment mentioned? Any general picture identifiable in the way access is provided? Please gather responses in categories (e.g. nearby village, from neighbors, etc.)?**

*If sesame grower*

**Access to ox-plough if not owned by household**

Reason specified	Frequency	Percent
We do not use/need	34	29.0
<b>From other villages</b>	<b>7</b>	<b>6.0</b>
From friends	1	0.9
From Somanga	1	0.9
Don't know	73	62.4
Total	117	100

**Access to tractor if not owned by household**

Reason specified	Frequency	Percent
We do not use/need	34	29.0
From other villages	7	6.0
From friends	1	0.9
From Somanga	1	0.9
Don't know	73	62.4
Total	117	100

#### Access to cart if not owned by household

Reason specified	Frequency	Percent
We do not use/need	34	29.0
From other villages	7	6.0
From friends	1	0.9
From Somanga	1	0.9
Don't know	73	62.4
Total	117	100

#### Access to milling machine if not owned by household

	Frequency	Percent
Miumbu village	1	0,9
From Somanga	8	6,8
From private person/neighbor/friend	18	15,4
From other village	35	29,9
Not available	19	16,2
We do not use/need	15	12,8
Do not know	21	17,9
Total	117	100.0

*If non-sesame grower*

#### Access to ox-plough if not owned by household

Reason specified	Frequency	Percent
From other villages	3	6.2
From Somanga	1	2.0
We do not use/need	7	14.6
Not available	11	22.9
Don't know	26	54.2
Total	48	100.0

#### Access to tractor if not owned by household

Reason specified	Frequency	Percent
------------------	-----------	---------

From other villages	3	6.2
From Somanga	1	2.0
We do not use/need	7	14.6
Not available	11	22.9
Don't know	26	54.2
Total	48	100.0

#### Access to cart if not owned by household

Reason specified	Frequency	Percent
From other villages	3	6.2
From Somanga	1	2.0
We do not use/need	7	14.6
Not available	11	22.9
Don't know	26	54.2
Total	48	100.0

#### Access to milling machine if not owned by household

	Frequency	Percentage
From Somanga	5	10,4
From neighbor/private person	7	14,6
From other village	9	18,8
Not available	11	22,9
Do not use/need	8	16,7
Do not know	8	16,7
Total	48	100,0

#### 15.4 What is the share of households who do not own or have access to the different types of agricultural equipment mentioned?

I construct the following table based on the information in the previous questions. Answers in the categories, "Do not use/need", "Do not know", "Not available" are all grouped as not having access.

#### Percentage of households within each group that do not have access to the agricultural equipment mentioned:

		Does household grow sesame?	
		No	Yes
Percentage of households within group not having any access to:	Ox-plough	91.7%	92.3%
	Tractor	91.7%	92.3%
	Cart	91.7%	92.3%
	Milling machine	60.4%	47.0%



## 16. Common pool resources (Form C-6)

### 16.1 What is the share of households who have access to some kind of common pool of resources?

A higher percentage of sesame growers than non-sesame growers have access to some kind of common pool resource.

#### Common pool resources, access of the HH \* Does household grow sesame? Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Common pool resources, access of the HH	yes	Count	21	68	89
		% within Does household grow sesame?	46.7%	59.6%	56.0%
	no	Count	24	46	70
		% within Does household grow sesame?	53.3%	40.4%	44.0%
Total	Count		45	114	159
	% within Does household grow sesame?		100.0%	100.0%	100.0%

### 16.2 What kind of common pool resources do the households have access to? List numbers of 'yes' for each type of resource.

Notice that the number of valid N drops from 159 (who have answered access or not) to 90-94 (slightly more than those 89 who have said they have any access). Thus the percentages in the following tables are only "within those that have access to some common pool resource".

#### Common pool resources as agricultural land \* Does household grow sesame? Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Common pool resources as agricultural land	yes	Count	2	0	2
		% within Does household grow sesame?	8.7%	0.0%	2.1%
	no	Count	21	71	92
		% within Does household grow sesame?	91.3%	100.0%	97.9%
Total	Count		23	71	94
	% within Does household grow sesame?		100.0%	100.0%	100.0%

### Common pool resources for livestock \* Does household grow sesame?

#### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Common pool resources for livestock	no	Count	22	69	91
		% within Does household grow sesame?	100.0%	100.0%	100.0%
Total	Count		22	69	91
	% within Does household grow sesame?		100.0%	100.0%	100.0%

### Common pool resources to collecting firewood \* Does household grow sesame?

#### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	

Common pool resources to collecting firewood	yes	Count	20	68	88
		% within Does household grow sesame?	95.2%	98.6%	97.8%
	no	Count	1	1	2
		% within Does household grow sesame?	4.8%	1.4%	2.2%
Total		Count	21	69	90
		% within Does household grow sesame?	100.0%	100.0%	100.0%

### Common pool resources making charcoal \* Does household grow sesame?

#### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Common pool resources making charcoal	yes	Count	2	1	3
		% within Does household grow sesame?	9.1%	1.4%	3.3%
	no	Count	20	68	88
		% within Does household grow sesame?	90.9%	98.6%	96.7%
Total		Count	22	69	91
		% within Does household grow sesame?	100.0%	100.0%	100.0%

### Common pool resources collecting food/natural resources \* Does household grow sesame? Crosstabulation

	Does household grow sesame?	Total
--	-----------------------------	-------

			No	Yes	
Common pool resources collecting food/natural resources	yes	Count	0	2	2
		% within Does household grow sesame?	0.0%	2.9%	2.2%
	no	Count	22	67	89
		% within Does household grow sesame?	100.0%	97.1%	97.8%
Total		Count	22	69	91
		% within Does household grow sesame?	100.0%	100.0%	100.0%

### Common pool resources other uses \* Does household grow sesame?

#### Crosstabulation

			Does household grow sesame?		Total
			No	Yes	
Common pool resources other uses	no	Count	21	69	90
		% within Does household grow sesame?	100.0%	100.0%	100.0%
Total		Count	21	69	90
		% within Does household grow sesame?	100.0%	100.0%	100.0%

### 16.3 How do the households consider the importance of having access to common pool resources (list share of each category)?

A higher percentage of sesame growers than non-sesame growers consider common pool resources very important.

### Common pool resources, importance for HH \* Does household grow sesame?

#### Crosstabulation

			Does household grow sesame?	Total
--	--	--	-----------------------------	-------

			No	Yes	
Common pool resources, importance for HH	very important	Count	12	45	57
		% within Does household grow sesame?	50.0%	66.2%	62.0%
	important	Count	11	23	34
		% within Does household grow sesame?	45.8%	33.8%	37.0%
	not insignificant	Count	1	0	1
		% within Does household grow sesame?	4.2%	0.0%	1.1%
Total	Count		24	68	92
	% within Does household grow sesame?		100.0%	100.0%	100.0%

## 17. USE OF CREDIT AND LOANS

### 17.1 % of households making use of credits or loans

6 Households have 1 loan, and 1 household have 2 loans.

Thus 3,4% of households make use of 1 or more loans, while 0,5% have two loans.

### 17.2 Main types of sources of credit and loans by the household (eg: family, cooperative, microfinance institution, commercial bank)?

I think these might be names of banks?

#### Specify lender of loan1 past 5 years

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid ?YOHSEF	1	.5	14.3	14.3
BORESHA	1	.5	14.3	28.6
nmb bank	3	1.5	42.9	71.4
VICOBA	2	1.0	28.6	100.0
Total	7	3.5	100.0	
Missing not applicable	194	96.5		
Total	201	100.0		

#### Specify lender of loan2 past 5 years

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid POST BANK	1	.5	100.0	100.0
Missing not applicable	200	99.5		
Total	201	100.0		

### 17.3 Main uses (purposes) of credits and loans by the household (%)

#### Specify purpose of loan1 purpose past 5 years

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid ?for capital of my business	1	.5	14.3	14.3
building a house	2	1.0	28.6	42.9
farming	1	.5	14.3	57.1
for business (selling food)	1	.5	14.3	71.4
for sesame cultivation	1	.5	14.3	85.7
to build house	1	.5	14.3	100.0
Total	7	3.5	100.0	
Missing not applicable	194	96.5		
Total	201	100.0		

**Specify purpose of loan2 purpose past 5 years**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Treatment	1	.5	100.0	100.0
Missing not applicable	200	99.5		
Total	201	100.0		

**17.4 % Households making use of "mobile money" facilities****HH member makes use of mobile phone for banking/savings**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	52	25.9	26.5	26.5
Valid no	144	71.6	73.5	100.0
Total	196	97.5	100.0	
Missing don't know / no answer	1	.5		
Missing not applicable	3	1.5		
Missing System	1	.5		
Total	5	2.5		
Total	201	100.0		

**17.5 Purposes for use of "mobile money" facilities (%)**

The majority quote "mobile money" as the 'purpose' of having mobile money facilities. I'm not sure what this means. It seems the types of explanations, "banking", "mobile money", "sending and receiving money" probably all mean the same thing.

**Specify HH members use of mobile phone for banking/savings**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Communication	1	.5	1.9	1.9
Valid Mobile banking	13	6.5	25.0	26.9
Valid Mobile money	38	18.9	73.1	100.0
Total	52	26.4	100.0	
Missing don't know / no answer	2	1.0		
Missing not applicable	147	73.1		
Total	148	73.6		
Total	201	100.0		

## 18. COMPOSITION OF HOUSEHOLD INCOME (FORM D-2)

It should probably be remembered that NINA spoke of problems in the household income data in her reflections on the survey.

### 18.1 Total amount of income per year

I use the variable inc\_tot (total income). You have 9 households with 0 income. Furthermore you have 11 who “don't know”, and 17 “non applicable” (which does not make sense?). I won't show the frequency table, as it has continuous values.

#### Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean
Total income per year	173	.00	11140000.00	171400250.00	990752.8902
Valid N (listwise)	173				

### 18.2 Relative distribution of all income-generating categories for the entire sample of households (frequency distribution in %)

I am not quite sure what is meant by the relative distribution of the income generating categories. Does it make sense to make such a distribution when you have overlapping categories?

### 18.3-18.8 % of households in which “X” is main source of income

The variable is created on the basis of all the types of income. However, only 160 households have answered all questions on types income. Since this might be because we have some households without any income, I use those who have given an answer to “total income” as the basis number of valid respondents.

#### HH's main type of income

	Frequency	Percent	Valid Percent	Cumulative Percent
No income	22	10.9	12.3	12.3
Agricultural production	99	49.3	55.3	67.6
Livestock	12	6.0	6.7	74.3
Self-employed work	38	18.9	21.2	95.5
Salaried work	4	2.0	2.2	97.8
Casual wage work	1	.5	.6	98.3
Remittances	3	1.5	1.7	100.0
Total	179	89.1	100.0	
MissingSystem	22	10.9		
Total	201	100.0		

### 18.9 % of households that receive remittances

If we use the income from remittances variable, 41 households receive remittances; 20%.

#### Income remittances total amount per year



	Frequency	Percent	Valid Percent	Cumulative Percent
.00	156	77.6	83.0	83.0
10000.00	3	1.5	1.6	84.6
20000.00	8	4.0	4.3	88.8
30000.00	1	.5	.5	89.4
50000.00	8	4.0	4.3	93.6
80000.00	1	.5	.5	94.1
100000.00	1	.5	.5	94.7
120000.00	1	.5	.5	95.2
150000.00	1	.5	.5	95.7
200000.00	4	2.0	2.1	97.9
300000.00	2	1.0	1.1	98.9
500000.00	1	.5	.5	99.5
2000000.00	1	.5	.5	100.0
Total	188	93.5	100.0	
Missing don't know / no answer	5	2.5		
Missing not applicable	8	4.0		
Missing Total	13	6.5		
Total	201	100.0		

## 19. REMITTANCES

### 19.1 National remittances as % of total remittances

Below are the national remittances. As established in section 18., we have 41 households receiving remittances. The numbers do not add up precisely, since we have 2 at 0, and 3 don't know. If we include the don't knows, but exclude the 0's we have 100% of remittances being national. If we exclude both, we have 92% (38/41) of remittances being national.

#### National remittances<sup>1</sup> in amount/type received last year

	Frequency	Percent	Valid Percent	Cumulative Percent
0	2	1.0	5.0	5.0
10000	2	1.0	5.0	10.0
100000	1	.5	2.5	12.5
120000	1	.5	2.5	15.0
150000	1	.5	2.5	17.5
20000	7	3.5	17.5	35.0
200000	2	1.0	5.0	40.0
2000000	1	.5	2.5	42.5
30000	2	1.0	5.0	47.5
300000	3	1.5	7.5	55.0
40000	1	.5	2.5	57.5
50000	7	3.5	17.5	75.0
500000	1	.5	2.5	77.5
80000	1	.5	2.5	80.0
food (flour)	1	.5	2.5	82.5
goods (flour)	4	2.0	10.0	92.5
goods (flours)	1	.5	2.5	95.0
maize	1	.5	2.5	97.5
maize 10 kg	1	.5	2.5	100.0
Total	40	19.9	100.0	
Don't know / no answer	3	1.5		
Missing Not applicable	158	78.6		
Total	161	80.1		
Total	201	100.0		

### 19.2 International remittances as % of total remittances

There is only one international remittance; giving 2%.

#### International remittances1 in amount/type received last year

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 200000	1	.5	100.0	100.0
Missing not applicable	200	99.5		
Total	201	100.0		

### 19.3 How regularly do households receive national remittances (on average)

It impossible to give an average for this question since the variable is nominal. However, "sometimes" seems to be the predominant answer.

#### National remittances1 frequency last year (categories)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Sometimes	32	15.9	76.2	76.2
Valid Once a year	5	2.5	11.9	88.1
Valid Regularly	5	2.5	11.9	100.0
Valid Total	42	20.9	100.0	
Missing not applicable	159	79.1		
Total	201	100.0		

### 19.4 How regularly do households receive international remittances (on average)

#### International remittances1 frequency last year (categories)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Sometimes	1	.5	100.0	100.0
Missing Not applicable	200	99.5		
Total	201	100.0		

### 19.5 Distinction between remittances in cash an remittances in kind. Which type is the most common? Both?

Of all those that have specified their remittances (39), 8 were in kind and 31 in cash. The remittances in kind were either flour or maize.

### 19.6 Main channels for receiving national remittances (informal, formal, mobile)

Most significant result: none were through formal channels.

**National remittances1 channel last year (categories)**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Informal (by hand)	25	12.4	59.5	59.5
Valid Mobile money	17	8.5	40.5	100.0
Total	42	20.9	100.0	
Missing Not applicable	159	79.1		
Total	201	100.0		

**19.7 Main channels for receiving international remittances (informal, formal mobile)****International remittances1 channel last year (categories)**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Mobile money	1	.5	100.0	100.0
Missing Not applicable	200	99.5		
Total	201	100.0		

**19.8 For what purpose do households mainly use remittances**

It seems the main purpose is food and consumables. I am unsure if “home use” and “housing” means the same. However, housing, med. treatment and agriculture/business are also listed.

	Frequency	Percent	Valid percent
Valid For food only	15	7.5	39.5
For food and clothes	3	1.5	7.9
For food and agriculture	2	1.0	5.3
For food and home expenditures	2	1.0	5.3
For food and treatment	4	2.0	10.6
Valid For agriculture	1	.5	2.6
For home expenditures	1	.5	2.6
For home expenditures and treatment	2	1.0	5.3
For school fees and basic needs	1	.5	2.6
For business and treatment	1	.5	2.6
To expand business (shop and bodaboda)	1	.5	2.6
Total	38	18.9	100.0
Don't know / no answer	4	2.0	
Missingnot applicable	159	79.1	
Total	163	81.1	
Total	201	100.0	

## 20. REVERSE FLOWS OF MONEY AND GOODS (FORM D-4)

### 20.1 % of households that send money and/or goods

Only one household sends more than one remittance in cash. While one household sends a second remittance in good as well.

#### Does household send remittances in cash or goods?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	48	23.9	100.0	100.0
Missing System	153	76.1		
Total	201	100.0		

### 20.2 Average amount of money send per household

#### Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean
Total cash sent by HH as remittance	35	3000.00	4000000.00	7683000.00	219514.2857
Valid N (listwise)	35				

### 20.3 Type of goods sent by household

The goods are primarily food.

#### Remittances sent1 goods in type and amount past 5 years

	Frequency	Percent	Valid Percent	Cumulative Percent
0	1	.5	4.8	4.8
1	1	.5	4.8	9.5
fish	4	2.0	19.0	28.6
flour	1	.5	4.8	33.3
flour and sugar	1	.5	4.8	38.1
flour,rice and sugar	1	.5	4.8	42.9
Valid food	8	4.0	38.1	81.0
goods	1	.5	4.8	85.7
maize and millet	1	.5	4.8	90.5
rice and flour	1	.5	4.8	95.2
sugar , rice	1	.5	4.8	100.0
Total	21	10.4	100.0	
don't know / no answer	3	1.5		
Missingnot applicable	177	88.1		
Total	180	89.6		
Total	201	100.0		

One household also sends fish

**Remittances sent2 goods in type and amount past 5 years**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid fishes	1	.5	100.0	100.0
don't know / no answer	1	.5		
Missing not applicable	199	99.0		
Total	200	99.5		
Total	201	100.0		

**20.4 How regularly do households send money and or goods (on average)?**

For this question I only focus on remittances 1 in cash and goods.

If sending cash:

**Remittances sent frequency cash and goods past 5 years**

	Frequency	Percent	Valid Percent	Cumulative Percent
sometimes	29	85.3	90.6	90.6
once a year	1	2.9	3.1	93.8
Valid regularly	2	5.9	6.3	100.0
Total	32	94.1	100.0	
Missing don't know / no answer	2	5.9		
Total	34	100.0		

If sending goods;

**Remittances sent frequency cash and goods past 5 years**

	Frequency	Percent	Valid Percent	Cumulative Percent
sometimes	14	70.0	73.7	73.7
once a year	3	15.0	15.8	89.5
Valid regularly	2	10.0	10.5	100.0
Total	19	95.0	100.0	
Missing don't know / no answer	1	5.0		
Total	20	100.0		

## 20.5 Main channels for sending money (informal, formal, mobile)

### Remittances sent<sup>1</sup> used channel past 5 years

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	informal (by hand)	11	32.4	33.3	33.3
	mobile money	22	64.7	66.7	100.0
	Total	33	97.1	100.0	
Missing	not applicable	1	2.9		
Total		34	100.0		

## 21. HOUSING

(The template would like you to compare data on housing to the average national housing standards)

### 21.1 Average size of houses (floor space)

This question cannot be answered, since 99,5 % of respondents dont know the size of their houses.

### 21.2 Housing tenure status type (%)

#### Housing assets, tenure status

	Frequency	Percent	Valid Percent	Cumulative Percent
Owned (with registered title)	8	4.0	4.0	4.0
Owned (without registered title)	157	78.1	78.5	82.5
Valid Rented	22	10.9	11.0	93.5
Rent-free use	13	6.5	6.5	100.0
Total	200	99.5	100.0	
Missing not applicable	1	.5		
Total	201	100.0		

### 21.3 Construction materials used for floors (%)

#### Housing assets, construction materials of floor

	Frequency	Percent	Valid Percent	Cumulative Percent
cement	31	15.4	15.5	15.5
Valid mud	167	83.1	83.5	99.0
bare earth	2	1.0	1.0	100.0
Total	200	99.5	100.0	
Missing don't know / no answer	1	.5		
Total	201	100.0		

### 21.4 Construction materials used for external walls (%)

#### Housing assets, construction materials of external walls

	Frequency	Percent	Valid Percent	Cumulative Percent
concrete blocks	2	1.0	1.0	1.0
burnt bricks	1	.5	.5	1.5
Valid pole/bamboo	9	4.5	4.5	6.0
mud	180	89.6	89.6	95.5
other	9	4.5	4.5	100.0
Total	201	100.0	100.0	



## 21.5 Construction materials used for roofs (%)

### Housing assets, construction materials of roof

	Frequency	Percent	Valid Percent	Cumulative Percent
corrugated iron sheets	39	19.4	19.4	19.4
tins or metals other than corrugated iron sheets	7	3.5	3.5	22.9
Valid asbestos	1	.5	.5	23.4
thatch	154	76.6	76.6	100.0
Total	201	100.0	100.0	

## 21.6 Number of rooms (%)

### Housing assets, number of rooms (without kitchen)

	Frequency	Percent	Valid Percent	Cumulative Percent
0	1	.5	.5	.5
1	31	15.4	15.4	15.9
2	91	45.3	45.3	61.2
3	57	28.4	28.4	89.6
Valid 4	12	6.0	6.0	95.5
5	3	1.5	1.5	97.0
6	1	.5	.5	97.5
7	5	2.5	2.5	100.0
Total	201	100.0	100.0	

## 21.7 Kitchen types (%)

### Housing assets, location of kitchen

	Frequency	Percent	Valid Percent	Cumulative Percent
separate kitchen in house	79	39.3	39.3	39.3
kitchen is part of other room	27	13.4	13.4	52.7
Valid outside the house	94	46.8	46.8	99.5
other	1	.5	.5	100.0
Total	201	100.0	100.0	

## 22. PUBLIC SERVICES

### 22.1 Electricity (%)

#### HH access to electricity

	Frequency	Percent	Valid Percent	Cumulative Percent
No electricity	178	88.6	88.6	88.6
Generator	2	1.0	1.0	89.6
Solar	4	2.0	2.0	91.5
Electricity (grid connection)	16	8.0	8.0	99.5
Other	1	.5	.5	100.0
Total	201	100.0	100.0	

### 22.2 Drinking water connection (%)

#### HH access to drinking water connection

	Frequency	Percent	Valid Percent	Cumulative Percent
Tap inside/outside home	1	.5	.5	.5
Collect from public tap or standpipe or pump	83	41.3	44.1	44.7
Rainwater	13	6.5	6.9	51.6
Other	91	45.3	48.4	100.0
Total	188	93.5	100.0	
Don't know / no answer	8	4.0		
Not applicable	5	2.5		
Total	13	6.5		
Total	201	100.0		

### 22.3 Source of drinking water (%)

#### HH access to drinking water source

	Frequency	Percent	Valid Percent	Cumulative Percent
Public network	25	12.4	12.5	12.5
Borehole or protected well	63	31.3	31.5	44.0
Unprotected well	109	54.2	54.5	98.5
Other	2	1.0	1.0	99.5
5	1	.5	.5	100.0
Total	200	99.5	100.0	
don't know / no answer	1	.5		
Total	201	100.0		

**22.4 Sanitation (%)****HH access to sanitation**

	Frequency	Percent	Valid Percent	Cumulative Percent
No sanitation or latrine	2	1.0	1.0	1.0
Private latrine with a slab or platform made from cement or wood, with a squatting hole or seat	8	4.0	4.0	5.0
Private latrine without a slab or platform, just a mud floor with a hole in the ground	188	93.5	93.5	98.5
Other	3	1.5	1.5	100.0
Total	201	100.0	100.0	

## 23. MEANS OF COMMUNICATION AND TRANSPORTATION

### 23.1 Ownership of mobile phones, radio, television (%)

#### HH assets, number of mobile phones owned

	Frequency	Percent	Valid Percent	Cumulative Percent
0	88	43.8	43.8	43.8
1	89	44.3	44.3	88.1
Valid 2	19	9.5	9.5	97.5
3	5	2.5	2.5	100.0
Total	201	100.0	100.0	

#### HH assets, number of radio's owned

	Frequency	Percent	Valid Percent	Cumulative Percent
0	98	48.8	48.8	48.8
Valid 1	93	46.3	46.3	95.0
2	10	5.0	5.0	100.0
Total	201	100.0	100.0	

#### HH assets, number of television sets owned

	Frequency	Percent	Valid Percent	Cumulative Percent
0	187	93.0	93.0	93.0
Valid 1	13	6.5	6.5	99.5
2	1	.5	.5	100.0
Total	201	100.0	100.0	

### 23.2 Ownership of motorcycle, car , bicycle (%)

#### HH assets, number of motorcycles owned

	Frequency	Percent	Valid Percent	Cumulative Percent
0	191	95.0	95.0	95.0
Valid 1	9	4.5	4.5	99.5
2	1	.5	.5	100.0
Total	201	100.0	100.0	

**HH assets, number of cars owned**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	200	99.5	100.0	100.0
Missing don't know / no answer	1	.5		
Total	201	100.0		

**HH assets, number of bicycles owned**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	96	47.8	47.8	47.8
1	102	50.7	50.7	98.5
2	3	1.5	1.5	100.0
Total	201	100.0	100.0	

**23.3 In case of no ownership, do households in any way have access to these means?****How?**

If no phone: only 6 households do not have any access, while 13 don't know. All others are able to access from family, friends or neighbours.

If no radio: only 4 households do not "use"/have access, 12 don't know. All others are able to access from family, friends or neighbours.

If no television: 30 households do not use, while 34 don't know. All others are able to access from family, friends or neighbours.

If no motorcycle: most seem to rent.

Access to motorcycle if no ownership			Frequency	Percent
Valid	From brother		2	.5
	From children		3	.5
	From friends		26	.5
	From neighbours		13	2.0
	Through renting/hiring		100	.5
	From "others"		15	.5
	Do not use		4	9.5
	Total		163	81.1
Missing	Don't know / no answer		27	13.4
	Not applicable		11	5.5
Total			38	18.9
Total			201	100.0

If no car: most hire, borrow or use public busses.

Access to car if no ownership			
		Frequency	Percent
Valid	Use public transport (e.g.: buses)	42	20.9
	Through renting/hiring	44	21.9
	From friends	20	10.0
	From children	3	1.5
	From brother	1	.5
	From neighbours	15	7.5
	From “others”	16	8.0
	Do not use	6	3.0
	Total	147	73.1
Missing	Don't know / no answer	53	26.4
	Not applicable	1	.5
	Total	54	26.9
Total		201	100.0

If no bicycle

Access to bicycle if no ownership			
		Frequency	Percent
Valid	Through renting/hiring	17	.5
	From friends	18	1.0
	From family	6	1.0
	From neighbours	16	.5
	From “others”	14	.5
	Do not use	3	1.0
	Total	92	45.8
Missing	don't know / no answer	6	3.0
	not applicable	103	51.2
	Total	109	54.2
Total		201	100.0

## 24. EXPENDITURE AND SAVING

### 24.1 Total amounts of consumer expenditure per year

The “total consumer expenditure” variable is not answered by any household so I have created it on the basis of the specified expenditures for each individual consumer expenditure variable. This may be the cause of some uncertainty.

#### Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean
Consumer expenditure total per year	201	.00	4199100.00	82698485.00	411435.2488
Valid N (listwise)	201				

### 24.2 Total amount of productive expenditure per year

Same issue as with the total consumer expenditure variable. Furthermore, the reason why N is only 173 has to do with missing values.

#### Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean
Productive expenditures total per year	173	.00	2500000.00	10653500.00	61580.9249
Valid N (listwise)	173				

### 24.3 total annual amounts of expenditure

#### Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean
Total expenditure	201	.00	4199100.00	93342985.00	464392.9602
Valid N (listwise)	201				

Here are the percentiles for consumer, productive and total expenditure.

**Statistics**

		Consumer expenditure total per year	Productive expenditures total per year	Total expenditure
N	Valid	201	173	201
	Missing	0	28	0
Percentiles	10	87000	0	96200
	20	137600	0	151600
	25	168000	3000	181250
	30	183280	5000	200900
	40	230700	7000	244800
	50	265000	10000	293750
	60	352500	14000	371800
	70	418500	20000	440640
	75	461650	32500	497200
	80	510000	62200	615800
	90	720600	154200	877400

**24.4 Three main types of consumer expenditure (%)**

if you consider it by the mean value, the main three 'main types of expenditure' are; clothes, food and social events. It will be the same three types if you look at the median value.

**Descriptive Statistics**

	N	Minimum	Maximum	Mean
Consumer expenditure on food per year	196	7000.00	700000.00	76410
Consumer expenditure on drinks per year	194	.00	70000.00	5167
Consumer expenditure on clothes per year	186	.00	3000000.00	141185
Consumer expenditure on utilities per year	201	.00	100000.00	1731
Consumer expenditure on rent per year	200	.00	180000.00	2435
Consumer expenditure on transport per year	196	.00	1000000.00	46896
Consumer expenditure on medical per year	187	.00	1000000.00	41751
Consumer expenditure on schooling per year	191	.00	1000000.00	30629
Consumer expenditure on social events per year	183	.00	1000000.00	91117
Consumer expenditure on other per year	194	.00	100000.00	515
Valid N (listwise)	150			



### 24.5 Three main types of productive expenditure (%)

Considered by the maximum mean, the three main types of productive expenditures are Hired labour, transport and seeds.

#### Descriptive Statistics

	N	Minimum	Maximum	Mean
Productive expenditures on hired labour per year	169	.00	2500000.00	49431
Productive expenditures on hired equipment per year	169	.00	.00	.0
Productive expenditures on transport per year	169	.00	60000.00	1627
Productive expenditures on membership fee cooperative per year	171	.00	80000.00	1315
Productive expenditures on seeds per year	171	.00	80000.00	9938
Productive expenditures on fertilizers per year	168	.00	100000.00	595
Productive expenditures on irrigation per year	168	.00	.00	.0
Productive expenditures on other per year	168	.00	.00	.0
Valid N (listwise)	164			

### 24.6 Main person of household to decide on expenditure

This answer will depend on who was interviewed. Thus, if somebody other than the head of household was interviewed, these answers might not mean the same.

#### HH member that decides on expenditures

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Father	31	15.4	15.5
	Mother	10	5.0	20.5
	Both	132	65.7	86.5
	My self	26	12.9	99.5
	All	1	.5	100.0
	Total	200	99.5	100.0
Missing	Don't know / no answer	1	.5	
Total		201	100.0	

### 24.7 Average amount of savings per year

126 households have answered that that they save up. Only 113 of these have provided a value.

**Descriptive Statistics**

	N	Minimum	Maximum	Mean
HH savings, amount per year	113	5000.00	2400000.00	224955.7522
Valid N (listwise)	113			

**25. CONCLUDING SUMMARY**

Sesame has emerged as a new, very popular cash crop of the area produced by households almost entirely for the market. Surging market prices of sesame 2010-2014 and a favorable market (incl. more buyers) are some of the main drivers of this sesame boom. In the Ward of Kinjumbi, commercial sesame production is very new. Among the households covered in the questionnaire survey 60% of the households have only grown sesame since 2010.

The majority of households in the area practice agriculture – production of food crops for home consumption as well as sale is important. In the survey 82% practice farming and out of these 165 households 71% cultivates sesame for selling. This is in the upper end of the estimated range (40-70%) for Kilwa District in general (40-70%). Sesame, however, is rarely the only cash crop of the household, but sesame has increased in importance. Among the households cultivating sesame today, 94.5 % indicated that the income from sesame is either important or very important.

Transition to commercial sesame production alters the cultivation system of smallholders towards a higher reliance of inputs, mainly purchased seeds and pesticides. The data collected in this survey compared to National Agricultural Census data from 2007 indicate a ten-fold increase in the use of chemical pesticides in the area over the past 7 years. Sesame income is mainly spent on covering basic needs, including clothes and medicines. The sesame boom is very new; in the Ward of Kinjumbi it has “taken off” since 2013 (whereas in other parts of the district it “took off” from around year 2000). Hence the survey data from the Ward of Kinjumbi fail to fully document the socio-economic outcomes of the sesame boom. It is simply too early to see the impact in the ward yet. The questionnaire survey data shows no clear difference between sesame and non-sesame producing households (with agricultural livelihoods). This indicates that sesame production (at least at the current state) is not dominated by any particular group or income quartile. The sesame boom hence has offered a new income source to a broad and diverse part of the population of the area. Qualitative information gathered, indicates a potential poverty-reducing effect of the sesame boom, however, if this is the case, it is not backed-up with the questionnaire survey data.



**African Rural-City Connections**  
**(RurbanAfrica)**

**Agricultural Change and Rural Livelihoods**  
**The case of Irish Potatoes in Njombe Region Tanzania**



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## **1 Executive Summary**

A study was conducted in Njombe Region in the Southern highlands of Tanzania. The general objective of the study was to understand how the changes in farming practices, access to market, diversification and mobility due to rural-urban linkages are transforming the livelihoods and economy. Rural-urban linkages and interactions play an increasingly significant role in local economies and livelihood transformation (Tacoli, 2002), and there is an increased interest for understanding the impact of rural–urban linkages on changing livelihoods both in rural and urban areas (Bah et al., 2003; Gough et al., 2010). In the study area it is observed that the connection between rural and urban areas has influenced the transformation of Irish potato production and improvement in household livelihoods in rural villages. Irish potato has been grown in the study area mainly as one of the traditional subsistence crops. However, an increase in consumption of potatoes in urban areas influenced the transformation of potato in Njombe. Notable changes that contributed to the transformation include introduction of new high yielding varieties and irrigation in some villages in Njombe.

Over time the role of mobility and migration in the livelihoods of rural households has increased due to changes of destination, frequency and type of people who migrated. Evidence from the study rural villages show that while commuting to Njombe town which is an immediate urban destination has increased, permanent migration and migration to other urban (Dar-Es-Salaam city for example) is on a decline in recent years. The increase in mobility was largely due to improved accessibility of the rural villages resulting from improvements in rural road networks, roads connecting with Njombe town and emergence of private transport services providers. Private vehicles (buses and mini-buses) commute daily between the rural villages and Njombe town and for shorter distances (especially rural-rural commuting) motorcycles are common. The main reasons for commuting include access to financial services, social services (such as health and education), and agricultural inputs. These services tend to be very limited within the rural villages. Commercial banks are located in the urban (mostly district and regional headquarters) but SACCOs are located mostly in ward or Division headquarters which are in rural areas.

Improved accessibility has contributed to changes or transformation of the Irish potato production in the rural villages due to increased product and inputs market access, emergence of new economic activities, and changes in farming practices. The Irish potato transformation has improved rural incomes and livelihoods in general. It has also increased demand for labour

(hired as well as family labour), land and other inputs not only for Irish potato but for maize as well the main staple crop.

Permanent migration is on a decline compared to circular and seasonal migration mainly because of improvements in household livelihoods largely emanating from Irish potatoes incomes and diversified non agricultural and agricultural activities. Destination areas for circular and seasonal migration are largely rural agricultural areas (including Ruvuma region) and is necessitated by limited access to productive agricultural land and labour market in home villages. The general tendency is for adult young male to migrate. This form of migration usually leads to split households and therefore remittances (cash money or goods) are common and spent in rural home village. Remittances tend to improve the livelihoods of the 'sending' households especially for investments.

Transformation of Irish potato has also resulted in emergence of new actors and/or increase in number of actors that undertake specialized activities in the value chain. These include rural villagers that have specialized in harvesting (mostly women), packaging (mostly youth-boys), transporters (mostly adult men), and village agents (traders, mostly youth boys and few girls). In urban areas new actors include urban agents (mostly adult men), loading and unloading; peeling potatoes (mostly women) and retailers (women and men).

Of interest here is how the emergence of new or an increase in the number of actors impact on producers' income from potato. For example the case of intermediary buyers commonly identified as village agents who are contracted by urban buyers for Irish potato transactions during the season. In this case Irish potato producers in the rural villages do not have a direct contact with the urban buyers.

## **2 Methodological Background of the study**

### **2.1.1 Site selection and sample selection**

Njombe Region in the Southern Highlands of Tanzania was selected for the study based on its Irish potato production that is preferred in urban areas. Njombe Region provided a clear evidence of rural- city connections and agricultural transformation. Two districts in Njombe region were selected Njombe Rural District and Wanging'ombe. The selection of the districts was based on the distance to the Regional headquarters (immediate urban area) whereas Njombe Rural District is relatively more remote/distant compared to Wanging'ombe. An exploratory survey was conducted to identify specific wards and villages of interest to the study objectives.

Ulembwe ward in Wanging'ombe and Iwungilo ward in Njombe (Table 1) were selected because of their contrasting Irish potato production system which provides elaborate insights for agricultural transformation. Irrigation possibilities for Irish potato production are available in Iwungilo and not in Ulembwe. From each ward two villages were randomly selected for the household survey, Igagala and Ulembwe in Ulembwe ward; Iwungilo and Ngalanga in Iwungilo ward. With the help of village leaders (Village executive officer, sub-village chair and village chair) the list of household in the village were generated to form a sampling frame for each village. From each of the village sampling frames a random selection of households was done using a computer based sample size formula.

**Table 1: Study sites for structured household Survey**

District	Ward	Village	Population	Household number	Number of sub-villages
Wanging'ombe	Ulembwe	Igagala	3 332	812	6
		Ulembwe	1 800	897	7
Njombe	Iwungilo	Iwungilo	2 140	499	5
		Ngalanga	1 963	459	5
Total			9 235	2 204	

Household questionnaire were used to collect information from the household about household characteristics, expenditure and savings, migration/mobility and remittance information, agricultural and livestock information and household assets. The data collected by the household questionnaire were transferred to Statistical Package for Social Science (SPSS) computer program for further analysis and computation.

Together with structured questionnaire survey, Focus Group Discussion (FGD) was done in each of the selected villages. Groups of 8 - 12 participants' women and men were selected for interview in each village. Participants for focus group discussion at the village level were selected purposely from the sampling frames of each village based on knowledge of history of village, and production systems. The focus group discussions were guided by the interview guide with checklist of questions. During FGD the following methods were used to collect



information: matrix exercise for agricultural production practices (type of crop produced, use of crop, market of the crop), time trend methods (historical time line methods) i.e change in crop production, major events in the transformation of agriculture, migration and mobility and wealth ranking (to identify different groups of wealth in the village).

### 2.1.2 Survey implementation

The survey was implemented in two phase, first phase was the main data collection and the second phase was conducted as a follow up interview for household that were not available during the main first phase data collection. Table 2 represent the date and number of household interviewed by sampled villages.

**Table 2: Date and number of interview per village**

Date	Village	Number of respondents	Data collection phase
8 – 14/5/2014	Igagala	50	main data collection
15 – 20/5/2014	Ulembwe	50	main data collection
21 – 25/5/2014	Iwungilo	50	main data collection
26 – 28/5/2014	Ngalanga	23	main data collection
24/7 – 27/7/2014	Ngalanga	27	data collection for replacement
Total		200	

Eight experienced enumerators were involved in data collection. The qualifications of the enumerators are presented in Table 3. To ensure quality data collection a two days enumerator training was conducted in Morogoro and a pretest of the questionnaire with the enumerator at Pangawe Village.

This was important for the enumerator to have a common understanding of each question in the questionnaire.

**Table 3: Enumerator used in the household survey at Njombe region**

No.	Name of Enumerator	Education level
1	Aaron Joseph	Bsc. Rural development
2	Aisha Mtipa	Msc. Rural development (student)
3	Baraka Mlawa	Mba. Agribusiness

4	Misibo Ntilangiza	Msc. Agric. Economics (student)
5	Benard Muga	Bsc. Agric. Economics and agribusiness
6	Spensa Lishela	Ba. Community development
7	Beatrice Daniel	Msc. Agric. Economics (student)
8	Sinne Ortenblad	Msc (student)
9	Lukelo Msese	PhD (student)

To verify some issues from structured household survey, and the FGD key informant interviews was conducted. Key informants included Regional agricultural officers, District Agricultural officers, village officers (agricultural extension officers, Village Executive Officers and chairpersons), and selected people involved in the Irish potato value chain.

### 2.1.3 Local adaptations to the main questionnaire

The following modifications were made in the general household questionnaire to cover detailed Irish potato value chain information in the area. Table 4 indicates the additional questions in the household questionnaire. These additional parts focus on the Irish potato production at Njombe region.

**Table 4: Added parts in the household survey questionnaire**

Part added	Explanation
Main cash crop and food crop	Table were added to obtain the importance of the crop in terms of cash crop as well as in terms of food crop
Irish potato production	To obtain more information on the production of Irish potato in the study sites in terms of inputs, harvesting, marketing and constrains in production and marketing
Networking and collective action	To obtain more information of the availability of different local farmer groups/organization in the study site

### 2.1.4 Method of data analysis

After the collection of data by the household questionnaire, data were transferred into Statistical Package for Social Science (SPSS) computer program for further computation and analysis.

### 2.1.5 Main limitation of the research

In the study villages there was no list of residents which could form a sampling frame. For this reason a sampling frame was generated with the help of respective village and sub-village leaders.

Some randomly selected households were missing during the main household survey. This was the case in Ngalanga village where some households had migrated temporary for farming activities. The timing of the survey in this village coincided with the period for fields preparation for planting irrigated Irish potato. For this reasons a second phase survey was organized to cover the intended sample of households.

Due to the overlap of the production season in the study site the production and marketing information were based on the previous (last) year (2013) production and marketing for the household. Question for production and marketing for agricultural and non agricultural activities were asked with the reference of last year (2013).

## 3 Map of the research site

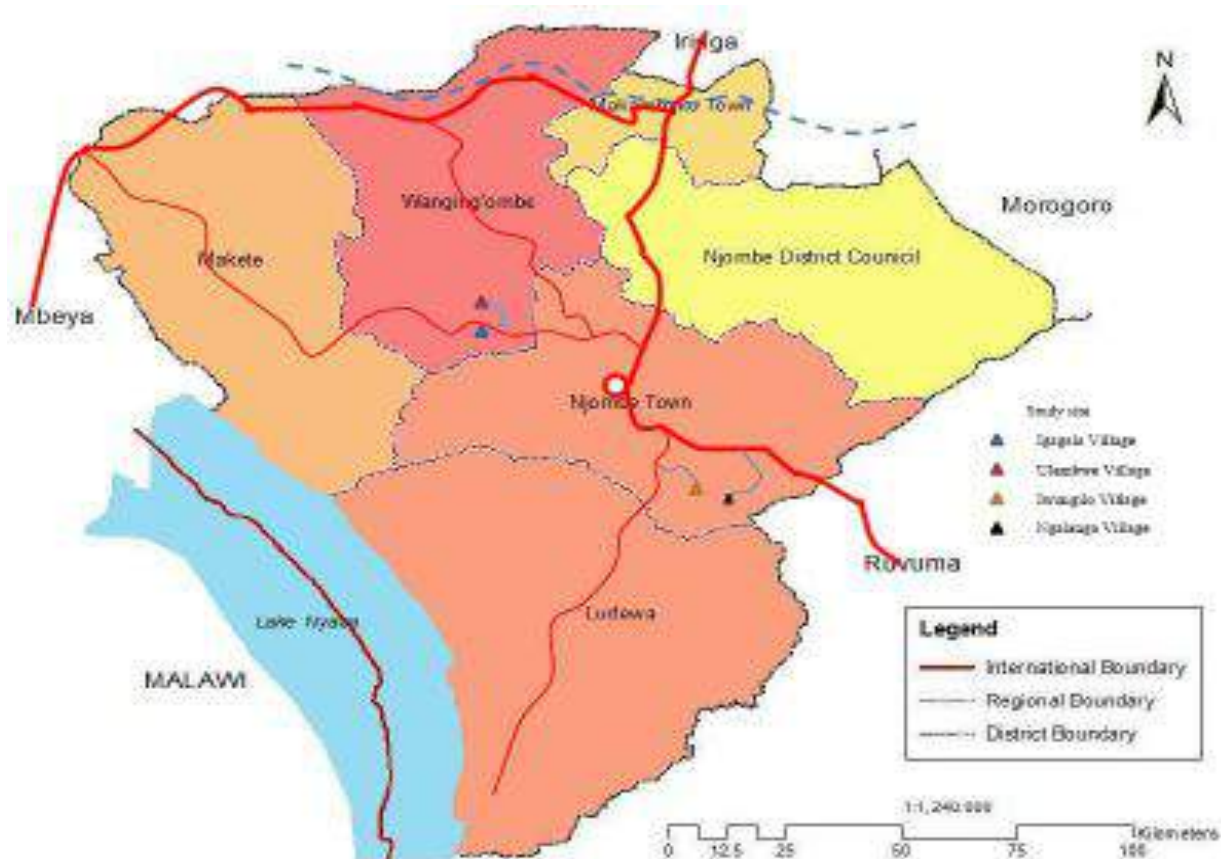


Figure 1: Sketched map of Njombe indicating selected site village

Source: Modified from URT, 2013

## 4 Description of the research site

### 4.1.1 Geographical description

Njombe Region is a recently formed region in Tanzania; it was announced officially on March 2012. The Region has an area of 24 994 square km out of which 21 172 square km is land (84.7%) and 3 822 square km (15.3%) is covered by water (Table 5). Njombe Region borders Iringa Region in the North, Morogoro Region in the East and Ruvuma Region in the South. In the north-west and west Njombe Region borders Republic of Malawi and Mbeya region respectively. Njombe Region lies between latitudes 08<sup>0</sup>40' and 10<sup>0</sup>32' south of the equator and between longitudes 33<sup>0</sup>47' and 35<sup>0</sup>45' east of the Greenwich.

Administratively the region is comprised of four districts namely, Njombe District, Makete District, Ludewa District and Wanging'ombe District (Table 5). Njombe District comprises of three councils namely; Njombe Town Council, Njombe District Council and Makambako Town Council.

**Table 5: Njombe Region area distribution**

District	Land area	Water area	area	percentage
Makete	4 850	950	5 800	23.2
Njombe rural	6 780	447	7 227	28.9
Ludewa	6 325	2 072	8 397	33.6
Wanging'ombe	3 217	353	3 570	14.3
Total	21 172	3 822	24 994	100.0

Source: URT 2013

### 4.1.2 Agricultural Production in Njombe Region

Njombe Region has three agro-ecological zones, the eastern highlands, the Njombe plateau and Makambako plateau. The following agricultural crops are produced within Njombe region by ranking them according to economic importance are Tea, Maize, Beans, Sunflower, Irish Potatoes, fruits (Avocado, Pineapple, Apples and Pears). Other crops include wheat, sunflower,

vegetables (e.g cabbage, and tomato). Livestock keeping is also important including cattle, goats, chicken and guinea pigs.

#### **4.1.3 Road Network Connections to Nearest cities, Towns and Within Districts.**

Road network infrastructure stimulates and facilitates input as well as product market access. In Njombe town which is the regional headquarters is connected by highway to Dar Es Salaam city (714 Km) and Mbeya city (239 Km), Songea town (Regional headquarters for Ruvuma Region) (236 Km). Njombe town is also connected with all weather rough road to Makete district (110 Km), Ludewa district (132 Km), Wanging'ombe district (80 Km) and a tarmac road to Makambako town council (60 Km). Gravel and graded roads that are maintained by the communities and respective District Council Authorities connect villages within the districts. Occasionally, during rainy season some parts of these roads are challenging and can hinder or interrupt transport system in respective areas.

Agriculture, livestock keeping and small scale industrial are main occupation of most of villages in Njombe district council, road transport in the council is one of the key factors responsible for the council's sustainable development and poverty reduction strategies.

#### **4.1.4 Telecommunication services**

Like in many parts of Tanzania telecommunication services in Njombe region have over time progressively been developed. Wide distribution of telecommunication infrastructure has enabled ownership and use of mobile phone handsets by majority of households in rural villages and urban areas. Mobile phone service providers including Airtel, Vodacom, TiGO, TTCL and Zantel have different coverage intensity within the region. Products used by households in rural villages include telephone communication and mobile money services. Telephone communication has contributed to information exchange relevant to agriculture. For example through the network of smallholder farmers' groups (MVIWATA) market information for maize is communicated through mobile phones. Agricultural product transactions are also done through mobile money services.

#### **4.1.5 Railway transport**

The Tanzania Zambia Railway Authority (TAZARA) passes through Njombe region and main railway stations located at Makambako town council. Most of Zambia, Malawi and Democratic Republic of Congo imports and exports goods within Njombe region; TAZARA line

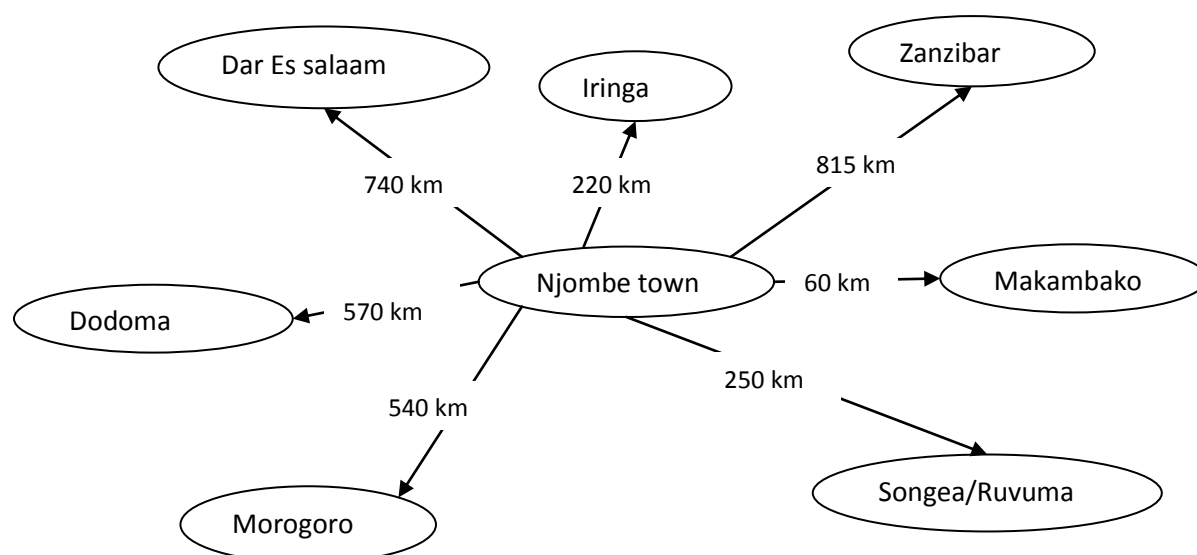
#### **4.1.6 Labour and Labour Markets for Agricultural Activities**

Agricultural activities are largely undertaken by household labour. However, during labour peak season (especially for planting, weeding and harvesting of different crops) hired labour is employed to supplement household labour. There are different contractual arrangements for hired labour, on daily, monthly and sometimes on seasonal basis. Payments are based on individual agreements between responsible parties and negotiated. However, there exists for each village prevailing market price for different contractual agreements during specific seasons. During labour peak seasons mobility of participants in agricultural labour markets (labourers) increases. People travel to areas of high labour demand especially in areas with irrigated Irish potato production in search of jobs. In each village households that are main employers of labour due to having, large farms or relatively wealthy are recognized and can hire labour from within the village or distant villages depending on price for labour.

#### **4.1.7 Agricultural Marketing Facilities**

Out of the four study s villages only Igagala village has a physical agricultural commodity market constructed by a country wide farmers' organization, MVIWATA (National Networks of Farmers' Groups in Tanzania). The market is used mainly for the maize and not for the Irish potato or other crops due to being a traditional crop and storability. Marketing of most agricultural commodities in the study villages are based on the spot selling after the farmer agreed with the buyer. Marketing of Irish potato is based on the spot market where village agents/blocker make agreement with buyer and respective farmers and the buyer arrange for harvesting crop from the field.

Village agents sell Irish potato to District traders/blocker who in turn sell Irish potato to business traders (Regional traders) who are selling to different markets within the country (Figure 2). Regional traders buy about 90% of Irish potato produced in Njombe. Farmers do not have direct contact with these buyers from outside Njombe town.



**Figure 2: Location of Irish potato marketing cities/towns outside Njombe town**

#### 4.1.8 Settlement pattern

According to the 2012 population Census (NBS, 2013) Njombe region has a population of 702,097 out of which about 32% live in areas designated as towns/urban areas ( 18.5% live in Njombe town and 13.4% in Makambako town).

Settlements in the study villages is concentrated along the road and scattered in the area where are far from the main road which are connecting the village with the other village as well as the district headquarter. Settlement for the Igagala village is good example of this where it stretched along the main road connecting Njombe Town and Makete District (Plate 1).



Iwungilo village settlements are also located along the main road connecting the village with the other villages (Plate 2).



#### **4.1.9 Public Services**

The distribution of public services in the study villages is indicated in Table 6. When the service is not available in the village the household access the service from the nearby village where the service is available, like in Igagala Village and Ulembwe Village some of the household are accessing the milling machine service from Wikichi Village which is supplied with electricity.



**Table 6: Socio-economic services in the four study villages**

Characteristics	Wanging'ombe district		Njombe district	
	Ulembwe	Igagala	Ngalanga	Iwungilo
Agricultural commodity market	Depend on the Igagala market for maize, in the case of Irish potato transaction is done in the field.	The market is under MVIWATA it saves Ulembwe, Nyumbanitu, Usita, & Usalule Village. Main product which is exchanged at the market is maize.	Marketing is done at the village and they depend on the negotiation with the buyer	Marketing is done in the village and at individual farmers' fields and home places.
Road network	Passable all the year season, about (17 km from Njombe town out of which 3 km is tarmac road from Njombe town)	Along Njombe to Makete road (about 21 km from Njombe town out of which 3 km is tarmac road from Njombe town)	Part of it is not good during rainy season (about 64 km from Njombe town, out of which 30 km is tarmac road from Njombe town)	Easy to connect with Uwemba the junction to the road goes to Ludewa (about 35 km from Njombe town out of which 13 km is tarmac road from Njombe town)
Telecommunication	Vodacom, airtel and tigo available in the village 3 mobile money agents in the village	Vodacom, airtel and tigo available in the village 4 mobile money agents in the village	Vodacom, airtel and tigo available in the village 2 mobile money agents in the village	Vodacom, airtel and tigo available in the village 2 mobile money agents in the village
Primary school	3	1	1	1
Secondary school	1 (Ward level)	Use at Ulembwe ward	Use the ward secondary school at Uliwa village	Use the ward secondary school at Uliwa village
Health centre	1	Under construction	1	1
Pharmacy	2	3	3	1
Church	4	5	3	3
Mosque	1	1	0	0
Shops	46	23	25	23
Restaurants	21	15	12	7
Milling machine	3 <sup>1</sup>	4 <sup>1</sup>	4	2

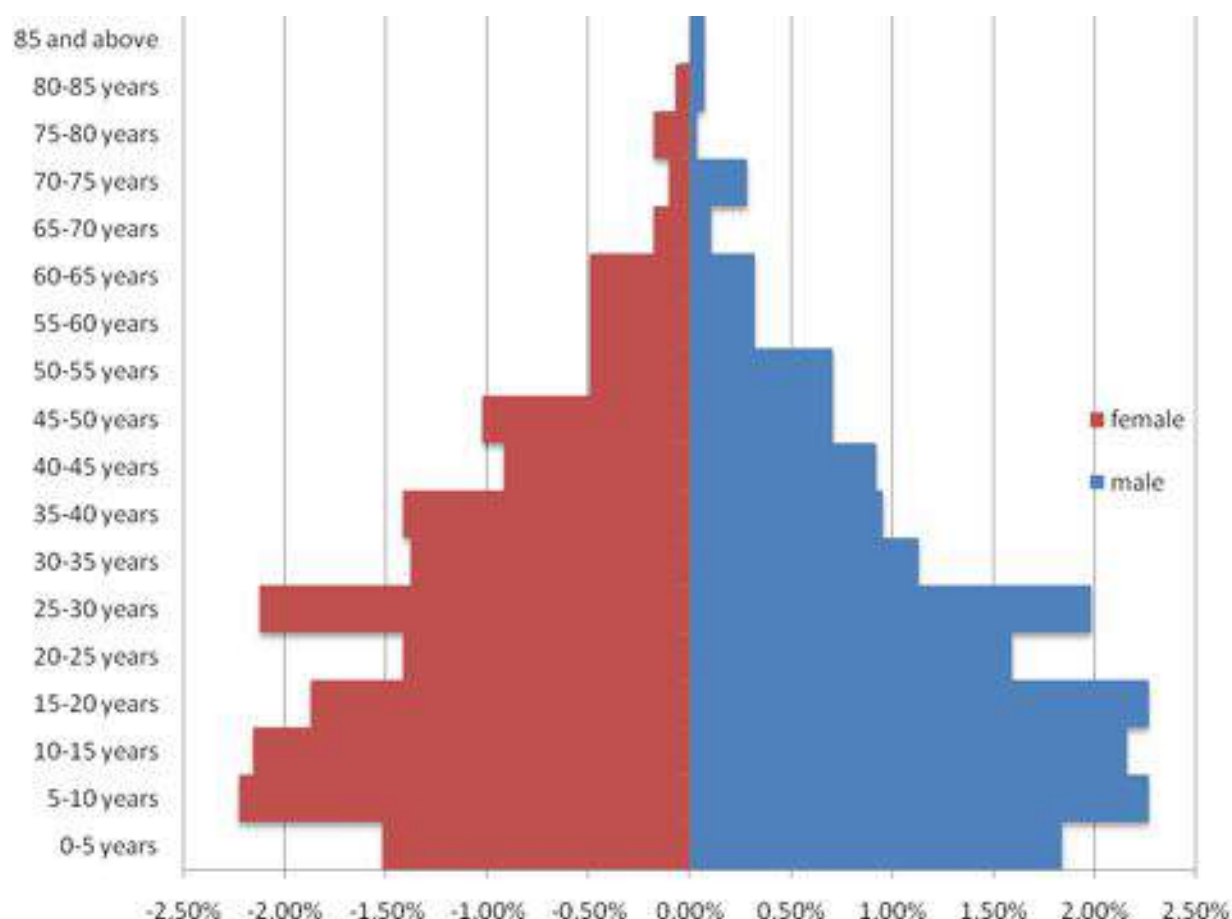
<sup>1</sup>Others access at neighbouring (Ramadhani) village

## 5 Population Characteristics (Form A-1 – Household roster)

### 5.1.1 Population pyramid

Population pyramid (in age/gender class as % of total population): 5-year age classes, by gender.

NOTE: Total population (male and female) is 100%. From the data set the total population is 1012 people



**Figure 3: Population pyramid for Njombe research site**

### 5.1.2 Household size

Average household size in the study site is about 5 people which is slightly higher than the regional average of 4.1 people.

### 5.1.3 Education level for household members

Education level of household members is presented by age in Table 7. The table shows that 38.5% and 41.1% of all respondents from households that were growing potatoes and who did not grow potatoes respectively had primary education. The table also shows that 44.5% and

36.6% of all household members from households that grew potatoes and who did not grow potatoes respectively were below 18 years of age. This result shows that the difference in education between potato produces and non potato producers is small and that the majority had attained primary education. At the same time there is an indication that number of household members below age 18 years is substantial for both producers and non potato producers

**Table 7: Education level by age of sampled household members**

				Working age group of household member					
				Below 18 years	18 - 35 years	36 - 65 years	Above 65 years		
Household grow Irish potato								Total	
Yes Household member highest level of completed education	No formal education	Count		5	8	21	9	43	
		% of Total		.9%	1.5%	3.8%	1.6%	7.8%	
	Primary education	Count		18	102	85	7	212	
		% of Total		3.3%	18.5%	15.5%	1.3%	38.5%	
	Secondary education	Count		3	38	8	0	49	
		% of Total		.5%	6.9%	1.5%	.0%	8.9%	
	High school education	Count		0	4	0	0	4	
		% of Total		.0%	.7%	.0%	.0%	.7%	
	Still in school	Count		163	15	0	0	178	
		% of Total		29.6%	2.7%	.0%	.0%	32.4%	
	Certificate/Diploma/Degree	Count		1	5	2	1	9	
		% of Total		.2%	.9%	.4%	.2%	1.6%	
	Still in childhood	Count		55	0	0	0	55	
		% of Total		10.0%	.0%	.0%	.0%	10.0%	
Total				Count	245	172	116	17	550

				% of Total	44.5%	31.3%	21.1%	3.1%	100.0%
No household member highest level of completed education	No formal education	Count	4	16	35	15	70		
		% of Total	.9%	3.5%	7.6%	3.2%	15.2%		
	Primary education	Count	15	87	81	7	190		
		% of Total	3.2%	18.8%	17.5%	1.5%	41.1%		
	Secondary education	Count	3	19	5	1	28		
		% of Total	.6%	4.1%	1.1%	.2%	6.1%		
	High school education	Count	1	5	2	0	8		
		% of Total	.2%	1.1%	.4%	.0%	1.7%		
	Still in school	Count	105	12	0	0	117		
		% of Total	22.7%	2.6%	.0%	.0%	25.3%		
	Certificate/Diploma/Degree	Count	0	8	0	0	8		
		% of Total	.0%	1.7%	.0%	.0%	1.7%		
	Still in childhood	Count	40	0	0	0	40		
		% of Total	8.7%	.0%	.0%	.0%	8.7%		
	not applicable	Count	1	0	0	0	1		
		% of Total	.2%	.0%	.0%	.0%	.2%		
Total				Count	169	147	123	23	462
				% of Total	36.6%	31.8%	26.6%	5.0%	100.0%

Education level of household members is presented by gender in Table 8. Table 8 shows that 19.8% and 18.7% of all household members that grew potatoes and had primary education were male and female headed households respectively. Similarly 18.8% and 19.8% of all household members that did not grow potatoes but had primary education were male and female headed households. This observation indicates that the difference between education level and gender of household members on potato production is very small.

**Table 8: Education level by gender**

Household grow Irish potato				Household member gender		Total
				male	female	
Yes	Household member highest level of completed education	No formal education	Count	18	25	43
			% of Total	3.3%	4.5%	7.8%
		Primary education	Count	103	109	212
			% of Total	18.7%	19.8%	38.5%
		Secondary education	Count	31	18	49
			% of Total	5.6%	3.3%	8.9%
		High school education	Count	3	1	4
			% of Total	.5%	.2%	.7%
		Still in school	Count	87	91	178
			% of Total	15.8%	16.5%	32.4%
		Certificate/Diploma/Degree	Count	8	1	9
			% of Total	1.5%	.2%	1.6%
		Still in childhood	Count	25	30	55
			% of Total	4.5%	5.5%	10.0%
	Total		Count	275	275	550
			% of Total	50.0%	50.0%	100.0%
No	Household member highest level of completed education	No formal education	Count	22	48	70
			% of Total	4.8%	10.4%	15.2%
		Primary education	Count	87	103	190
			% of Total	18.8%	22.3%	41.1%
		Secondary education	Count	21	7	28
			% of Total	4.5%	1.5%	6.1%
		High school education	Count	6	2	8
			% of Total	1.3%	.4%	1.7%
		Still in school	Count	60	57	117
			% of Total	13.0%	12.3%	25.3%
		Certificate/Diploma/Degree	Count	3	5	8
			% of Total	.6%	1.1%	1.7%
		Still in childhood	Count	27	13	40
			% of Total	5.8%	2.8%	8.7%

not applicable	Count	0	1	1
	% of Total	.0%	.2%	.2%
Total	Count	226	236	462
	% of Total	48.9%	51.1%	100.0%

#### 5.1.4 Gender of household head

In the study area 72% of sampled households were male headed households and 28% female headed households (Table 9a).

**Table 9a Head of Household gender**

Head of Household Gender	Frequency	Percent
male	144	72.0
female	56	28.0
Total	200	100.0

Further analysis shows that 31.6% and 57.3% of female headed households and male headed households respectively grow Irish potato (Table 9b).

**Table 9b: Gender of household head by potato production**

Household member gender		Household grow Irish potato		Total
		Yes	No	
male	Count	82	61	143
	% within Household member gender	57.3%	42.7%	100.0%
	% within Household grow Irish potato	82.0%	61.0%	71.5%
female	Count	18	39	57
	% within Household member gender	31.6%	68.4%	100.0%
	% within Household grow Irish potato	18.0%	39.0%	28.5%

Total	Count	100	100	200
	% within Household member gender	50.0%	50.0%	100.0%
	% within Household grow Irish potato	100.0%	100.0%	100.0%

### 5.1.5 Residence category of household

Only 1% of interviewed heads of household indicated that they were usually absent from ‘sending’ household Table 10a)

**Table 10a: Head of household residence**

Head of Household Residence	Frequency	Percent
Resident	198	99.0
Usually absent	2	1.0
Total	200	100.0

Household with one or more member categorized as usually absent are presented in **Error! Reference source not found.b**. The table shows that 17.5% of members of sampled households were categorized as usually absent.

**Table 10b shows that 17.5% of members of sampled households were usually absent**

**Table 10c: Household members’ residence**

Household member resident	Frequency	Percent
resident	838	82.5
usually absent	178	17.5
Total	1016	100.0

Table 10; presents the proportion of members of households who live elsewhere (“usually absent” category) and contribute to ‘sending’ household’s livelihood. only 1.7% of household members who are usually absent (live elsewhere) contribute to the livelihood of the ‘sending’ household this is in the form of remittances, cash money or in-kind.

**Table 10a: Usually Absent Household Members and Sending Remittances**

Frequency national remittances previous year	Frequency	Percent
once a year	1	.6
regularly	2	1.1
Total (sent remittance)	3	1.7
Did not send remittance	175	98.3
Total (Household members usually absent)	178	100.0

In the study area Table 11b shows that only 42 (4%) of samples members of household were living in the different district as district they were born (Migrant population). Of the migrants only 43% grew Irish potatoes. For those who were living in the same district as they were born 55% grew Irish potatoes.

**Table 11b Household member live in the same district as he/she was born and grow Irish potato**

Household member live in the same district as he/she was born	Household grow Irish potato		Total
	Yes	No	
No Count	18	24	42
%	43%	57%	100%
Yes Count	531	438	969
%	55%	45%	100%
Total Count	549	462	1011
%	54.3%	45.7%	100.0%

**Table 11c Main places/areas of previous residence for immigrants**

Name of previous district of residence	Household grow Irish potato		Total
	Yes	No	
Dar es salaam (City) Count	0	1	1
%	.0%	4%	2%



Handeni Urban (outside Njombe Region)	Count	0	1	1
	%	.0%	4%	2%
Iringa (outside Njombe Region)	Count	4	0	4
	%	22%	.0%	10%
Ludewa (within Njombe region)	Count	1	6	7
	%	6%	25%	17%
Makete (within Njombe region)	Count	2	2	4
	%	11%	8%	10%
Mbeya (outside Njombe Region)	Count	1	0	1
	%	6%	.0%	2%
Mufindi (outside Njombe Region)	Count	1	7	8
	%	6%	29%	19%
Njombe (within Njombe region)	Count	5	4	9
	%	28%	17%	21%
Songea (outside Njombe Region)	Count	0	2	2
	%	.0%	8%	5%
Tanga (outside Njombe Region)	Count	4	0	4
	%	22%	.0%	10%
Wanging'ombe (within Njombe region)	Count	0	1	1
	%	.0%	4%	2%
Count		18	24	42
%		100%	100%	100.0%

## 6 Livelihood Characteristics (Form A-3)

The proportion of economically active members of sampled household by gender is presented in Table 12a.

**Table 12a Household members' main activity**

Economic activity	Frequency	Percent
income generating	530	52.2
School (children)	317	31.2
unemployed	12	1.2
retired	2	.2

disabled	13	1.3
subsistence production	41	4.0
domestic work	10	1.0
other	1	.1
Total	926	91.1
not applicable (infants/children below school age)	90	8.9
Total	1016	100.0

Table 12a shows that 52.2 % of members of sampled households are involved in some kind of income generating activity and about 31.2% are school age children who at the time of interview were attending school. One household member under other was elderly and therefore not directly involved in economic activities.

Table 12b present household heads main economic activity by gender. The results show that 93.4% and 82.1% of sampled male and female headed households are involved in income generating activities respectively. At the same time 4.2% and 12.5% of male and female headed households were involved in subsistence production

**Table 12b Household head main activity by gender**

Household member gender		Household head main activity					Total
		income generating	unemployed	retired	disabled	subsistence production	
Male	Count	135	0	1	2	6	144
	% within Household member gender	93.8%	.0%	.7%	1.4%	4.2%	100.0%
	% within Household member main activity	74.6%	.0%	100.0%	66.7%	46.2%	72.0%
Female	Count	46	2	0	1	7	56
	% within Household member gender	82.1%	3.6%	.0%	1.8%	12.5%	100.0%
	% within Household member main activity	25.4%	100.0%	.0%	33.3%	53.8%	28.0%
Total	Count	181	2	1	3	13	200
	% within Household member gender	90.5%	1.0%	.5%	1.5%	6.5%	100.0%

Household member gender		Household head main activity					Total
		income generating	unemployed	retired	disabled	subsistence production	
Male	Count	135	0	1	2	6	144
	% within Household member gender	93.8%	.0%	.7%	1.4%	4.2%	100.0%
	% within Household member main activity	74.6%	.0%	100.0%	66.7%	46.2%	72.0%
Female	Count	46	2	0	1	7	56
	% within Household member gender	82.1%	3.6%	.0%	1.8%	12.5%	100.0%
	% within Household member main activity	25.4%	100.0%	.0%	33.3%	53.8%	28.0%
Total	Count	181	2	1	3	13	200
	% within Household member gender	90.5%	1.0%	.5%	1.5%	6.5%	100.0%
	% within Household member main activity	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 12c shows that 83.3% and 84.2% potato producing female and male headed households are involved in income generating activity as main activity. At the same time 36.8% and 63.2% non potato producing female and male headed household are involved in income generating activity as main activity. This data show that only few non potato producing households are involved in other income generating activities most likely explanation could be shortage of labour or financial capital.

**Table 11c: Economically Active Household head by Gender and Potato growing**

Household grow Irish potato	Household Head gender	Household Head main activity					Total
		income generating	unemployed	retired	disabled	subsistence production	
Yes	male	Count	80	0	1	1	82

No		% within Household member gender	97.6%	.0%	1.2%		1.2%	100.0%
		% within Household member main activity	84.2%	.0%	100.0%		33.3%	82.0%
		Count	15	1	0		2	18
	female	% within Household member gender	83.3%	5.6%	.0%		11.1%	100.0%
		% within Household member main activity	15.8%	100.0%	.0%		66.7%	18.0%
		Count	95	1	1		3	100
	Total	% within Household member gender	95.0%	1.0%	1.0%		3.0%	100.0%
		% within Household member main activity	100.0%	100.0%	100.0%		100.0%	100.0%
		Count	55	0		2	5	62
	male	% within Household member gender	88.7%	.0%		3.2%	8.1%	100.0%
		% within Household member main activity	63.2%	.0%		66.7%	50.0%	61.4%
		Count	32	1		1	5	38
	female	% within Household member gender	82.1%	2.6%		2.6%	12.8%	100.0%
		% within Household member main activity	36.8%	100.0%		33.3%	50.0%	38.6%
		Count	87	1		3	10	100
	Total	% within Household member gender	86.1%	1.0%		3.0%	9.9%	100.0%
		% within Household member main activity	100.0%	100.0%		100.0%	100.0%	100.0%
		Count	87	1		3	10	100
		% within Household member gender	86.1%	1.0%		3.0%	9.9%	100.0%
		% within Household member main activity	100.0%	100.0%		100.0%	100.0%	100.0%
		Count	87	1		3	10	100

The main economic activities of the economically active population are presented in Table 13a. The table shows that 92.2% and 95.4% of the economically active members of potato producing households and non potato producing household respectively are involved in agriculture . In this case agriculture refers to both crop and livestock production. In some cases tree cultivation for timber and poles is also included as part of agricultural activities. Crops in the study area are grown almost throughout the year on rotation. Main crops include, maize,

wheat, sunflower, vegetables and Irish potatoes. The table also shows that 45.4% and 46.8% of members of households that produce potato and involved in agriculture are females and males respectively. The table also shows that 52.8% and 42.6% of members of non potato producing households and involved in agriculture are females and males respectively. These data imply that gender makes only a slight difference in main economic activities in the study area for potato producers compared to non potato producers.

**Table 12a: Main economic sector by gender and Potato production**

Household grow Irish potato			Household member gender		Total
			male	female	
Yes	Others Activities	Count	6	3	9
		% of Total	2.9%	1.5%	4.4%
	Agriculture	Count	96	93	189
		% of Total	46.8%	45.4%	92.2%
	Business	Count	5	2	7
		% of Total	2.4%	1.0%	3.4%
	Total	Count	107	98	205
		% of Total	52.2%	47.8%	100.0%
	Others Activities	Count	6	2	8
		% of Total	3.1%	1.0%	4.1%
No	Agriculture	Count	83	103	186
		% of Total	42.6%	52.8%	95.4%
	Business	Count	1	0	1
		% of Total	.5%	.0%	.5%
	Total	Count	90	105	195
		% of Total	46.2%	53.8%	100.0%

Distribution of the sampled households into the main economic sector by gender is presented in Table . The table shows that 49.2% and 44.5% of economically active members involved in agriculture are females and males respectively.

**Table 14: Main economic sector by gender**

Main economic sector of the household member		Household member gender		Total
		male	female	
Others Activities	Count	12	5	17
	% of Total	3.0%	1.2%	4.2%
Agriculture	Count	178	197	375
	% of Total	44.5%	49.2%	93.8%
Business	Count	6	2	8
	% of Total	1.5%	.5%	2.0%
Total	Count	196	204	400
	% of Total	49.0%	51.0%	100.0%

Members of sampled households were involved in different occupations with varied terms. Table 15 shows that 85.6% of members of sampled households were self employed. The table also shows that 43.6% and 42% household members were self employed females and males respectively.

**Table 13: Labour position in main occupation**

Household member labour position (categories)		Household member gender		Total
		male	female	
self-employed	Count	160	166	326
	% of Total	42.0%	43.6%	85.6%
permanent wage labour	Count	2	2	4
	% of Total	.5%	.5%	1.0%
long term contract (one year and above)	Count	2	0	2
	% of Total	.5%	.0%	.5%
short term contract (less than one year)	Count	1	1	2
	% of Total	.3%	.3%	.5%
casual wage labour	Count	6	3	9
	% of Total	1.6%	.8%	2.4%
family workers without pay	Count	18	20	38
	% of Total	4.7%	5.2%	10.0%
Total	Count	189	192	381

Household member labour position (categories)		Household member gender		Total
		male	female	
self-employed	Count	160	166	326
	% of Total	42.0%	43.6%	85.6%
permanent wage labour	Count	2	2	4
	% of Total	.5%	.5%	1.0%
long term contract (one year and above)	Count	2	0	2
	% of Total	.5%	.0%	.5%
short term contract (less than one year)	Count	1	1	2
	% of Total	.3%	.3%	.5%
casual wage labour	Count	6	3	9
	% of Total	1.6%	.8%	2.4%
family workers without pay	Count	18	20	38
	% of Total	4.7%	5.2%	10.0%
Total	Count	189	192	381
	% of Total	49.6%	50.4%	100.0%

Table 16 present main economic sector and labour position in main occupation of members of household. The results show that 81.1% and 2.4% of members of sampled households are self employed and casual wage labour in agriculture.

**Table 14: Main economic sector and Labour position in main occupation**

Main economic sector of the household member		Household member labour position (categories)						Total
		self-employed	permanent wage labour	long term contract (one year and above)	short term contract (less than one year)	casual wage labour	family workers without pay	
Others Activities	Count	10	4	2	0	0	0	16
	% of Total	2.6%	1.1%	.5%	.0%	.0%	.0%	4.2%
Agriculture	Count	308	0	0	2	9	37	356
	% of Total	81.1%	.0%	.0%	.5%	2.4%	9.7%	93.7%
Business	Count	8	0	0	0	0	0	8

	% of Total	2.1%	.0%	.0%	.0%	.0%	.0%	2.1%
Total	Count	326	4	2	2	9	37	380
	% of Total	85.8%	1.1%	.5%	.5%	2.4%	9.7%	100.0%

The result of an analysis of main economic sector and level of education is presented in Table 17.

**Table 15: Main economic sector and Level of education**

Main economic sector of the household member		Household member highest level of completed education							Total
		No formal education	Primary education	Secondary education	High school education	Still in school	Certificate /Diploma/ Degree	Still in childhood	
Others	Count	3	10	2	2	0	0	0	17
Activities	% of Total	.8%	2.5%	.5%	.5%	.0%	.0%	.0%	4.2%
Agriculture	Count	76	259	27	3	2	6	2	375
	% of Total	19.0%	64.8%	6.8%	.8%	.5%	1.5%	.5%	93.8%
Business	Count	0	5	2	1	0	0	0	8
	% of Total	.0%	1.2%	.5%	.2%	.0%	.0%	.0%	2.0%
Total	Count	79	274	31	6	2	6	2	400
	% of Total	19.8%	68.5%	7.8%	1.5%	.5%	1.5%	.5%	100.0%

Table 18 presents the relationship between members of samples households' labour position and education. The results indicate that 60.4% and 15.7% of members of sampled households that are self employed have primary education and no formal education respectively.

**Table 16: Labour position and Level of education**

Household member labour	Household member highest level of completed education	Total
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position (Labour categories)		No formal education	Primary education	Secondary education	High school education	Certificate/Diploma/Degree	
self-employed	Count	60	230	27	3	6	326
	% of Total	15.7%	60.4%	7.1%	.8%	1.6%	85.6%
permanent wage labour	Count	0	1	1	2	0	4
	% of Total	.0%	.3%	.3%	.5%	.0%	1.0%
long term contract (one year and above)	Count	0	2	0	0	0	2
	% of Total	.0%	.5%	.0%	.0%	.0%	.5%
short term contract (less than one year)	Count	2	0	0	0	0	2
	% of Total	.5%	.0%	.0%	.0%	.0%	.5%
casual wage labour	Count	2	7	0	0	0	9
	% of Total	.5%	1.8%	.0%	.0%	.0%	2.4%
family workers without pay	Count	12	22	2	2	0	38
	% of Total	3.1%	5.8%	.5%	.5%	.0%	10.0%
	Count	76	262	30	7	6	381
	% of Total	19.9%	68.8%	7.9%	1.8%	1.6%	100.0%

An estimate of distance to work for non-agricultural employment was made by respondents. The results are presented in Table 19 where an average of 85.64 Km or 97 minutes was estimated for potato producing households and 87.87 Km or 74.2 minutes was estimated for non potato producers.

**Table 17: Descriptive statistics for location of non-agricultural activities**

Household grow Irish potato		N	Minimum	Maximum	Mean	Std. Deviation
Yes	Distance of non-agricultural employment in time (minutes)	14	.0	900.0	97.143	233.4747
	Distance of non-agricultural employment in space (km)	15	.0	1048.0	85.640	267.1326

No	Distance of non-agricultural employment in time (minutes)	12	1.0	600.0	74.250	166.6090
	Distance of non-agricultural employment in space (km)	12	.5	1000.0	87.875	287.3151

Respondents were requested to determine importance of non-farming income relative to total household income. About 90.9% and 50.5% of potato growing and non growing households respectively depend on agriculture production as the main source of income (Table20). The Table also shows that 1% and 17.2% of potato producing and non producing households depend on casual wage work as a source of income.

**Table 18: Household's main type of income source**

Household grow Irish potato	Source of income	Frequency	Percent	Valid Percent
Yes	Agricultural production	90	16.4	90.9
	Self-employed work	4	.7	4.0
	Salaried work	3	.5	3.0
	Casual wage work	1	.2	1.0
	Remittances	1	.2	1.0
	Total	99	18.0	100.0
	Missing System	451	82.0	
	Total	550	100.0	
No	Agricultural production	50	10.8	50.5
	Self-employed work	14	3.0	14.1
	Salaried work	1	.2	1.0
	Casual wage work	17	3.7	17.2
	Remittances	14	3.0	14.1
	Other	3	.6	3.0
	Total	99	21.4	100.0
	Missing System	363	78.6	
	Total	462	100.0	

## 7 Livelihood diversification and transformation

Table 21 shows that 39.9% of interviewed heads of household indicated that economic activities for the household have not changed overtime. The table also show that 53.8% and 41.7% of heads of household who indicated an improvement were potato and non potato producers respectively.

**Table 19: Change in activity in the household**

Change in activity in the HH (categories		Household grow Irish potato		Total
		Yes	No	
same	Count	39	40	79
	% within Change in activity in the HH (categories)	49.4%	50.6%	100.0%
	% within Household grow Irish potato	39.8%	40.0%	39.9%
	% of Total	19.7%	20.2%	39.9%
changed	Count	31	40	71
	% within Change in activity in the HH (categories)	43.7%	56.3%	100.0%
	% within Household grow Irish potato	31.6%	40.0%	35.9%
	% of Total	15.7%	20.2%	35.9%
Improved	Count	28	20	48
	% within Change in activity in the HH (categories)	58.3%	41.7%	100.0%
	% within Household grow Irish potato	28.6%	20.0%	24.2%
	% of Total	14.1%	10.1%	24.2%
Total	Count	98	100	198
	% within Change in activity in the HH (categories)	49.5%	50.5%	100.0%
	% within Household grow Irish potato	100.0%	100.0%	100.0%
	% of Total	49.5%	50.5%	100.0%

Table 22 indicates if heads of interviewed households experienced any changes in income. The table shows that 44.9% of respondents indicated that household income deteriorated overtime. This finding is contrary to perceptions generated during FGD where participants in the four villages noted general improvement of household incomes from Irish potatoes. This was more obvious in villages with irrigated Irish potato fields. The possibility is that the proportion of households who are benefiting is relatively small compared to total population and/or the fact that prices of goods and services has increase thus reducing purchasing power. With increased general income within the study villages resulting from potato and other crops possibilities of increased prices cannot be ruled out.

**Table 20: Change in Income in the household**

Change in income in the HH (categories)		Household grow Irish potato		Total
		Yes	No	
deteriorated	Count	45	44	89
	% within Change in income in the HH (categories)	50.6%	49.4%	100.0%
	% within Household grow Irish potato	45.9%	44.0%	44.9%
	% of Total	22.7%	22.2%	44.9%
same	Count	20	35	55
	% within Change in income in the HH (categories)	36.4%	63.6%	100.0%
	% within Household grow Irish potato	20.4%	35.0%	27.8%
	% of Total	10.1%	17.7%	27.8%
improved	Count	33	21	54
	% within Change in income in the HH (categories)	61.1%	38.9%	100.0%
	% within Household grow Irish potato	33.7%	21.0%	27.3%
	% of Total	16.7%	10.6%	27.3%
Total	Count	98	100	198
	% within Change in income in the HH (categories)	49.5%	50.5%	100.0%
	% within Household grow Irish potato	100.0%	100.0%	100.0%
	% of Total	49.5%	50.5%	100.0%

The analysis of the households' responses on purchasing power indicated that 39.2% of the respondents indicated that during the interview their purchasing power had deteriorated in the sense that they bought less good compared to previous years (Table 23). An attempt to assess the influence of potato production indicates that only 26.8% and 23.7% of potato and non potato producing households indicated that they bought more goods. Table 23 also shows that 44.3% and 34% of potato and non potato producing households indicated that they bought fewer goods. The possible explanation is that as a result of an increase in general income there is a tendency of increasing prices (inflation), this is typical of economically booming areas such as mining areas.

**Table 21: Change in purchasing power for the household**

Change in purchasing power (categories)		Household grow Irish potato		Total
		Yes	No	
less goods	Count	43	33	76
	% within Change in purchasing power (categories)	56.6%	43.4%	100.0%
	% within Household grow Irish potato	44.3%	34.0%	39.2%
	% of Total	22.2%	17.0%	39.2%
same goods	Count	28	41	69
	% within Change in purchasing power (categories)	40.6%	59.4%	100.0%
	% within Household grow Irish potato	28.9%	42.3%	35.6%
	% of Total	14.4%	21.1%	35.6%
more goods	Count	26	23	49
	% within Change in purchasing power (categories)	53.1%	46.9%	100.0%
	% within Household grow Irish potato	26.8%	23.7%	25.3%

	% of Total	13.4%	11.9%	25.3%
Total	Count	97	97	194
	% within Change in purchasing power (categories)	50.0%	50.0%	100.0%
	% within Household grow Irish potato	100.0%	100.0%	100.0%
	% of Total	50.0%	50.0%	100.0%

Table 24a shows that 36.7 % of potato producing households who experienced income deterioration did not change economic activity.

**Table 24a Change in income and change in activity by potato production.**

Household grow Irish potato				Change in activity in the HH (categories)			Total
				same	changed	Improved	
Yes	Change in income in the HH (categories)	deteriorated	Count	36	8	1	45
			% of Total	36.7%	8.2%	1.0%	45.9%
		same	Count	2	16	2	20
			% of Total	2.0%	16.3%	2.0%	20.4%
		improved	Count	1	7	25	33
			% of Total	1.0%	7.1%	25.5%	33.7%
	Total	Count	39	31	28	98	
		% of Total	39.8%	31.6%	28.6%	100.0%	
No	Change in income in the HH (categories)	deteriorated	Count	36	6	2	44
			% of Total	36.0%	6.0%	2.0%	44.0%
		same	Count	4	29	2	35
			% of Total	4.0%	29.0%	2.0%	35.0%
		improved	Count	0	5	16	21
			% of Total	.0%	5.0%	16.0%	21.0%
	Total	Count	40	40	20	100	
		% of Total	40.0%	40.0%	20.0%	100.0%	

**Table 24b Change in income and change in purchasing power by potato production.**

Household grow Irish potato				Change in purchasing power (categories)			Total
				less goods	same goods	more goods	
Yes	Change in income in the HH (categories)	deteriorated	Count	34	5	5	44
			% of Total	35.1%	5.2%	5.2%	45.4%
		same	Count	5	14	1	20
			% of Total	5.2%	14.4%	1.0%	20.6%
		improved	Count	4	9	20	33
			% of Total	4.1%	9.3%	20.6%	34.0%
	Total	Count	43	28	26	97	
		% of Total	44.3%	28.9%	26.8%	100.0%	
No	Change in income in the HH (categories)	deteriorated	Count	29	9	5	43
			% of Total	29.9%	9.3%	5.2%	44.3%
		same	Count	3	25	5	33
			% of Total	3.1%	25.8%	5.2%	34.0%
		improved	Count	1	7	13	21
			% of Total	1.0%	7.2%	13.4%	21.6%
	Total	Count	33	41	23	97	
		% of Total	34.0%	42.3%	23.7%	100.0%	

**Table 25 Change in owned land over past 10 years and change in activity by potato production.**

Household grow Irish potato				Change in activity in the HH (categories)			Total
				same	changed	Improved	
Yes	Change in owned land over last 10 years (categories)	decreased	Count	7	3	0	10
			% of Total	8.0%	3.4%	.0%	11.5%
		same	Count	28	22	16	66
			% of Total	32.2%	25.3%	18.4%	75.9%
		increased	Count	1	3	7	11
			% of Total	1.1%	3.4%	8.0%	12.6%

Total			Count	36	28	23	87
			% of Total	41.4%	32.2%	26.4%	100.0%
No	Change in owned land over last 10 years (categories)	decreased	Count	6	5	4	15
			% of Total	7.5%	6.2%	5.0%	18.8%
		same	Count	23	31	11	65
			% of Total	28.8%	38.8%	13.8%	81.2%
	Total		Count	29	36	15	80
			% of Total	36.2%	45.0%	18.8%	100.0%

**Table 26 Change in owned land over past 10 years and change in income by potato production**

				Change in income in the HH (categories)			
				deteriorated	same	improved	
Household grow Irish potato							
Yes	Change in owned land over last 10 years (categories)	decreased	Count	8	1	1	10
			% of Total	9.2%	1.1%	1.1%	11.5%
		same	Count	30	16	20	66
			% of Total	34.5%	18.4%	23.0%	75.9%
		increased	Count	2	3	6	11
			% of Total	2.3%	3.4%	6.9%	12.6%
	Total		Count	40	20	27	87
			% of Total	46.0%	23.0%	31.0%	100.0%
No	Change in owned land over last 10 years (categories)	decreased	Count	7	4	4	15
			% of Total	8.8%	5.0%	5.0%	18.8%
		same	Count	26	27	12	65
			% of Total	32.5%	33.8%	15.0%	81.2%
	Total		Count	33	31	16	80
			% of Total	41.2%	38.8%	20.0%	100.0%

## 8 Multi-locality and mobility

Table 27 shows main activity of members of household who are usually absent and present. About 41.2% of potatoes producing households who are resident are involved in income generating activity. At the same time 11.1% and 11.3% of members of potato and non potato



producing households respectively and usually absent are involved in income generating activities.

**Table 27 Household member resident and main activity by Irish potato production**

Household grow Irish potato/ Household member residence			Household member main activity							Total	
			income generating	school	unemployed	retired	disabled	subsistence production	domestic work		other
Yes	resident	Count	226	152	4	2	6	6	2	52	450
		% of Total	41.2%	27.7%	.7%	.4%	1.1%	1.1%	.4%	9.5%	82.0%
	usually absent	Count	61	36	0	0	0	1	1	0	99
		% of Total	11.1%	6.6%	.0%	.0%	.0%	.2%	.2%	.0%	18.0%
	Total	Count	287	188	4	2	6	7	3	52	549
		% of Total	52.3%	34.2%	.7%	.4%	1.1%	1.3%	.5%	9.5%	100.0%
No	resident	Count	190	118	5		7	28	4	31	383
		% of Total	41.2%	25.6%	1.1%		1.5%	6.1%	.9%	6.7%	83.1%
	usually absent	Count	52	13	3		0	6	3	1	78
		% of Total	11.3%	2.8%	.7%		.0%	1.3%	.7%	.2%	16.9%
	Total	Count	242	131	8		7	34	7	32	461
		% of Total	52.5%	28.4%	1.7%		1.5%	7.4%	1.5%	6.9%	100.0%

Table 28 show that the reason for leaving “sending’ home is education for 26% and work for 23.6% for household members who are usually. About 4% leave ‘sending’ home for farming activities. The analysis also show that 14% and 11.3% of household members who are usually absent from potato and non potato producing households leave “sending household” for work.

**Table 22: Reason for leaving for usually absent member of household**

Absent resident HH member reason for leaving	Household grow Irish potato		Total
	Yes	No	

education	Count	25	14	39
	% of Total	16.7%	9.3%	26.0%
work	Count	21	17	38
	% of Total	14.0%	11.3%	25.3%
Business	Count	7	9	16
	% of Total	4.7%	6.0%	10.7%
Farming activities	Count	3	3	6
	% of Total	2.0%	2.0%	4.0%
Marriage	Count	24	26	50
	% of Total	16.0%	17.3%	33.3%
Others	Count	1	0	1
	% of Total	.7%	.0%	.7%
Total	Count	81	69	150
	% of Total	54.0%	46.0%	100.0%

The time since the left members of households who are usually absent. About 14.3% and 18.8% of household members who are usually absent have been absent for three years and more than 8 years respectively. At the same time 5.3% and 13.5% of members of household who are usually absent for more than 8 years are from potato and non potato producing households respectively (Table 29)`.

**Table 23: Time since left for usually absent resident member of household**

Duration of leaving in category of months		Household grow Irish potato		Total
		Yes	No	
Less than 3 month	Count	1	2	3
	% of Total	.8%	1.5%	2.3%
4 - 6 month	Count	0	2	2
	% of Total	.0%	1.5%	1.5%
10 - 12 month	Count	14	9	23
	% of Total	10.5%	6.8%	17.3%
13 - 15 month	Count	8	3	11
	% of Total	6.0%	2.3%	8.3%
16 - 18 month	Count	4	2	6

	% of Total	3.0%	1.5%	4.5%
19 - 21 month	Count	1	3	4
	% of Total	.8%	2.3%	3.0%
22 - 24 month	Count	9	3	12
	% of Total	6.8%	2.3%	9.0%
3 years	Count	12	7	19
	% of Total	9.0%	5.3%	14.3%
4 years	Count	5	5	10
	% of Total	3.8%	3.8%	7.5%
5 years	Count	4	5	9
	% of Total	3.0%	3.8%	6.8%
6 years	Count	1	1	2
	% of Total	.8%	.8%	1.5%
7 years	Count	4	3	7
	% of Total	3.0%	2.3%	5.3%
More than 8 years	Count	7	18	25
	% of Total	5.3%	13.5%	18.8%
Count		70	63	133
% of Total		52.6%	47.4%	100.0%

Location for absent resident member of households is presented in Table 30. The table shows that 19.2% and 37.7% of members of household who are usually absent are located in town/city in the same district and other district respectively.

**Table 30: Location for absent resident member of household by potato production**

Absent resident HH member current location		Household grow Irish potato		Total
		Yes	No	
nearby village	Count	15	15	30
	% of Total	10.3%	10.3%	20.5%
village in same district	Count	10	10	20
	% of Total	6.8%	6.8%	13.7%
village in other district	Count	7	6	13
	% of Total	4.8%	4.1%	8.9%
town/city in same district	Count	11	17	28

	% of Total	7.5%	11.6%	19.2%
town/city in other district	Count	34	21	55
	% of Total	23.3%	14.4%	37.7%
Total	Count	77	69	146
	% of Total	52.7%	47.3%	100.0%

Table 31 shows that destination of work related migration for 72.1% of members of household go to urban areas. At the same time destination of work related migration is rural for 27.3% and 28.6% of potato and non potato households.

**Table 31: Location of absent (temporary) members of household**

Area of main destination of work related migration		Household grow Irish potato		Total
		Yes	No	
rural	Count	6	6	12
	% within Area of main destination of work related migration	50.0%	50.0%	100.0%
	% within Household grow Irish potato	27.3%	28.6%	27.9%
	% of Total	14.0%	14.0%	27.9%
urban	Count	16	15	31
	% within Area of main destination of work related migration	51.6%	48.4%	100.0%
	% within Household grow Irish potato	72.7%	71.4%	72.1%
	% of Total	37.2%	34.9%	72.1%
	Count	22	21	43
	% within Area of main destination of work related migration	51.2%	48.8%	100.0%
	% within Household grow Irish potato	100.0%	100.0%	100.0%
	% of Total	51.2%	48.8%	100.0%

The frequency away from 'sending' home for members of household who are temporary migrants is presented in Table 32. The table shows that 34% of members of household who migrate temporary, migrate seasonally and 12.8% migrate on weekly basis.

**Table 32: mobility/migration frequency away from household**

Migration frequency of trips away from HH		Household grow Irish potato		Total
		Yes	No	
daily commuting	Count	3	4	7
	% within Migration frequency of trips away from HH (categories)	42.9%	57.1%	100.0%
	% within Household grow Irish potato	12.0%	18.2%	14.9%
	% of Total	6.4%	8.5%	14.9%
every week	Count	2	4	6
	% within Migration frequency of trips away from HH (categories)	33.3%	66.7%	100.0%
	% within Household grow Irish potato	8.0%	18.2%	12.8%
	% of Total	4.3%	8.5%	12.8%
every month	Count	3	3	6
	% within Migration frequency of trips away from HH (categories)	50.0%	50.0%	100.0%
	% within Household grow Irish potato	12.0%	13.6%	12.8%
	% of Total	6.4%	6.4%	12.8%
a few times a year	Count	2	5	7
	% within Migration frequency of trips away from HH (categories)	28.6%	71.4%	100.0%
	% within Household grow Irish potato	8.0%	22.7%	14.9%
	% of Total	4.3%	10.6%	14.9%
seasonally	Count	11	5	16
	% within Migration frequency of trips away from HH (categories)	68.8%	31.2%	100.0%
	% within Household grow Irish potato	44.0%	22.7%	34.0%

	% of Total	23.4%	10.6%	34.0%
occasionally	Count	4	1	5
	% within Migration			
	frequency of trips away from HH (categories)	80.0%	20.0%	100.0%
	% within Household grow Irish potato	16.0%	4.5%	10.6%
	% of Total	8.5%	2.1%	10.6%
Total	Count	25	22	47
	% within Migration			
	frequency of trips away from HH (categories)	53.2%	46.8%	100.0%
	% within Household grow Irish potato	100.0%	100.0%	100.0%
	% of Total	53.2%	46.8%	100.0%

Means of transport for members of household who migrate temporally is presented in Table 33. About 58.3% and 22.9% of members of household who migrate temporarily use buses and bicycles as a means of transport.

**Table 24: Means of transport used during the mobility/migration**

Migration most used means of transport (categories)		Household grow Irish potato		Total
		Yes	No	
bus	Count	16	12	28
	% within Migration most used means of transport (categories)	57.1%	42.9%	100.0%
	% within Household grow Irish potato	61.5%	54.5%	58.3%
	% of Total	33.3%	25.0%	58.3%
car	Count	3	0	3
	% within Migration most used means of transport (categories)	100.0%	.0%	100.0%
	% within Household grow Irish potato	11.5%	.0%	6.2%
	% of Total	6.2%	.0%	6.2%
truck	Count	2	2	4

	% within Migration most used means of transport (categories)	50.0%	50.0%	100.0%
	% within Household grow Irish potato	7.7%	9.1%	8.3%
	% of Total	4.2%	4.2%	8.3%
motorbike	Count	2	0	2
	% within Migration most used means of transport (categories)	100.0%	.0%	100.0%
	% within Household grow Irish potato	7.7%	.0%	4.2%
	% of Total	4.2%	.0%	4.2%
bicycle	Count	3	8	11
	% within Migration most used means of transport (categories)	27.3%	72.7%	100.0%
	% within Household grow Irish potato	11.5%	36.4%	22.9%
	% of Total	6.2%	16.7%	22.9%
Total	Count	26	22	48
	% within Migration most used means of transport (categories)	54.2%	45.8%	100.0%
	% within Household grow Irish potato	100.0%	100.0%	100.0%
	% of Total	54.2%	45.8%	100.0%

An estimate of the proportion of time that migrant household members spend in rural and urban areas was estimated by interviewed respondents. The results are presented in Table 34 and show that for potato producing and non producing household migrant household members spent on average 68.9% and 81.1% of the time in rural area.

**Table 25: Time spent by migrant household member in urban and rural areas**

Household grow Irish potato	N	Minimum	Maximum	Mean	Std. Deviation
Yes					
Time spent in rural locations over last 12 months (%)	24	10.0	100.0	68.9	28.6181
Time spent in urban locations over last 12 months (%)	20	.0	90.0	34.7	25.4556
Valid N (listwise)	20				
No					
Time spent in rural locations over last 12 months (%)	21	30.0	100.0	81.1	21.7745

Time spent in urban locations over last 12 months (%)	20	2.0	70.0	19.8	21.8959
Valid N (listwise)	20				

Table 35 shows that for members of potato producing households who were male only 1% was usually absent. Whereas none female members of Irish potato producing households were usually absent.

**Table 26: Household member gender and residence by Irish potato production**

Household grow Irish potato				Household member resident		Total
				resident	usually absent	
Yes	Household member gender male	Count		81	1	82
		% of Total		81.0%	1.0%	82.0%
	female	Count		18	0	18
		% of Total		18.0%	.0%	18.0%
	Total	Count		99	1	100
		% of Total		99.0%	1.0%	100.0%
No	Household member gender male	Count		60	1	61
		% of Total		60.0%	1.0%	61.0%
	female	Count		39	0	39
		% of Total		39.0%	.0%	39.0%
	Total	Count		99	1	100
		% of Total		99.0%	1.0%	100.0%

About 35% of potatoes producing heads of households were aged 35 years and less. Only one member of potato producing household aged more than 35 years old who indicated to be usually absent. None of the members aged less than 35 indicated to be usually absent (Table 36).

**Table 36: Age group and residence of household member by Irish potato production**

Household grow Irish potato				Household member resident of the HH		Total
				resident	usually absent	
Yes	Working age group of	Below 18 years	Count	1	0	1



household member				% of Total	1.0%	.0%	1.0%
18 - 35 years				Count	34	0	34
				% of Total	34.0%	.0%	34.0%
36 - 65 years				Count	56	1	57
				% of Total	56.0%	1.0%	57.0%
Above 65 years				Count	8	0	8
				% of Total	8.0%	.0%	8.0%
Total				Count	99	1	100
				% of Total	99.0%	1.0%	100.0%
No	Working age group of household member	18 - 35 years		Count	23	0	23
				% of Total	23.0%	.0%	23.0%
		36 - 65 years		Count	58	1	59
				% of Total	58.0%	1.0%	59.0%
		Above 65 years		Count	18	0	18
				% of Total	18.0%	.0%	18.0%
		Total		Count	99	1	100
				% of Total	99.0%	1.0%	100.0%

In comparing frequency and purpose of mobility to urban areas with frequency and purpose to other rural areas it is noted that 13.3% of members of potato producing household with rural area as destination of work related migration were commuting daily where none was observed for urban area as destination of work related migration (Table 37)

**Table 37: Area and frequency to main destination of work related migration by Irish potato production**

				Migration frequency of trips away from HH (categories)						Total
				daily commuting	every week	every month	a few times a year	seasonally	occasionally	
Household grow Irish potato										
Yes	Area of main destination of work related migration	rural	Count	2	0		0	3	0	5
			% of Total	13.3%	.0%		.0%	20.0%	.0%	33.3%
		urban	Count	0	1		1	5	3	10

				% of Total	.0%	6.7%		6.7%	33.3%	20.0%	66.7%
Total				Count	2	1		1	8	3	15
				% of Total	13.3%	6.7%		6.7%	53.3%	20.0%	100.0%
No	Area of main destination of work related migration	rural	Count	1	1	0	1	0	0	0	3
			% of Total	8.3%	8.3%	.0%	8.3%	.0%	.0%	.0%	25.0%
		urban	Count	1	2	2	1	2	1	1	9
			% of Total	8.3%	16.7%	16.7%	8.3%	16.7%	8.3%	8.3%	75.0%
		Total		Count	2	3	2	2	2	1	12
				% of Total	16.7%	25.0%	16.7%	16.7%	16.7%	8.3%	100.0%

Buying shop commodities and charcoal business are the main purpose for trips to urban areas for 16.5% of members of non potato producing household with urban area as main destination of work related migration (Table 38). Business is the main purpose for trip to urban areas for 120 % of members of potato producing household with urban area as main destination of work related migration. Casual labour is important as main purpose for trip to rural areas.

**Table 38: Main purpose of trips away from household and area of main destination of work related migration**

				Area of main destination of work related migration		Total
				rural	urban	
Household grow Irish potato						
Yes	Specify main purpose of trips away from HH	Business	Count	2	3	5
			% of Total	13.3%	20.0%	33.3%
		Buying shop commodities	Count	0	1	1
			% of Total	.0%	6.7%	6.7%
		Casual labour	Count	1	2	3
			% of Total	6.7%	13.3%	20.0%
		Cultivating rice	Count	1	0	1
			% of Total	6.7%	.0%	6.7%

No	Specify main purpose of trips away from HH	Doing house building work	Count	0	1	1
			% of Total	.0%	6.7%	6.7%
		Doing work	Count	1	0	1
			% of Total	6.7%	.0%	6.7%
		Selling farm crops	Count	0	2	2
			% of Total	.0%	13.3%	13.3%
		Visiting family	Count	0	1	1
			% of Total	.0%	6.7%	6.7%
		Total	Count	5	10	15
			% of Total	33.3%	66.7%	100.0%
		Business	Count	0	1	1
			% of Total	.0%	8.3%	8.3%
		Buying shop commodities	Count	0	2	2
			% of Total	.0%	16.7%	16.7%
		Casual labour	Count	1	0	1
			% of Total	8.3%	.0%	8.3%
		Charcoal business	Count	0	2	2
			% of Total	.0%	16.7%	16.7%
		Doing work	Count	0	1	1
			% of Total	.0%	8.3%	8.3%
		Household shopping	Count	0	1	1
			% of Total	.0%	8.3%	8.3%
		Selling farm crops	Count	1	1	2
			% of Total	8.3%	8.3%	16.7%
		Visiting family	Count	0	1	1
			% of Total	.0%	8.3%	8.3%
		selling art works	Count	1	0	1
			% of Total	8.3%	.0%	8.3%
		Total	Count	3	9	12
			% of Total	25.0%	75.0%	100.0%

There is no clear evidence from data on changes to mobility due to very small number of respondents.

**Table 39: Change in mobility compared to 10 years ago by Irish potato production**

Specify how mobility has changed compared to 10 years ago		Household grow Irish potato		Total
		Yes	No	
don't know / no answer	Count	2	0	2
	% of Total	1.0%	.0%	1.0%
not applicable	Count	84	92	176
	% of Total	42.0%	46.0%	88.0%
Change of frequency and distance travelled	Count	1	0	1
	% of Total	.5%	.0%	.5%
Distance and frequencies of travel has reduced	Count	1	0	1
	% of Total	.5%	.0%	.5%
Frequencies of travel has been reduced	Count	1	0	1
	% of Total	.5%	.0%	.5%
Frequency has increase	Count	1	0	1
	% of Total	.5%	.0%	.5%
Frequency increase due to business	Count	0	2	2
	% of Total	.0%	1.0%	1.0%
Frequency of travelling has decreased	Count	2	1	3
	% of Total	1.0%	.5%	1.5%
Frequency of travelling has increased	Count	0	1	1
	% of Total	.0%	.5%	.5%
Increases in trips and distance	Count	0	1	1
	% of Total	.0%	.5%	.5%
More time to travel for business	Count	1	0	1
	% of Total	.5%	.0%	.5%
The distance of travelling has increased	Count	2	0	2
	% of Total	1.0%	.0%	1.0%
changed from agriculture to livestock keeping	Count	1	0	1
	% of Total	.5%	.0%	.5%
during harvesting season frequency of mobility inc	Count	0	1	1
	% of Total	.0%	.5%	.5%
increase in trips and frequency	Count	1	0	1
	% of Total	.5%	.0%	.5%

increase in frequency of trips	Count	2	2	4
	% of Total	1.0%	1.0%	2.0%
more mobility,more time in ludewa	Count	1	0	1
	% of Total	.5%	.0%	.5%
Total	Count	100	100	200
	% of Total	50.0%	50.0%	100.0%

The number of respondents is too small to make any meaningful finding (Table 40)

**Table 40: Reason for changed mobility compared to 10 years ago by Irish potato production**

Specify why mobility has changed compared to 10 years ago		Household grow Irish potato		Total
		Yes	No	
don't know / no answer	Count	2	0	2
	% of Total	1.0%	.0%	1.0%
not applicable	Count	85	92	177
	% of Total	42.5%	46.0%	88.5%
Change of agricultural season	Count	0	1	1
	% of Total	.0%	.5%	.5%
Doing different activities to increase HH income	Count	3	1	4
	% of Total	1.5%	.5%	2.0%
Due to increase of production	Count	2	0	2
	% of Total	1.0%	.0%	1.0%
Increase for household income	Count	0	3	3
	% of Total	.0%	1.5%	1.5%
Increase of business activities	Count	1	0	1
	% of Total	.5%	.0%	.5%
Increased activities	Count	1	0	1
	% of Total	.5%	.0%	.5%
Introduction of irrigation	Count	0	1	1
	% of Total	.0%	.5%	.5%
More income fo household	Count	1	0	1
	% of Total	.5%	.0%	.5%
Most of times travelling	Count	0	1	1

	% of Total	.0%	.5%	.5%
Old age	Count	2	0	2
	% of Total	1.0%	.0%	1.0%
Searching for job to increase income	Count	1	0	1
	% of Total	.5%	.0%	.5%
change of employment agreement	Count	0	1	1
	% of Total	.0%	.5%	.5%
concentrate on agriculture	Count	1	0	1
	% of Total	.5%	.0%	.5%
due to change of household activities	Count	1	0	1
	% of Total	.5%	.0%	.5%
Total	Count	100	100	200
	% of Total	50.0%	50.0%	100.0%

## 9 Typology of Mobility

**Table 41: Typology of mobility**

Time dimension	Spatial pattern			
	<i>Rural-rural</i>	<i>Rural-urban</i>	<i>Urban-rural</i>	<i>Urban-urban</i>
<i>Commuting</i>	Daily circular mobility of workers as hired labour to other fields especially in the Irish potato production  other type is the village traders/agents searching for fields to harvest	Daily circular mobility of farmers selling the produce to urban.	Daily circular mobility of traders.	Daily circular mobility of workers to manufacturing and service sectors, petty traders/self-employed, school children/students to urban nodes.

	irish potato,  school children attending ward level secondary schools			
<i>Periodic / short term</i>	Traders to markets,	Traders of agro- products to urban markets, children moving to boarding schools	Traders of manufacturing products	Traders of manufacturing products.
<i>Seasonal / medium term</i>	Mobility of workers to other farmer field	Movement from rural areas to cities during agricultural low seasons	Return migration during farming season (Faring of Irish potato)	
<i>Long term</i>	Labour migration, retirement migration, marriage reasons	Labour migration, Moving to town/urban for self employment like petty trade.  marriage reasons	Retirement migration.	

## 10 Plots (Form C-1).

The size of landholdings for potato producing household range from 0.5 to 18.8 acres and the average size of landholding is 5.8 acres. And for none potato producing household landholdings range between 0.5 to 20 with an average of 3.6 acres

**Table 27: average size of landholdings per household**

Descriptive Statistics						
Household grow Irish potato		N	Minimum	Maximum	Mean	Std. Deviation
Yes	Estimated area owned by household	100	.50	18.8	5.8	3.96964
	Valid N (listwise)	100				
No	Estimated area owned by household	100	.50	20.00	3.6	3.89103
	Valid N (listwise)	100				

Results in Table 43 shows that 16% and 30% of potato and non potato producing households respectively own less than 2 acres of land (Table 43).

**Table 428: Total estimated land (acres) per household**

Total estimated land (acres) per household		Household grow Irish potato		Total
		Yes	No	
0<1	Count	6	23	29
	% within Household grow Irish potato	6.0%	23.0%	14.5%
1<2	Count	16	30	46
	% within Household grow Irish potato	16.0%	30.0%	23.0%
2<3	Count	11	13	24
	% within Household grow Irish potato	11.0%	13.0%	12.0%
3<4	Count	11	9	20
	% within Household grow Irish potato	11.0%	9.0%	10.0%
4<5	Count	10	5	15
	% within Household grow Irish potato	10.0%	5.0%	7.5%
5<6	Count	6	8	14
	% within Household grow Irish potato	6.0%	8.0%	7.0%
6<7	Count	9	3	12
	% within Household grow Irish potato	9.0%	3.0%	6.0%
7<8	Count	6	0	6
	% within Household grow Irish potato	6.0%	.0%	3.0%
8<9	Count	8	0	8
	% within Household grow Irish potato	8.0%	.0%	4.0%



9<10	Count	5	0	5
	% within Household grow Irish potato	5.0%	.0%	2.5%
10<15	Count	9	6	15
	% within Household grow Irish potato	9.0%	6.0%	7.5%
15<20	Count	3	3	6
	% within Household grow Irish potato	3.0%	3.0%	3.0%
Total	Count	100	100	200
	% within Household grow Irish potato	100.0%	100.0%	100.0%

For potato and non potato producing households they own on average 3 and 2 plots respectively (Table 44)

**Table 44: Farm plots per household by potato production**

Descriptive Statistics						
Household grow Irish potato		N	Minimum	Maximum	Mean	Std. Deviation
Yes	Total number of plots per HH	100	1.00	8.00	3	1.32513
	Total size of HH cultivated landholdings (Acres)	100	.00	18.75	3.9	2.67076
	Share of cultivated land in total land use (%)	100	.00	100.00	77.3	25.35191
	Valid N (listwise)	100				
No	Total number of plots per HH	100	1.00	5.00	2	1.05887
	Total size of HH cultivated landholdings (Acres)	100	.50	10.50	2.2	1.77097
	Share of cultivated land in total land use (%)	100	4.17	100.00	83.4	26.98874
	Valid N (listwise)	100				

Results in Table 45 show that 60 minutes is the highest perceived time to get to plot by non potato producer households

**Table 29: Distance to farm plots per household by potato production**

Descriptive Statistics					
Household grow Irish potato	N	Minimum	Maximum	Mean	Std. Deviation

Yes	Distance of plot1 in time (minutes)	96	0	180	46	36.612
	Distance of plot2 in time (minutes)	86	0	150	45	35.783
	Distance of plot3 in time (minutes)	48	0	120	37	27.684
	Distance of plot4 in time (minutes)	26	0	240	42	58.615
	Distance of plot5 in time (minutes)	12	5	180	49	47.360
	Valid N (listwise)	10				
No	Distance of plot1 in time (minutes)	91	1	120	41	29.810
	Distance of plot2 in time (minutes)	43	1	120	35	30.722
	Distance of plot3 in time (minutes)	29	1	180	50	44.281
	Distance of plot4 in time (minutes)	8	15	90	38	26.041
	Distance of plot5 in time (minutes)	1	60	60	60	.
	Valid N (listwise)	1				

Most plots cultivated by both potato and non potato producers are owned by households. An average of 77% and 83% plots are owned by potato and non potato producers (Table 46)

**Table 30: Ownership of farm plots per household by potato production**

Descriptive Statistics						
Household grow Irish potato		N	Minimum	Maximum	Mean	Std. Deviation
Yes	Percentage of plot which owned by household	100	.00	100.00	77	29.96821
	Percentage of plot which rented by household	100	.00	100.00	14	25.36735
	Percentage of plot which borrowed by household	100	.00	66.67	1	8.29283

	Percentage of plot which owned by community	100	.00	33.33	.5	3.71169
	Percentage of plot which owned by cooperatives	100	.00	20.00	.2	2.00000
	Percentage of plot which owed by clan	100	.00	100.00	4.	17.15265
	Valid N (listwise)	100				
No	Percentage of plot which owned by household	100	.00	100.00	83	31.83510
	Percentage of plot which rented by household	100	.00	100.00	11	29.22635
	Percentage of plot which borrowed by household	100	.00	100.00	3	17.14466
	Percentage of plot which owned by community	100	.00	.00	.0	.00000
	Percentage of plot which owned by cooperatives	100	.00	33.33	1	4.69018
	Percentage of plot which owed by clan	100	.00	100.00	5	18.78966
	Valid N (listwise)	100				

**Table 31: Use of farm plots per household by potato production**

Descriptive Statistics						
Household grow Irish potato		N	Minimum	Maximum	Mean	Std. Deviation
Yes	Total number of plots per HH	100	1.00	5.00	3	1.10937
	Total number of plots per HH use family labour	55	1.00	5.00	2	.84087
	Percentage of cultivated plot which family labour used	100	.00	100.00	39	40.23116
	Valid N (listwise)	55				
No	Total number of plots per HH	100	1.00	5.00	2	1.05887
	Total number of plots per HH use family labour	70	1.00	3.00	1	.54298
	Percentage of cultivated plot which family labour used	100	.00	100.00	58	42.94335
	Valid N (listwise)	70				

**11 Livestock (Form C-1)****Table 32: Types of livestock per household by potato production**

Descriptive Statistics						
Household grow Irish potato		N	Minimum	Maximum	Mean	Std. Deviation
Yes	Livestock oxen amount	12	0	5	1.75	1.960
	Livestock cattle amount	19	0	8	3.68	2.540
	Livestock pigs amount	31	0	6	1.61	1.145
	Livestock sheep amount	3	0	6	2.00	3.464
	Livestock goats amount	31	0	20	4.90	5.095
	Livestock chicken amount	67	0	400	16.97	50.398
	Livestock donkey amount	9	0	10	6.22	3.193
	Livestock guinea piggs amount	5	5.00	50.00	23.6000	24.13089
	Valid N (listwise)	0				
No	Livestock oxen amount	8	1	6	3.12	1.885
	Livestock cattle amount	8	1	4	2.38	1.061
	Livestock pigs amount	14	1	2	1.29	.469
	Livestock sheep amount	0				
	Livestock goats amount	9	1	5	2.44	1.667
	Livestock chicken amount	48	1	14	5.52	3.591
	Livestock donkey amount	2	4	10	7.00	4.243
	Livestock guinea piggs amount	3	3.00	10.00	7.6667	4.04145
	Valid N (listwise)	0				

**Table 33: Use of oxen products per household by potato production**

Too few respondents

Use of oxen products (categories) * Household grow Irish potato Crosstabulation			
			Household grow Irish potato
			Yes No Total
Use of oxen products (categories)	subsistence	Count	5 3 8
		% within Household grow Irish potato	71.4% 37.5% 53.3%

	sale	Count	1	4	5
		% within Household grow Irish potato	14.3%	50.0%	33.3%
	both	Count	1	1	2
		% within Household grow Irish potato	14.3%	12.5%	13.3%
Total		Count	7	8	15
		% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 34: Use of Cattle products per household by potato production**

Too few respondents

**Use of cattle products (categories) \* Household grow Irish potato Crosstabulation**

			Household grow Irish potato		Total
			Yes	No	
Use of cattle products (categories)	subsistence	Count	6	5	11
		% within Household grow Irish potato	35.3%	62.5%	44.0%
	sale	Count	5	1	6
		% within Household grow Irish potato	29.4%	12.5%	24.0%
	both	Count	6	2	8
		% within Household grow Irish potato	35.3%	25.0%	32.0%
Total		Count	17	8	25
		% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 35: Use of pigs products per household by potato production****Use of pigs products (categories) \* Household grow Irish potato Crosstabulation**

			Household grow Irish potato		Total
			Yes	No	

Use of pigs products (categories)	subsistence	Count	14	2	16
		% within Household grow Irish potato	50.0%	15.4%	39.0%
	sale	Count	11	9	20
		% within Household grow Irish potato	39.3%	69.2%	48.8%
	both	Count	3	2	5
		% within Household grow Irish potato	10.7%	15.4%	12.2%
Total	Count		28	13	41
	% within Household grow Irish potato		100.0%	100.0%	100.0%

**Table 36a: Use of goats products per household by potato production**

Use of goats products (categories)		Household grow Irish potato		Total
		Yes	No	
subsistence	Count	15	2	17
	% within Household grow Irish potato	51.7%	25.0%	45.9%
sale	Count	9	2	11
	% within Household grow Irish potato	31.0%	25.0%	29.7%
both	Count	5	4	9
	% within Household grow Irish potato	17.2%	50.0%	24.3%
Total	Count	29	8	37
	% within Household grow Irish potato	100.0%	100.0%	100.0%

Table 52 shows that 71.6 and 59.6% of potato producing and non potato producing households use chicken products for subsistence

**Table 37b: Use of chicken products per household by potato production**

Use of chicken products (categories)	Household grow Irish potato	Total
--------------------------------------	-----------------------------	-------

		Yes	No	
subsistence	Count	48	28	76
	% within Household grow Irish potato	71.6%	59.6%	66.7%
sale	Count	2	1	3
	% within Household grow Irish potato	3.0%	2.1%	2.6%
both	Count	17	18	35
	% within Household grow Irish potato	25.4%	38.3%	30.7%
Total	Count	67	47	114
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 38c: Use of donkey products per household by potato production**

Too few respondents

			Household grow Irish potato		Total
			Yes	No	
Use of donkey products (categories)	subsistence	Count	6	2	8
		% within Household grow Irish potato	75.0%	100.0%	80.0%
	both	Count	2	0	2
		% within Household grow Irish potato	25.0%	.0%	20.0%
Total		Count	8	2	10
		% within Household grow Irish potato	100.0%	100.0%	100.0%

**12 Changes in size and tenure of land (Form C-2)****Table 39a: Change in owned land over last 10 years (categories) by potato production**

Change in owned land over last 10 years (categories)		Household grow Irish potato		Total
		Yes	No	
decreased	Count	10	15	25
	% within Household grow Irish potato	11.4%	18.8%	14.9%
same	Count	67	65	132
	% within Household grow Irish potato	76.1%	81.2%	78.6%
increased	Count	11	0	11
	% within Household grow Irish potato	12.5%	.0%	6.5%
Total	Count	88	80	168
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 53b: Change in rented land over last 10 years (categories) by potato production**

Change in rented land over last 10 years (categories)		Household grow Irish potato		Total
		Yes	No	
decreased	Count	8	0	8
	% within Household grow Irish potato	26.7%	.0%	22.2%
same	Count	17	4	21
	% within Household grow Irish potato	56.7%	66.7%	58.3%
increased	Count	5	2	7
	% within Household grow Irish potato	16.7%	33.3%	19.4%
Total	Count	30	6	36
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 53c: Change in owned land over last 10 years (categories) by potato production**

Change in clan owned land over last 10 years (categories)		Household grow Irish potato		Total
		Yes	No	
decreased	Count	4	2	6
	% within Household grow Irish potato	33.3%	33.3%	33.3%



same	Count	8	4	12
	% within Household grow Irish potato	66.7%	66.7%	66.7%
Total	Count	12	6	18
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 403d: Change in borrowed land over last 10 years (categories) by potato production**

Change in borrowed land over last 10 years (categories)		Yes	No	
decreased	Count	2	2	4
	% within Household grow Irish potato	66.7%	50.0%	57.1%
same	Count	1	2	3
	% within Household grow Irish potato	33.3%	50.0%	42.9%
Total	Count	3	4	7
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 41e: Change in land over last 10 years by potato production**

Descriptive Statistics					
Household grow Irish potato		N	Minimum	Maximum	Mean
Yes	Total area of land increase per HH	5	1.00	10.00	3.6000
	Total area of land decrease per HH	5	1.00	3.00	1.6000
	Valid N (listwise)	0			
No	Total area of land increase per HH	2	2.00	2.00	2.0000
	Total area of land decrease per HH	7	1.00	7.00	3.5714
	Valid N (listwise)	0			

**Table 53f: Reason of decrease in owned land over last 10 years by potato production**

Household grow Irish potato			Frequency	Percent	Valid Percent	Cumulative Percent
Yes	Valid	Divided to other family members	2	20.0	22.2	22.2
		High cost of production and management	1	10.0	11.1	33.3
		inherited and no more money to buy	2	20.0	22.2	55.6
		Land shortage	1	10.0	11.1	66.7
		number of people has increased in the family	1	10.0	11.1	77.8
		Urbanisation	2	20.0	22.2	100.0
		Total	9	90.0	100.0	
	Missing	not applicable	1	10.0		
	Total		10	100.0		
No	Valid	Divided to other family members	3	20.0	23.1	23.1
		Fallow to increase fertility	2	13.3	15.4	38.5
		High cost of production and management	3	20.0	23.1	61.5
		less land for cultivation due to old age	1	6.7	7.7	69.2
		No money to buy more land	1	6.7	7.7	76.9
		Urbanisation	3	20.0	23.1	100.0
		Total	13	86.7	100.0	
	Missing	not applicable	1	6.7		
		don't know / no answer	1	6.7		
		Total	2	13.3		
Total		15	100.0			

**Table 53g: Reason of decrease in owned land over last 10 years by potato production**

Household grow Irish potato			Frequency	Percent	Valid Percent	Cumulative Percent
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Yes	Valid	Buying more land for agriculture	3	27.3	50.0	50.0
		expeting to buy more in near future	1	9.1	16.7	66.7
		Increase of numbers of members of household	1	9.1	16.7	83.3
		Increased from land purchased	1	9.1	16.7	100.0
		Total	6	54.5	100.0	
	Missing	don't know / no answer	1	9.1		
		not applicable	4	36.4		
		Total	5	45.5		
	Total		11	100.0		

### 13 Crop output (Form C-3)

Average size of planted area (household level) of Irish potato, maize and beans (Table 54).

For potato producing households area planted with maize and potatoes was 1.9 and 1.7 acres respectively.

**Table 54: Area under different crops grown by potato production**

Descriptive Statistics						
Household grow Irish potato		N	Minimum	Maximum	Mean	Std. Deviation
Yes	Area planted with maize (acres)	97	.50	7.00	1.9	1.19332
	Area planted with Irish potato (acres)	97	.25	6.00	1.7	1.07148
	Area planted with Beans (acres)	11	.25	2.00	.6	.54041
	Area planted with other crops (acres)	10	.25	1.00	.6	.29463
	Valid N (listwise)	4				
No	Area planted with maize (acres)	98	.50	7.00	1.9	1.32090

Area planted with Irish potato (acres)	0				
Area planted with Beans (acres)	16	.25	2.00	.6	.49133
Area planted with other crops (acres)	6	.25	1.00	.7	.37639
Valid N (listwise)	0				

**Table 55a: Quantity of different crops produced by potato production**

Descriptive Statistics						
Household grow Irish potato		N	Minimum	Maximum	Mean	Std. Deviation
Yes	Production of maize (Kg)	97	300.00	54000.00	2557	5433.90292
	Production of Irish potato (Kg)	97	180.00	126000.00	9850	15081.36049
	Production of Beans (Kg)	11	40.00	1000.00	274	347.08553
	Production of other crops (Kg)	7	100.00	840.00	262	262.58450
	Valid N (listwise)	2				
No	Production of maize (Kg)	98	80.00	20000.00	1940	3360.90585
	Production of Irish potato (Kg)	0				
	Production of Beans (Kg)	16	60.00	750.00	168	187.74575
	Production of other crops (Kg)	6	20.00	420.00	147	147.87382
	Valid N (listwise)	0				

**Table 55b: Productivity of different crops produced by potato production**

Descriptive Statistics						
Household grow Irish potato		N	Minimum	Maximum	Mean	Std. Deviation
Yes	Productivity for maize (Kg/Acre)	97	135.00	18000.00	1309.8	1824.82668
	Productivity for Irish potato (Kg/Acre)	97	456.67	63000.00	5560.5	7022.67813

	Productivity for beans (Kg/Acre)	11	50.00	1764.00	557.6	609.13501
	Productivity for other crops (Kg/Acre)	7	105.00	840.00	367.8	262.95908
	Valid N (listwise)	2				
No	Productivity for maize (Kg/Acre)	98	120.00	3333.33	825.5	604.92819
	Productivity for Irish potato (Kg/Acre)	0				
	Productivity for beans (Kg/Acre)	16	60.00	1000.00	313.4	231.41074
	Productivity for other crops (Kg/Acre)	6	80.00	840.00	236.7	297.83664
	Valid N (listwise)	0				

Table 56 shows that average of 85% and 48% of potatoes and maize are sold by potato producing households. Only about 48% and 46 of maize is sold by potato producing and non potato producing households

**Table 56: Share of different crops sold by potato production**

Descriptive Statistics						
Household grow Irish potato		N	Minimum	Maximum	Mean	Std. Deviation
Yes	Sold share of total production of maize (%)	96	.00	100.00	48	27.50714
	Sold share of total production of Irish potato (%)	96	.00	100.00	85	17.43834
	Sold share of total production of Beans (%)	8	.00	100.00	23	42.00340
	Sold share of total production of other crops (%)	5	.00	83.00	51	31.57214
	Valid N (listwise)	0				
No	Sold share of total production of maize (%)	90	.00	100.00	46	31.08847
	Sold share of total production of Irish potato (%)	0				

Sold share of total production of Beans (%)	15	.00	60.00	9	18.30951
Sold share of total production of other crops (%)	4	62.50	100.00	79	19.61505
Valid N (listwise)	0				

**Table 57: Unit price of different crops sold by potato production**

Descriptive Statistics						
Household grow Irish potato		N	Minimum	Maximum	Mean	Std. Deviation
Yes	Highest of maize (Tsh/Kg)	88	125.00	556.00	319	83.82902
	Highest of Irish potato (Tsh/Kg)	91	120.00	469.23	233	66.74699
	Highest of Beans (Tsh/Kg)	5	240.00	1250.00	848	457.46038
	Highest of other crops (Tsh/Kg)	5	143.00	1111.00	581	406.16068
	Lowest of maize (Tsh/Kg)	83	100.00	400.00	242	55.08617
	Lowest of Irish potato (Tsh/Kg)	84	87.50	323.35	177	48.45084
	Lowest of Beans (Tsh/Kg)	5	160.00	1000.00	672	376.72271
	Lowest of other crops (Tsh/Kg)	5	143.00	750.00	429	255.55391
	Valid N (listwise)	1				
No	Highest of maize (Tsh/Kg)	76	100.00	1500.00	348	207.14493
	Highest of Irish potato (Tsh/Kg)	0				
	Highest of Beans (Tsh/Kg)	6	300.00	1500.00	859	419.20888
	Highest of other crops (Tsh/Kg)	3	6.00	400.00	269	227.47601
	Lowest of maize (Tsh/Kg)	75	125.00	500.00	233	51.03611
	Lowest of Irish potato (Tsh/Kg)	0				
	Lowest of Beans (Tsh/Kg)	5	200.00	1000.00	640	304.95901

Lowest of other crops (Tsh/Kg)	4	100.00	600.00	338	204.63382
Valid N (listwise)	0				

**Table 58: Average price of different crops sold by potato production**

Descriptive Statistics						
Household grow Irish potato		N	Minimum	Maximum	Mean	Std. Deviation
Yes	Average price of maize	90	112.50	450.00	280	63.79175
	Average price of Potato	93	111.00	376.92	203	52.92204
	Average price of Beans	5	200.00	1125.00	760	417.05815
	Average price of Others	5	143.00	833.50	505	317.23899
	Valid N (listwise)	1				
No	Average price of maize	76	100.00	812.50	289	104.09030
	Average price of Potato	0				
	Average price of Beans	6	250.00	1250.00	743	343.50481
	Average price of Others	4	100.00	362.50	282	124.53313
	Valid N (listwise)	0				

**Table 59a: Use of local labour in potato crop by potato production**

local labour used on potato crops		Household grow Irish potato
		Yes
No	Count	43
	% within Household grow Irish potato	44.3%
Yes	Count	54
	% within Household grow Irish potato	55.7%
Total	Count	97
	% within Household grow Irish potato	100.0%

**Table 59b: Use of local labour on maize crop by potato production**

local labour used on maize crops	Household grow Irish potato	Total
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		Yes	No	
No	Count	49	79	128
	% within Household grow Irish potato	50.5%	80.6%	65.6%
Yes	Count	48	19	67
	% within Household grow Irish potato	49.5%	19.4%	34.4%
Total	Count	97	98	195
	% within Household grow Irish potato	100.0%	100.0%	100.0%

Number of cases too small for any meaningful inference (Table 59c)

**Table 59c: Use of local labour on beans by potato production**

local labour used on beans crops		Household grow Irish potato		Total
		Yes	No	
No	Count	10	16	26
	% within Household grow Irish potato	90.9%	100.0%	96.3%
Yes	Count	1	0	1
	% within Household grow Irish potato	9.1%	.0%	3.7%
Total	Count	11	16	27
	% within Household grow Irish potato	100.0%	100.0%	100.0%

Number of cases too small for any meaningful inference (Table 59d)

**Table 59d: Use of local labour on other crops by potato production**

local labour used on others crops		Household grow Irish potato		Total
		Yes	No	
No	Count	8	6	14



	% within Household grow Irish potato	80.0%	100.0%	87.5%
Yes	Count	2	0	2
	% within Household grow Irish potato	20.0%	.0%	12.5%
Total	Count	10	6	16
	% within Household grow Irish potato	100.0%	100.0%	100.0%

For Irish potato crop 87% of producers sold potatoes at farm gate (Table 60)

**Table 60: Selling of Irish potato at farm gate**

potato sold at farm gate	Frequency	Percent	Valid Percent
No	13	6.5	13.0
Yes	87	43.5	87.0
Total	100	50.0	100.0
Non potato producer	100	50.0	
Total	200	100.0	

For Irish potato crop 96% of producers did not sell potatoes at market (Table 61)

**Table 61: Selling of Irish potato at market**

potato sold at Market	Frequency	Percent	Valid Percent
No	96	48.0	96.0
Yes	4	2.0	4.0
Total	100	50.0	100.0
Non potato producer	100	50.0	
Total	200	100.0	

For Irish potato crop 93% of producers indicated that other farmers or villages did not buy potatoes (Table 62)

**Table 62: Potato bought by other farmers/villagers**

potato bought by other farmers/villagers	Frequency	Percent	Valid Percent
No	93	46.5	93.0
Yes	7	3.5	7.0
Total	100	50.0	100.0
Non potato producer	100	50.0	
Total	200	100.0	

For Irish potato crop 83% of producers indicated that local traders bought potatoes (Table 63)

**Table 63: Potato bought by local traders**

Is the potato bought by local traders	Frequency	Percent	Valid Percent
No	17	8.5	17.0
Yes	83	41.5	83.0
Total	100	50.0	100.0
Non potato producer	100	50.0	
Total	200	100.0	

For Irish potato crop 99% of producers indicated that company (agent) did not buy potatoes (Table 64)

**Table 64: Potato bought by company (agent)**

Potato bought by company (agent)	Frequency	Percent	Valid Percent
No	99	49.5	99.0
Yes	1	.5	1.0
Total	100	50.0	100.0
Non potato producer	100	50.0	
Total	200	100.0	

## 14 Changes in crops (Form C-4)

The proportion of households that have experienced overall increase in the land allocated for Irish potato is 16.3% (Table 65)

The proportion of households that have experienced overall decrease in the land allocated for Irish potato is 15.2% (Table 65)

**Table 65: Land allocated for Irish potato**

Land allocated for Irish potato		Household grow Irish potato
		Yes
Decreased	Count	14
	% of Total	15.2%
Same	Count	63
	% of Total	68.5%
Increased	Count	15
	% of Total	16.3%
Total	Count	92
	% of Total	100.0%

The proportion of potato and non potato producing households that have experienced overall increase in the land allocated for maize is 4.9 % and 2.7% respectively (Table 66)

The proportion of potato and non potato producing households that have experienced overall decrease in the land allocated for maize is 6.5% and 6% respectively (Table 66)

**Table 66: Land allocated for Maize**

Land allocated for maize		Household grow Irish potato		Total
		Yes	No	
Decreased	Count	12	11	23
	% of Total	6.5%	6.0%	12.5%
Same	Count	73	74	147
	% of Total	39.7%	40.2%	79.9%
Increased	Count	9	5	14
	% of Total	4.9%	2.7%	7.6%
Total	Count	94	90	184
	% of Total	51.1%	48.9%	100.0%

### Labour input

Majority of respondents indicate labour input remained the same for major crops Irish potato, maize and beans (Table 67a 67b 67c 67d).

**Table 67a: Labour input allocated for Irish potato**

Labour input allocated for Irish potato		Household grow Irish potato	Total
		Yes	
Decreased	Count	3	3
	% of Total	3.4%	3.4%
Same	Count	63	63
	% of Total	72.4%	72.4%
Increased	Count	21	21
	% of Total	24.1%	24.1%
Total	Count	87	87
	% of Total	100.0%	100.0%

**Table 67b: Labour allocated for Maize**

Labour input allocated for maize		Household grow Irish potato		Total
		Yes	No	
Decreased	Count	5	11	16
	% of Total	3.0%	6.7%	9.8%
Same	Count	64	56	120
	% of Total	39.0%	34.1%	73.2%
Increased	Count	20	8	28
	% of Total	12.2%	4.9%	17.1%
Total	Count	89	75	164
	% of Total	54.3%	45.7%	100.0%

**Table 67c: Labour allocated for beans**

Labour input allocated for beans		Household grow Irish potato		Total
		Yes	No	
Decreased	Count	0	1	1
	% of Total	.0%	4.8%	4.8%
Same	Count	9	11	20
	% of Total	42.9%	52.4%	95.2%
Total	Count	9	12	21
	% of Total	42.9%	57.1%	100.0%

**Table 67d: Labour allocated for other crops**

Labour input allocated for others		Household grow Irish potato		Total
		Yes	No	
Same	Count	4	4	8
	% of Total	44.4%	44.4%	88.9%
Increased	Count	1	0	1
	% of Total	11.1%	.0%	11.1%
Total	Count	5	4	9
	% of Total	55.6%	44.4%	100.0%

**Non labour input used**

Majority of respondents indicate non labour in put remained the same for major crops (Irish potato, maize and beans) (Table 68a 68b 68c 68d).

**Table 68a: Non-Labour input allocated for Irish potato**

Non-Labour input allocated for Irish potato		Household grow Irish potato	Total
		Yes	
Decreased	Count	4	4
	% of Total	4.5%	4.5%
Same	Count	51	51
	% of Total	58.0%	58.0%
Increased	Count	33	33
	% of Total	37.5%	37.5%
Total	Count	88	88
	% of Total	100.0%	100.0%

**Table 68b: Non-Labour input allocated for maize**

Non-Labour input allocated for maize		Household grow Irish potato		Total
		Yes	No	
Decreased	Count	5	18	23
	% of Total	2.8%	10.2%	13.0%
Same	Count	57	62	119

	% of Total	32.2%	35.0%	67.2%
Increased	Count	27	8	35
	% of Total	15.3%	4.5%	19.8%
Total	Count	89	88	177
	% of Total	50.3%	49.7%	100.0%

**Table 68c: Non-Labour input allocated for beans**

Non-Labour input allocated for beans		Household grow Irish potato		Total
		Yes	No	
Decreased	Count	1	0	1
	% of Total	5.3%	.0%	5.3%
Same	Count	8	9	17
	% of Total	42.1%	47.4%	89.5%
Increased	Count	0	1	1
	% of Total	.0%	5.3%	5.3%
Total	Count	9	10	19
	% of Total	47.4%	52.6%	100.0%

**Table 68d: Non-Labour input allocated for other crops**

Non-Labour input allocated for others		Household grow Irish potato		Total
		Yes	No	
Decreased	Count	2	0	2
	% of Total	18.2%	.0%	18.2%
Same	Count	3	4	7
	% of Total	27.3%	36.4%	63.6%
Increased	Count	1	1	2
	% of Total	9.1%	9.1%	18.2%
Total	Count	6	5	11
	% of Total	54.5%	45.5%	100.0%

## Subsistence production

Majority of respondents indicate subsistence production (own consumption) remained the same for major crops Irish potato, maize and beans (Table 69a, 69b, 69c, 69d).

**Table 69a: Subsistence production (Own consumption) of Irish potato**

Subsistence production (Own consumption) of Irish potato		Household grow Irish potato	Total
		Yes	
Decreased	Count	16	16
	% of Total	17.8%	17.8%
Same	Count	59	59
	% of Total	65.6%	65.6%
Increased	Count	15	15
	% of Total	16.7%	16.7%
Total	Count	90	90
	% of Total	100.0%	100.0%

**Table 69b: Subsistence production (Own consumption) of maize**

Subsistence production (Own consumption) of maize		Household grow Irish potato		Total
		Yes	No	
Decreased	Count	7	17	24
	% of Total	4.0%	9.6%	13.6%
Same	Count	57	63	120
	% of Total	32.2%	35.6%	67.8%
Increased	Count	26	7	33
	% of Total	14.7%	4.0%	18.6%
Total	Count	90	87	177
	% of Total	50.8%	49.2%	100.0%

**Table 69c: Subsistence production (Own consumption) of beans**

Subsistence production (Own consumption) of beans		Household grow Irish potato		Total
		Yes	No	

Decreased	Count	0	1	1
	% of Total	.0%	4.8%	4.8%
Same	Count	6	12	18
	% of Total	28.6%	57.1%	85.7%
Increased	Count	2	0	2
	% of Total	9.5%	.0%	9.5%
Total	Count	8	13	21
	% of Total	38.1%	61.9%	100.0%

**Table 69d: Subsistence production (Own consumption) of other crops**

Subsistence production (Own consumption) of others		Household grow Irish potato		Total
		Yes	No	
Decreased	Count	0	1	1
	% of Total	.0%	10.0%	10.0%
Same	Count	4	4	8
	% of Total	40.0%	40.0%	80.0%
Increased	Count	1	0	1
	% of Total	10.0%	.0%	10.0%
Total	Count	5	5	10
	% of Total	50.0%	50.0%	100.0%

**Production for sale**

Majority (44%) of respondents indicate production for sale for Irish potato increased (Table 70a). Majority of respondents indicated production for sale for other major crops maize and beans remained the same (70b, 70c).

**Table 70a: Production for sale of Irish potato**

Production for sale of Irish potato		Household grow Irish potato	Total
		Yes	
Decreased	Count	14	14
	% of Total	15.4%	15.4%
Same	Count	37	37



	% of Total	40.7%	40.7%
Increased	Count	40	40
	% of Total	44.0%	44.0%
Total	Count	91	91
	% of Total	100.0%	100.0%

**Table 70b: Production for sale of maize**

Production for sale of maize		Household grow Irish potato		Total
		Yes	No	
Decreased	Count	20	25	45
	% of Total	12.2%	15.2%	27.4%
Same	Count	48	39	87
	% of Total	29.3%	23.8%	53.0%
Increased	Count	20	12	32
	% of Total	12.2%	7.3%	19.5%
Total	Count	88	76	164
	% of Total	53.7%	46.3%	100.0%

**Table 70c: Production for sale of beans**

Production for sale of beans		Household grow Irish potato		Total
		Yes	No	
Decreased	Count	2	0	2
	% of Total	11.8%	.0%	11.8%
Same	Count	5	10	15
	% of Total	29.4%	58.8%	88.2%
Total	Count	7	10	17
	% of Total	41.2%	58.8%	100.0%

**Table 70d: Production for sale of other crops**

Production for sale of others		Household grow Irish potato		Total
		Yes	No	
Same	Count	3	2	5

	% of Total	42.9%	28.6%	71.4%
Increased	Count	1	1	2
	% of Total	14.3%	14.3%	28.6%
Total	Count	4	3	7
	% of Total	57.1%	42.9%	100.0%

Majority of respondents indicate pattern of buyers remained the same for major crops Irish potato, maize and beans (Table 71a, 71b, 71c, 71d).

**Table 71a: Pattern for buyers of Irish potato**

Pattern for buyers of Irish potato		Household grow Irish potato	Total
		Yes	
Same	Count	49	49
	% of Total	55.1%	55.1%
Change	Count	40	40
	% of Total	44.9%	44.9%
Total	Count	89	89
	% of Total	100.0%	100.0%

**Table 71b: Pattern for buyers of maize**

Pattern for buyers of maize		Household grow Irish potato		Total
		Yes	No	
Same	Count	50	30	80
	% of Total	31.2%	18.8%	50.0%
Change	Count	37	43	80
	% of Total	23.1%	26.9%	50.0%
Total	Count	87	73	160
	% of Total	54.4%	45.6%	100.0%

**Table 71c: Pattern for buyers of beans**

Pattern for buyers of beans		Household grow Irish potato		Total
		Yes	No	

Same	Count	4	7	11
	% of Total	26.7%	46.7%	73.3%
Change	Count	2	2	4
	% of Total	13.3%	13.3%	26.7%
Total	Count	6	9	15
	% of Total	40.0%	60.0%	100.0%

**Table 71d: Pattern for buyers of other crops**

Pattern for buyers of others		Household grow Irish potato		Total
		Yes	No	
Same	Count	3	1	4
	% of Total	33.3%	11.1%	44.4%
Change	Count	1	4	5
	% of Total	11.1%	44.4%	55.6%
Total	Count	4	5	9
	% of Total	44.4%	55.6%	100.0%

**General trends for main changes in crops, inputs and outputs****Household with irish potato****Table 72a: General trends for main changes in production**

General trends		Frequency	Percent	Valid Percent
Valid	High cost of farm inputs	3	12.0	12.5
	High/increased of production	2	8.0	8.3
	Low production due to lack of inputs	4	16.0	16.7
	Low production due to poor soil fertility	8	32.0	33.3
	No change	6	24.0	25.0
	Poor quality of farm inputs	1	4.0	4.2
	Decrease of cultivated land	4	16.0	16.0
	High cost of farm inputs	7	28.0	28.0

High/increased use of farm inputs	2	8.0	8.0
increase in output due to irrigation	1	4.0	4.0
Low production	2	8.0	8.0
No change	8	32.0	32.0
Poor quality of farm inputs	1	4.0	4.0
High cost of farm inputs	3	12.0	12.5
High/increased of production	6	24.0	25.0
High/increased use of farm inputs	7	28.0	29.2
Increase use of manpower	1	4.0	4.2
Low production due to poor soil fertility	1	4.0	4.2
No change	6	24.0	25.0
Always buyer are changing	1	4.0	4.0
Decrease of cultivated land	1	4.0	4.0
High cost of farm inputs	3	12.0	12.0
High/increased of production	3	12.0	12.0
High/increased use of farm inputs	5	20.0	20.0
Low production	1	4.0	4.0
Low production and low price of outputs	1	4.0	4.0
Low production due to lack of inputs	1	4.0	4.0
Low production due to poor soil fertility	2	8.0	8.0
No change	7	28.0	28.0
Total	25	100.0	100.0
Missing 99	1	4.0	
Total	100	100.0	

a. Household grow Irish potato = Yes

**Household without irish potato****Table 72b: General trends for main changes in production for Household without irish potato**

**the general trends for main changes in production<sup>a</sup>**

		Frequency	Percent	Valid Percent
Valid	High cost of farm inputs	1	4.0	4.3
	High/increased of production	2	8.0	8.7
	High/increased use of farm inputs	2	8.0	8.7
	Increase use of manpower	1	4.0	4.3
	Low production	2	8.0	8.7
	Low production due to lack of inputs	1	4.0	4.3
	Low production due to old age/health problem	3	12.0	13.0
	Low production due to poor soil fertility	1	4.0	4.3
	No change	9	36.0	39.1
	Poor quality of farm inputs	1	4.0	4.3
	High cost of farm inputs	10	40.0	47.6
	Low production	1	4.0	4.8
	Low production due to lack of inputs	1	4.0	4.8
	Low production due to old age/health problem	1	4.0	4.8
	Low production due to poor soil fertility	2	8.0	9.5
	No change	3	12.0	14.3
	Poor quality of farm inputs	2	8.0	9.5
	production of crops depends with the whether condi	1	4.0	4.8
	Decrease of cultivated land	1	4.0	4.3
	High cost of farm inputs	2	8.0	8.7
	High/increased of production	1	4.0	4.3

	High/increased use of farm inputs	4	16.0	17.4
	Increase use of manpower	1	4.0	4.3
	introduction of irish potato prod 2014	1	4.0	4.3
	Low production due to old age/health problem	1	4.0	4.3
	Low production due to poor soil fertility	4	16.0	17.4
	No change	8	32.0	34.8
	Decrease of cultivated land	1	4.0	4.0
	High cost of farm inputs	4	16.0	16.0
	Low production	3	12.0	12.0
	Low production due to lack of inputs	2	8.0	8.0
	Low production due to old age/health problem	5	20.0	20.0
	Low production due to poor soil fertility	2	8.0	8.0
	No change	5	20.0	20.0
	Poor quality of farm inputs	3	12.0	12.0
	Total	25	100.0	100.0
Missing	99	2	8.0	
Total		25	100.0	

a. Household grow Irish potato = No

### Household with Irish potato

**Table 72c: General trends for main crop that have been abandoned for household with Irish potato**

the general trends for main crop that have been abandoned		Frequency	Percent	Valid Percent
Valid	Beans	1	4.0	4.2
	Beans and cabagge	1	4.0	4.2

cabagge was abandoned due to unstable price	1	4.0	4.2
No crop change	17	68.0	70.8
Pyrethrum	1	4.0	4.2
pyrethrum, cabbages	1	4.0	4.2
Sweet potato	2	8.0	8.3
Garden pears beans and wheat	1	4.0	4.3
Irish potato	1	4.0	4.3
No crop change	8	32.0	34.8
Pears	1	4.0	4.3
Pyrethrum	4	16.0	17.4
sunflower	1	4.0	4.3
Sweet potato	1	4.0	4.3
Wheat	3	12.0	13.0
Wheat and pyrethrum	1	4.0	4.3
wheat,pyrethrum and cofee	2	8.0	8.7
Beans	1	4.0	4.3
coffee, pyrethrum	1	4.0	4.3
finger millet	1	4.0	4.3
No crop change	9	36.0	39.1
Numbu	1	4.0	4.3
Pyrethrum	7	28.0	30.4
sunflower, sweet potato,wheat	1	4.0	4.3
Sweet potato	1	4.0	4.3
Wheat	1	4.0	4.3
No crop change	14	56.0	63.6
Peas and wheat due ti low capital	2	8.0	9.1
Sweet potato	2	8.0	9.1
Wheat	3	12.0	13.6
Wheat and beans	1	4.0	4.5
Total	22	88.0	100.0

Missing	99	3	12.0
	88	1	4.0
	Total	2	8.0
Total		25	100.0

a. Household grow Irish potato = Yes

### Household without irish potato

**Table 72d: General trends for main crop that have been abandoned for household without Irish potato**

the general trends for main crop that have been abandoned <sup>a</sup>		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Irish potato	1	4.0	4.2	4.2
	No crop change	22	88.0	91.7	95.8
	Pyrethrum	1	4.0	4.2	100.0
	Garden pears	1	4.0	4.8	4.8
	Irish potato, pyrethrum and wheat	1	4.0	4.8	9.5
	No crop change	14	56.0	66.7	76.2
	Numbu	1	4.0	4.8	81.0
	Pyrethrum	2	8.0	9.5	90.5
	Sweet potato	1	4.0	4.8	95.2
	Wheat	1	4.0	4.8	100.0
	Irish potato	3	12.0	12.5	12.5
	No crop change	14	56.0	58.3	70.8
	Pyrethrum	2	8.0	8.3	79.2
	Pyrethrum and coffee	1	4.0	4.2	83.3
	Sweet potato	1	4.0	4.2	87.5
	Sweet potato and Numbu	1	4.0	4.2	91.7
	Wheat and coffee	1	4.0	4.2	95.8
	Wheat and pyrethrum	1	4.0	4.2	100.0
	Irish potato	1	4.0	4.0	4.0
	No crop change	22	88.0	88.0	92.0



	Pyrethrum	1	4.0	4.0	96.0
	Sweet potato	1	4.0	4.0	100.0
	Total	25	100.0	100.0	
Missing	99	1	4.0		
Total		25	100.0		

a. Household grow Irish potato = No

### Household with Irish potato

**Table 72e:** General trends for main changes in livestock keeping for household with Irish potato

General trends for main changes in livestock keeping		Frequency	Percent	Valid Percent
Valid	changed to poultry production	1	4.0	4.3
	decrease in size of livestock	1	4.0	4.3
	Decreases in size due to disease	2	8.0	8.7
	Decreases of size of livestock due land decreased	1	4.0	4.3
	Decreases of size of livestock due to low capital	1	4.0	4.3
	No change in livestock	17	68.0	73.9
	decrease in size of livestock	1	4.0	6.2
	Decreases of size of livestock due to poor financi	1	4.0	6.2
	Increase in size	1	4.0	6.2
	low capital,decrease in livestock keeping	1	4.0	6.2
	No change in livestock	12	48.0	75.0
	Decreases in size due to disease	1	4.0	7.7
	Increase in size	1	4.0	7.7
	Increase of donkey	2	8.0	15.4
	No change in livestock	9	36.0	69.2
	decrease in size of livestock	1	4.0	4.5
	due to extension services	1	4.0	4.5
	Goat kept before but not, less labour	1	4.0	4.5
	No change in livestock	16	64.0	72.7
	The number decreased due to lack of grazing land	1	4.0	4.5

	The number decreased due to selling	2	8.0	9.1
	Total	22	88.0	100.0
Missing	99	3	12.0	
Total		25	100.0	

a. Household grow Irish potato = Yes

**Household without irish potato****Table 72f: General trends for main changes in livestock keeping for household without Irish potato**

		Frequency	Percent	Valid Percent
Valid	Decreases in size due to disease	1	4.0	5.0
	No change in livestock	19	76.0	95.0
	all livestock died this year	1	4.0	16.7
	No change in livestock	5	20.0	83.3
	Decreases in size due to disease	4	16.0	21.1
	Increase of donkey	1	4.0	5.3
	No change in livestock	14	56.0	73.7
	All sold last year	1	4.0	5.3
	No change in livestock	17	68.0	89.5
	The size has increase due to capital availability	1	4.0	5.3
	Total	19	76.0	100.0
Missing	99	6	24.0	
	88	1	4.0	
	Total	19	76.0	
Total		25	100.0	

a. Household grow Irish potato = No

**15 Production assets (Form C-5)**

Majority of households own hand held farm tools such as hand hoe and machete limited number own or have access to agricultural equipment such as tractors and ox ploughs

**Table 73a: Access to Ox-plough by Irish potato production**

Access to Ox-plough		Household grow Irish potato		Total
		Yes	No	
No	Count	82	94	176
	% within Household grow Irish potato	91.1%	97.9%	94.6%
Yes	Count	8	2	10
	% within Household grow Irish potato	8.9%	2.1%	5.4%
Total	Count	90	96	186
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 73b: Access to tractor by Irish potato production**

Access to Tractor		Household grow Irish potato		Total
		Yes	No	
No	Count	89	95	184
	% within Household grow Irish potato	100.0%	100.0%	100.0%
Total	Count	89	95	184
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 73c: Access to cart by Irish potato production**

			Household grow Irish potato		Total
			Yes	No	
Access to Cart	No	Count	83	94	177
		% within Household grow Irish potato	92.2%	98.9%	95.7%
	Yes	Count	7	1	8
		% within Household grow Irish potato	7.8%	1.1%	4.3%

Total	Count	90	95	185
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 73d: Access to milling by Irish potato production**

			Household grow Irish potato		Total
			Yes	No	
Access to Milling	No	Count	86	92	178
		% within Household grow Irish potato	98.9%	100.0%	99.4%
	Yes	Count	1	0	1
		% within Household grow Irish potato	1.1%	.0%	.6%
Total			87	92	179
			100.0%	100.0%	100.0%

**Table 74a: Production asset, number of (ox-) plough owned by Irish potato production**

			Household grow Irish potato		Total
			Yes	No	
Production asset, number of (ox-) plough owned	0	Count	82	94	176
		% within Household grow Irish potato	91.1%	97.9%	94.6%
	1	Count	5	2	7
		% within Household grow Irish potato	5.6%	2.1%	3.8%
	2	Count	3	0	3
		% within Household grow Irish potato	3.3%	.0%	1.6%
Total			90	96	186

		Household grow Irish potato		Total	
		Yes	No		
Production asset, number of (ox-) plough owned	0	Count	82	94	176
		% within Household grow Irish potato	91.1%	97.9%	94.6%
	1	Count	5	2	7
		% within Household grow Irish potato	5.6%	2.1%	3.8%
	2	Count	3	0	3
		% within Household grow Irish potato	3.3%	.0%	1.6%
Total	Count	90	96	186	
	% within Household grow Irish potato	100.0%	100.0%	100.0%	

**Table 74b: Production asset, number of cart owned by Irish potato production**

Production asset, number of cart owned		Household grow Irish potato		Total
		Yes	No	
0	Count	83	94	177
	% within Household grow Irish potato	92.2%	98.9%	95.7%
1	Count	7	1	8
	% within Household grow Irish potato	7.8%	1.1%	4.3%
Total	Count	90	95	185
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 74c: Production asset, number of milling machine owned by Irish potato production**

Production asset, number of milling machine owned		Household grow Irish potato		Total
		Yes	No	
0	Count	86	92	178
	% within Household grow Irish potato	98.9%	100.0%	99.4%
1	Count	1	0	1

% within Household grow Irish potato		1.1%	.0%	.6%
Total	Count	87	92	179
% within Household grow Irish potato		100.0%	100.0%	100.0%

**Table 74d: Production asset, number of machete owned by Irish potato production**

Production asset, number of machete owned		Household grow Irish potato		Total
		Yes	No	
0	Count	0	8	8
	% within Household grow Irish potato	.0%	8.0%	4.0%
1	Count	37	49	86
	% within Household grow Irish potato	37.8%	49.0%	43.4%
2	Count	40	31	71
	% within Household grow Irish potato	40.8%	31.0%	35.9%
3	Count	16	10	26
	% within Household grow Irish potato	16.3%	10.0%	13.1%
4	Count	2	2	4
	% within Household grow Irish potato	2.0%	2.0%	2.0%
5	Count	3	0	3
	% within Household grow Irish potato	3.1%	.0%	1.5%
Total	Count	98	100	198
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 74e: Production asset, number of hand hoe owned by Irish potato production**

Production asset, number of hand hoe owned		Household grow Irish potato		Total
		Yes	No	
1	Count	8	15	23

	% within Household grow Irish potato	8.1%	15.0%	11.6%
2	Count	18	25	43
	% within Household grow Irish potato	18.2%	25.0%	21.6%
3	Count	14	26	40
	% within Household grow Irish potato	14.1%	26.0%	20.1%
4	Count	21	19	40
	% within Household grow Irish potato	21.2%	19.0%	20.1%
5	Count	14	10	24
	% within Household grow Irish potato	14.1%	10.0%	12.1%
6	Count	14	3	17
	% within Household grow Irish potato	14.1%	3.0%	8.5%
7	Count	5	2	7
	% within Household grow Irish potato	5.1%	2.0%	3.5%
8	Count	3	0	3
	% within Household grow Irish potato	3.0%	.0%	1.5%
9	Count	1	0	1
	% within Household grow Irish potato	1.0%	.0%	.5%
14	Count	1	0	1
	% within Household grow Irish potato	1.0%	.0%	.5%
Total	Count	99	100	199
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 74f: Production asset, number of spray pump owned by Irish potato production**

Production asset, number of spry pump owned * Household grow Irish potato Crosstabulation		
	Household grow Irish potato	Total

			Yes	No	
Production asset, number of spray pump owned	0	Count	30	72	102
		% within Household grow Irish potato	31.6%	75.8%	53.7%
	1	Count	52	19	71
		% within Household grow Irish potato	54.7%	20.0%	37.4%
	2	Count	12	4	16
		% within Household grow Irish potato	12.6%	4.2%	8.4%
	3	Count	1	0	1
		% within Household grow Irish potato	1.1%	.0%	.5%
	Total	Count	95	95	190
		% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 74g: Production asset, number of slasher owned by Irish potato production**

			Household grow Irish potato		Total
			Yes	No	
Production asset, number slasher of other owned	0	Count	26	50	76
		% within Household grow Irish potato	26.0%	50.0%	38.0%
	1	Count	28	12	40
		% within Household grow Irish potato	28.0%	12.0%	20.0%
	2	Count	18	19	37
		% within Household grow Irish potato	18.0%	19.0%	18.5%
	3	Count	8	9	17
		% within Household grow Irish potato	8.0%	9.0%	8.5%
	4	Count	6	5	11



	% within Household grow Irish potato	6.0%	5.0%	5.5%
5	Count	3	2	5
	% within Household grow Irish potato	3.0%	2.0%	2.5%
6	Count	5	2	7
	% within Household grow Irish potato	5.0%	2.0%	3.5%
8	Count	1	0	1
	% within Household grow Irish potato	1.0%	.0%	.5%
not applicable	Count	5	1	6
	% within Household grow Irish potato	5.0%	1.0%	3.0%
Total	Count	100	100	200
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 74h: Production asset, number of axe owned by Irish potato production**

Production asset, number axe of other owned		Household grow Irish potato		Total
		Yes	No	
0	Count	34	47	81
	% within Household grow Irish potato	40.5%	47.5%	44.3%
1	Count	35	44	79
	% within Household grow Irish potato	41.7%	44.4%	43.2%
2	Count	12	8	20
	% within Household grow Irish potato	14.3%	8.1%	10.9%
5	Count	2	0	2
	% within Household grow Irish potato	2.4%	.0%	1.1%
6	Count	1	0	1
	% within Household grow Irish potato	1.2%	.0%	.5%
Total	Count	84	99	183
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 74i: Production asset, number of rake owned by Irish potato production**

Production asset, number rake of other owned		Household grow Irish potato		Total
		Yes	No	
0	Count	45	66	111
	% within Household grow Irish potato	55.6%	70.2%	63.4%
1	Count	24	22	46
	% within Household grow Irish potato	29.6%	23.4%	26.3%
2	Count	5	3	8
	% within Household grow Irish potato	6.2%	3.2%	4.6%
3	Count	5	3	8
	% within Household grow Irish potato	6.2%	3.2%	4.6%
4	Count	2	0	2
	% within Household grow Irish potato	2.5%	.0%	1.1%
Total	Count	81	94	175
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**16 Common pool resources (Form C-6)**

Only 30% and 14% of potato and non potato producing households have access to some kind of common pool of resources (Table 75a).

**Table 75a: Households with access to common pool resources**

HH has access to common pool resources		Household grow Irish potato		Total
		Yes	No	
No	Count	70	86	156
	% within Household grow Irish potato	70.0%	86.0%	78.0%
Yes	Count	30	14	44
	% within Household grow Irish potato	30.0%	14.0%	22.0%

Total	Count	100	100	200
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 75b: Households with access to common pool land resources**

Common pool land resources, access of the HH		Household grow Irish potato		Total
		Yes	No	
Yes	Count	7	11	18
	% within Household grow Irish potato	25.0%	78.6%	42.9%
No	Count	21	3	24
	% within Household grow Irish potato	75.0%	21.4%	57.1%
Total	Count	28	14	42
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 75c: Households with access to common pool grazing land resources**

Common pool grazing land resources, access of the HH		Household grow Irish potato		Total
		Yes	No	
Yes	Count	24	0	24
	% within Household grow Irish potato	80.0%	.0%	55.8%
No	Count	6	13	19
	% within Household grow Irish potato	20.0%	100.0%	44.2%
Total	Count	30	13	43
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 75d: Households with access to common pool forest land resources**

			Household grow Irish potato		Total
			Yes	No	
Common forest land	Yes	Count	1	3	4

resources, access of the HH	% within Household grow Irish potato		5.0%	75.0%	16.7%
	No	Count	19	1	20
	% within Household grow Irish potato		95.0%	25.0%	83.3%
Total	Count		20	4	24
	% within Household grow Irish potato		100.0%	100.0%	100.0%

**Table 75e: Households with access to common pool bush land resources**

			Household grow Irish potato		Total
			Yes	No	
Common bush land resources, access of the HH	Yes	Count	0	1	1
		% within Household grow Irish potato	.0%	100.0%	6.2%
	No	Count	15	0	15
		% within Household grow Irish potato	100.0%	.0%	93.8%
Total	Count		15	1	16
	% within Household grow Irish potato		100.0%	100.0%	100.0%

**Importance of having access to common pool resources****Table 76a: Households importance for access to common pool land resources**

Common land resources, importance for HH		Household grow Irish potato		Total
		Yes	No	
Very important	Count	3	6	9
	% within Household grow Irish potato	30.0%	85.7%	52.9%
Important	Count	7	1	8
	% within Household grow Irish potato	70.0%	14.3%	47.1%

Total	Count	10	7	17
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 76b: Households importance for access to common pool grazing resources**

			Household grow Irish potato	
			Yes	Total
Common grazing resources, importance for HH	Very important	Count	11	11
		% within Household grow Irish potato	52.4%	52.4%
	Important	Count	8	8
		% within Household grow Irish potato	38.1%	38.1%
	Not important	Count	2	2
		% within Household grow Irish potato	9.5%	9.5%
Total	Count	21	21	
	% within Household grow Irish potato	100.0%	100.0%	

**Table 76c: Households importance for access to common pool forest land resources**

			Household grow Irish potato		Total
			Yes	No	
Common forest land resources, importance for HH	Very important	Count	0	2	2
		% within Household grow Irish potato	.0%	66.7%	18.2%
	Important	Count	8	1	9
		% within Household grow Irish potato	100.0%	33.3%	81.8%
Total		Count	8	3	11
		% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 76d: Households importance for access to common pool bush land resources**

			Household grow Irish potato		Total
			Yes	No	
Common bush land resources, importance for HH	Very important	Count	0	1	1
		% within Household grow Irish potato	.0%	100.0%	10.0%
	Important	Count	9	0	9
		% within Household grow Irish potato	100.0%	.0%	90.0%
Total		Count	9	1	10
		% within Household grow Irish potato	100.0%	100.0%	100.0%

**17 Use of credit and loans (Form D-1)**

Table 77 shows that 80% and 94% of potato and non potato producing households do not make use of credit or loans.

**Table 42: Household making use of credits/loans**

Household grow Irish potato		Frequency	Percent
Yes	No	80	80.0
	yes	20	20.0
	Total	100	100.0
No	No	94	94.0
	yes	6	6.0
	Total	100	100.0

Main type of sources of credit and loans by the household is SACCOS for 10% and 3% of potato non potato producing households .

**Table 43: Main types of sources for credit and loans by the household**

Household grow Irish potato			Frequency	Percent	Valid Percent	Cumulative Percent
Yes	Valid	Agro dealer	1	1.0	5.0	5.0
		Commercial bank	1	1.0	5.0	10.0
		Family	2	2.0	10.0	20.0
		Microfinance institution	6	6.0	30.0	50.0
		SACCOS	10	10.0	50.0	100.0
		Total	20	20.0	100.0	
	Missing	not applicable	80	80.0		
	Total		100	100.0		
No	Valid	Church	1	1.0	20.0	20.0
		Microfinance institution	1	1.0	20.0	40.0
		SACCOS	3	3.0	60.0	100.0
		Total	5	5.0	100.0	
	Missing	not applicable	94	94.0		
		don't know / no answer	1	1.0		
		Total	95	95.0		
	Total		100	100.0		

**Main uses (purposes) of credits and loans by the household****Table 44: Main use (purposes) of credit or loans by household**

Specify purpose of loan1 purpose past 5 years			Frequency	Percent	Valid Percent	Cumulative Percent
Household grow Irish potato			Frequency	Percent	Valid Percent	Cumulative Percent
Yes	Valid	Agriculture	16	16.0	72.7	72.7
		Business	1	1.0	4.5	77.3
		farm inputs	1	1.0	4.5	81.8
		Health service	1	1.0	4.5	86.4
		Save money	1	1.0	4.5	90.9

		School fees	2	2.0	9.1	100.0
		Total	22	22.0	100.0	
	Missing	not applicable	78	78.0		
	Total		100	100.0		
No	Valid	Agriculture	3	3.0	50.0	50.0
		invested in irrigation farming	1	1.0	16.7	66.7
		Purchasing agriculture inputs	1	1.0	16.7	83.3
		school fees and agriculture	1	1.0	16.7	100.0
		Total	6	6.0	100.0	
	Missing	not applicable	94	94.0		
	Total		100	100.0		

### Households making use of 'mobile money' facilities

**Table 45: Household making use of mobile money**

HH member makes use of mobile phone for banking/savings						
Household grow Irish potato			Frequency	Percent	Valid Percent	Cumulative Percent
Yes	Valid	yes	41	41.0	50.6	50.6
		no	40	40.0	49.4	100.0
		Total	81	81.0	100.0	
	Missing	not applicable	19	19.0		
	Total		100	100.0		
No	Valid	yes	29	29.0	32.6	32.6
		no	60	60.0	67.4	100.0
		Total	89	89.0	100.0	
	Missing	not applicable	11	11.0		
	Total		100	100.0		



Purposes for use of 'mobile money' facilities (%)

**Table 46: Main purposes for using mobile money**

Household members use of mobile phone for banking/savings						
Household grow Irish potato			Frequency	Percent	Valid Percent	Cumulative Percent
Yes	Valid	Money transfer	21	21.0	52.5	52.5
		Money transfer and receipt	1	1.0	2.5	55.0
		paying school fees	1	1.0	2.5	57.5
		save sending and withdraw money	1	1.0	2.5	60.0
		Send and receiving money	16	16.0	40.0	100.0
		Total	40	40.0	100.0	
	Missing	don't know / no answer	1	1.0		
		not applicable	59	59.0		
		Total	60	60.0		
	Total		100	100.0		
No	Valid	Money receiving	6	6.0	22.2	22.2
		Money transfer	9	9.0	33.3	55.6
		Money transfer and receipt	1	1.0	3.7	59.3
		save sending and withdraw money	2	2.0	7.4	66.7
		savings and transfer	2	2.0	7.4	74.1
		Send and receiving money	7	7.0	25.9	100.0
		Total	27	27.0	100.0	
	Missing	not applicable	73	73.0		
	Total		100	100.0		

**18 Composition of household income (Form D-2)**

Total amounts of income per year

**Table 47: Total household income (Tanzanian Shilling) descriptive statistics**

Descriptive Statistics					
Household grow Irish potato	N	Minimum	Maximum	Mean	Std. Deviation

Yes	Total annual amounts of income per household	100	100000.00	45435000.00	3069985.0100	4962282.44078
	Valid N (listwise)	100				
No	Total annual amounts of income per household	100	50000.00	9400000.00	1366417.5000	1654862.26236
	Valid N (listwise)	100				

**Table 48: Composition of household source of income**

HH's main type of income						
Household grow Irish potato			Frequency	Percent	Valid Percent	Cumulative Percent
Yes	Valid	Agricultural production	90	16.4	90.9	90.9
		Self-employed work	4	.7	4.0	94.9
		Salaried work	3	.5	3.0	98.0
		Casual wage work	1	.2	1.0	99.0
		Remittances	1	.2	1.0	100.0
		Total	99	18.0	100.0	
	Missing	System	451	82.0		
	Total		550	100.0		
No	Valid	Agricultural production	50	10.8	50.5	50.5
		Self-employed work	14	3.0	14.1	64.6
		Salaried work	1	.2	1.0	65.7
		Casual wage work	17	3.7	17.2	82.8
		Remittances	14	3.0	14.1	97.0
		Other	3	.6	3.0	100.0
		Total	99	21.4	100.0	
	Missing	System	363	78.6		
	Total		462	100.0		

**19 Remittances (Form D-3)**

National remittances as % of Total remittances is the dominant type of the remittance in the research area. None of the household interviewed receive the international remittance. Table indicates frequency for receiving national remittance by the household which is in cash or goods.

**Table 49a: Type of National remittances1 received last year**

Type of National remittances1 received last year					
Household grow Irish potato			Frequency	Percent	Valid Percent
					Cumulative Percent
Yes	Valid	Cash	23	23.0	100.0
	Missing	99	77	77.0	
	Total		100	100.0	
No	Valid	Cash	20	20.0	100.0
	Missing	99	80	80.0	
	Total		100	100.0	

**Table 50b: Type of National remittances2 received last year**

Type of National remittances2 received last year					
Household grow Irish potato			Frequency	Percent	Valid Percent
					Cumulative Percent
Yes	Valid	Cash	6	6.0	100.0
	Missing	99	94	94.0	
	Total		100	100.0	
No	Valid	Cash	3	3.0	75.0
		Clothes	1	1.0	25.0
		Total	4	4.0	100.0
	Missing	99	96	96.0	
	Total		100	100.0	

**Table 84c: Type of National remittances3 received last year**

Type of National remittances3 received last year

Household grow Irish potato			Frequency	Percent	Valid Percent	Cumulative Percent
Yes	Valid	Cash	3	3.0	100.0	100.0
	Missing	99	97	97.0		
	Total		100	100.0		
No	Valid	Cash	2	2.0	66.7	66.7
		Sugar/soap	1	1.0	33.3	100.0
		Total	3	3.0	100.0	
	Missing	99	97	97.0		
	Total		100	100.0		

### Frequency that households receive National remittances (on average)

**Table 85a: Frequency previous year for receiving national remittance1 in cash or goods**

			Household grow Irish potato		Total
			Yes	No	
National remittances1 frequency last year (categories)	sometimes	Count	10	1	11
		% of Total	21.7%	2.2%	23.9%
	once a year	Count	7	10	17
		% of Total	15.2%	21.7%	37.0%
	regularly	Count	9	9	18
		% of Total	19.6%	19.6%	39.1%
Total		Count	26	20	46
		% of Total	56.5%	43.5%	100.0%

**Table 85b: Frequency previous year for receiving national remittance2 in cash or goods**

			Household grow Irish potato		Total
			Yes	No	
National remittances2 frequency last year (categories)	sometimes	Count	1	2	3
		% of Total	12.5%	25.0%	37.5%
	once a year	Count	1	2	3
		% of Total	12.5%	25.0%	37.5%

	regularly	Count	1	1	2
		% of Total	12.5%	12.5%	25.0%
Total		Count	3	5	8
		% of Total	37.5%	62.5%	100.0%

Main channels for receiving National remittances (informal, formal, mobile)

**Table 86a: Channels for receiving national remittance in cash or goods**

National remittances1 channel last year (categories)		Household grow Irish potato		Total
		Yes	No	
informal (by hand)	Count	11	9	20
	% of Total	26.2%	21.4%	47.6%
mobile money	Count	12	10	22
	% of Total	28.6%	23.8%	52.4%
Total	Count	23	19	42
	% of Total	54.8%	45.2%	100.0%

For what purposes do households mainly use remittances?

**Table 86b: Use of received remittances during the past 5 years**

Use of received remittances during the past 5 years						
Household grow Irish potato			Frequency	Percent	Valid Percent	Cumulative Percent
Yes	Valid	Agricultural inputs	7	7.0	33.3	33.3
		Agriculture and business	1	1.0	4.8	38.1
		agriculture,scholl fees	1	1.0	4.8	42.9
		buying sugar and ssalt	1	1.0	4.8	47.6
		Household expenditure	4	4.0	19.0	66.7
		Household expenditure and buying farm inputs	2	2.0	9.5	76.2
		Household uses	1	1.0	4.8	81.0
		Irish potatoes farming	1	1.0	4.8	85.7

		subsistence agriculture	2	2.0	9.5	95.2
		Used for treatment of their mother	1	1.0	4.8	100.0
		Total	21	21.0	100.0	
Missing		not applicable	79	79.0		
Total			100	100.0		
No	Valid	Agriculture and household expenditure	3	3.0	15.8	15.8
		for home use and medical	1	1.0	5.3	21.1
		household consumption	2	2.0	10.5	31.6
		household consumption and agriculture	1	1.0	5.3	36.8
		Household expenditure	7	7.0	36.8	73.7
		Household expenditure and agriculture	1	1.0	5.3	78.9
		Household use and treatments	1	1.0	5.3	84.2
		illness	2	2.0	10.5	94.7
		Paying school fees	1	1.0	5.3	100.0
		Total	19	19.0	100.0	
Missing		not applicable	81	81.0		
Total			100	100.0		

## 20 Reverse flows of money and goods (Form D-4)

Percentage of households that send money and/or goods

**Table 87: Household send remittance in cash or goods**

Does household send remittances in cash or goods?		Household grow Irish potato		Total
		Yes	No	
No	Count	82	88	170
	% of Total	41.0%	44.0%	85.0%
Yes	Count	18	12	30
	% of Total	9.0%	6.0%	15.0%

Total	Count	100	100	200
	% of Total	50.0%	50.0%	100.0%

Average amount of money sent per household

**Table 88a: Amount of money sent by household**

Household grow Irish potato		N	Minimum	Maximum	Mean	Std. Deviation
Yes	Total cash sent by HH as remittance (Tsh)	17	50000.00	1400000.00	384705.8824	311149.43450
	Valid N (listwise)	17				
No	Total cash sent by HH as remittance (Tsh)	7	7000.00	150000.00	45285.7143	51629.17226
	Valid N (listwise)	7				

Type of goods sent by household

**Table 89a: Remittances sent1 goods in type and amount for past 5 years**

Remittances sent1 goods in type and amount past 5 years						
Household grow Irish potato			Frequency	Percent	Valid Percent	Cumulative Percent
Yes	Valid	Cash (Sh300000)	1	1.0	20.0	20.0
		Maize	4	4.0	80.0	100.0
		Total	5	5.0	100.0	
	Missing	not applicable	95	95.0		
	Total		100	100.0		
No	Valid	Maize	9	9.0	90.0	90.0
		Potatoes and maize	1	1.0	10.0	100.0
		Total	10	10.0	100.0	
	Missing	not applicable	90	90.0		
	Total		100	100.0		

**Table 89b: Remittances sent2goods in type and amount for past 5 years**

Remittances sent2 goods in type and amount past 5 years						
Household grow Irish potato			Frequency	Percent	Valid Percent	Cumulative Percent
Yes	Valid	Maize	2	2.0	66.7	66.7
		Rice,maize and beans	1	1.0	33.3	100.0
		Total	3	3.0	100.0	
	Missing	not applicable	97	97.0		
	Total		100	100.0		
No	Valid	irish potato	2	2.0	50.0	50.0
		Maize	1	1.0	25.0	75.0
		Potatoes and maize	1	1.0	25.0	100.0
		Total	4	4.0	100.0	
	Missing	not applicable	96	96.0		
	Total		100	100.0		

Frequency households send money and or goods (on average)

**Table 90a: Frequency for household sending remittance**

Remittances sent frequency cash and goods past 5 years		Household grow Irish potato		Total
		Yes	No	
sometimes	Count	7	4	11
	% within Household grow Irish potato	35.0%	33.3%	34.4%
once a year	Count	8	0	8
	% within Household grow Irish potato	40.0%	.0%	25.0%
regularly	Count	5	8	13
	% within Household grow Irish potato	25.0%	66.7%	40.6%
Total	Count	20	12	32
	% within Household grow Irish potato	100.0%	100.0%	100.0%



**Table 90b: Frequency for household sending remittance2 for past 5 years**

Remittances sent2 frequency cash and goods past 5 years		Household grow Irish potato		Total
		Yes	No	
sometimes	Count	1	1	2
	% within Household grow Irish potato	12.5%	25.0%	16.7%
once a year	Count	2	0	2
	% within Household grow Irish potato	25.0%	.0%	16.7%
regularly	Count	5	3	8
	% within Household grow Irish potato	62.5%	75.0%	66.7%
Total	Count	8	4	12
	% within Household grow Irish potato	100.0%	100.0%	100.0%

Main channels for sending money (Informal, formal, mobile)

**Table 91a: Main channels for sending remittances1 for past 5 years**

Remittances sent1 used channel past 5 years		Household grow Irish potato		Total
		Yes	No	
informal (by hand)	Count	10	12	22
	% within Household grow Irish potato	50.0%	100.0%	68.8%
formal (financial institutions)	Count	3	0	3
	% within Household grow Irish potato	15.0%	.0%	9.4%
mobile money	Count	7	0	7
	% within Household grow Irish potato	35.0%	.0%	21.9%
Total	Count	20	12	32
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**Table 91b: Main channels for sending remittances 2 for past 5 years**

Remittances sent2 used channel past 5 years		Household grow Irish potato		Total
		Yes	No	
informal (by hand)	Count	6	4	10
	% within Household grow Irish potato	85.7%	100.0%	90.9%
mobile money	Count	1	0	1
	% within Household grow Irish potato	14.3%	.0%	9.1%
Total	Count	7	4	11
	% within Household grow Irish potato	100.0%	100.0%	100.0%

**21 Housing (Form D-5)**

Average size of houses (floor space) in meter square and number of the rooms (without kitchen)

**Table 92a: Average size of houses and number of rooms**

Total estimated area of the house (Square metres)		Household grow Irish potato		Total
		Yes	No	
0 - 20	Count	0	3	3
	% of Total	.0%	1.5%	1.5%
21 - 40	Count	17	37	54
	% of Total	8.5%	18.5%	27.0%
41 - 60	Count	30	35	65
	% of Total	15.0%	17.5%	32.5%
61 - 80	Count	17	9	26
	% of Total	8.5%	4.5%	13.0%
81 - 100	Count	14	8	22
	% of Total	7.0%	4.0%	11.0%
101 - 200	Count	17	8	25
	% of Total	8.5%	4.0%	12.5%
201 - 1000	Count	5	0	5

	% of Total	2.5%	.0%	2.5%
Count		100	100	200
% of Total		50.0%	50.0%	100.0%

**Table 92b: Total number of rooms without kitchen**

Total number of rooms without kitchen		Household grow Irish potato		Total
		Yes	No	
0 - 2	Count	4	7	11
	% of Total	2.0%	3.5%	5.5%
3 - 4	Count	35	60	95
	% of Total	17.5%	30.0%	47.5%
5 - 6	Count	30	25	55
	% of Total	15.0%	12.5%	27.5%
7 - 8	Count	14	4	18
	% of Total	7.0%	2.0%	9.0%
9 - 10	Count	14	2	16
	% of Total	7.0%	1.0%	8.0%
11 - 15	Count	3	2	5
	% of Total	1.5%	1.0%	2.5%
Total	Count	100	100	200
	% of Total	50.0%	50.0%	100.0%

Housing tenure status types (%)

**Table 92c: Housing assets and tenure status**

Housing assets, tenure status		Household grow Irish potato		Total
		Yes	No	
owned (with registered title)	Count	13	6	19
	% of Total	6.5%	3.0%	9.5%
Owned (without registered title)	Count	83	88	171
	% of Total	41.5%	44.0%	85.5%
Rented	Count	1	3	4

	% of Total	.5%	1.5%	2.0%
Rent-free use	Count	2	3	5
	% of Total	1.0%	1.5%	2.5%
Other	Count	1	0	1
	% of Total	.5%	.0%	.5%
Total	Count	100	100	200
	% of Total	50.0%	50.0%	100.0%

## Construction materials used for floors (%)

**Table 92d: Construction material used for floors**

Housing assets, construction materials of floor		Household grow Irish potato		Total
		Yes	No	
concrete	Count	2	1	3
	% of Total	1.0%	.5%	1.5%
cement	Count	63	27	90
	% of Total	31.5%	13.5%	45.0%
mud	Count	22	51	73
	% of Total	11.0%	25.5%	36.5%
bare earth	Count	13	21	34
	% of Total	6.5%	10.5%	17.0%
Total	Count	100	100	200
	% of Total	50.0%	50.0%	100.0%

## Construction materials used for external walls (%)

**Table 92e: Housing assets construction material used for external walls**

Housing assets, construction materials of external walls		Household grow Irish potato		Total
		Yes	No	
concrete blocks	Count	3	0	3
	% of Total	1.5%	.0%	1.5%
burnt bricks	Count	64	53	117
	% of Total	32.0%	26.5%	58.5%

mud bricks	Count	31	43	74
	% of Total	15.5%	21.5%	37.0%
wood	Count	1	1	2
	% of Total	.5%	.5%	1.0%
mud	Count	1	3	4
	% of Total	.5%	1.5%	2.0%
Total	Count	100	100	200
	% of Total	50.0%	50.0%	100.0%

## Construction materials used for roof (%)

**Table 93a: Construction material used for roof**

Housing assets, construction materials of roof		Household grow Irish potato		Total
		Yes	No	
tiles	Count	2	0	2
	% of Total	1.0%	.0%	1.0%
corrugated iron sheets	Count	73	68	141
	% of Total	36.5%	34.0%	70.5%
tins or metals other than corrugated iron sheets	Count	15	8	23
	% of Total	7.5%	4.0%	11.5%
asbestos	Count	0	1	1
	% of Total	.0%	.5%	.5%
thatch	Count	10	23	33
	% of Total	5.0%	11.5%	16.5%
Total	Count	100	100	200
	% of Total	50.0%	50.0%	100.0%

## Kitchen types (%)

**Table 93b: Housing assets location of kitchen in the house**

			Household grow Irish potato		Total
			Yes	No	
Housing assets, location of kitchen	separate kitchen in house	Count	46	43	89
		% of Total	23.0%	21.5%	44.5%
	kitchen is part of other room	Count	36	20	56
		% of Total	18.0%	10.0%	28.0%
	outside the house	Count	18	36	54
		% of Total	9.0%	18.0%	27.0%
	other	Count	0	1	1
		% of Total	.0%	.5%	.5%
	Total	Count	100	100	200
		% of Total	50.0%	50.0%	100.0%

**22 Public Services (Form D-5)**

## Electricity (%)

**Table 51a: Access to electricity**

HH access to electricity		Household grow Irish potato		Total
		Yes	No	
no electricity	Count	65	88	153
	% within HH access to electricity	42.5%	57.5%	100.0%
	% within Household grow Irish potato	65.0%	88.0%	76.5%
	% of Total	32.5%	44.0%	76.5%
generator	Count	6	1	7
	% within HH access to electricity	85.7%	14.3%	100.0%
	% within Household grow Irish potato	6.0%	1.0%	3.5%
	% of Total	3.0%	.5%	3.5%
solar	Count	29	11	40
	% within HH access to electricity	72.5%	27.5%	100.0%

	% within Household grow Irish potato	29.0%	11.0%	20.0%
	% of Total	14.5%	5.5%	20.0%
Total	Count	100	100	200
	% within HH access to electricity	50.0%	50.0%	100.0%
	% within Household grow Irish potato	100.0%	100.0%	100.0%
	% of Total	50.0%	50.0%	100.0%

## Drinking water connection (%)

**Table 52b: Access to drinking water connection**

HH access to drinking water connection		Household grow Irish potato		Total
		Yes	No	
tap inside/outside home	Count	5	3	8
	% within HH access to drinking water connection	62.5%	37.5%	100.0%
	% within Household grow Irish potato	5.1%	3.0%	4.0%
	% of Total	2.5%	1.5%	4.0%
collect from public tap or standpipe or pump	Count	68	70	138
	% within HH access to drinking water connection	49.3%	50.7%	100.0%
	% within Household grow Irish potato	68.7%	70.0%	69.3%
	% of Total	34.2%	35.2%	69.3%
rainwater	Count	1	0	1
	% within HH access to drinking water connection	100.0%	.0%	100.0%
	% within Household grow Irish potato	1.0%	.0%	.5%
	% of Total	.5%	.0%	.5%
river	Count	25	27	52
	% within HH access to drinking water connection	48.1%	51.9%	100.0%
	% within Household grow Irish potato	25.3%	27.0%	26.1%
	% of Total	12.6%	13.6%	26.1%
Total	Count	99	100	199
	% within HH access to drinking water connection	49.7%	50.3%	100.0%
	% within Household grow Irish potato	100.0%	100.0%	100.0%

HH access to drinking water connection		Household grow Irish potato		Total
		Yes	No	
tap inside/outside home	Count	5	3	8
	% within HH access to drinking water connection	62.5%	37.5%	100.0%
	% within Household grow Irish potato	5.1%	3.0%	4.0%
	% of Total	2.5%	1.5%	4.0%
collect from public tap or standpipe or pump	Count	68	70	138
	% within HH access to drinking water connection	49.3%	50.7%	100.0%
	% within Household grow Irish potato	68.7%	70.0%	69.3%
	% of Total	34.2%	35.2%	69.3%
rainwater	Count	1	0	1
	% within HH access to drinking water connection	100.0%	.0%	100.0%
	% within Household grow Irish potato	1.0%	.0%	.5%
	% of Total	.5%	.0%	.5%
river	Count	25	27	52
	% within HH access to drinking water connection	48.1%	51.9%	100.0%
	% within Household grow Irish potato	25.3%	27.0%	26.1%
	% of Total	12.6%	13.6%	26.1%
Total	Count	99	100	199
	% within HH access to drinking water connection	49.7%	50.3%	100.0%
	% within Household grow Irish potato	100.0%	100.0%	100.0%
	% of Total	49.7%	50.3%	100.0%

Source of drinking water (%)

**Table 94c: Access to source of drinking water**

HH access to drinking water source		Household grow Irish potato		Total
		Yes	No	
public network	Count	70	70	140
	% within HH access to drinking water source	50.0%	50.0%	100.0%



	% within Household grow Irish potato	70.7%	70.0%	70.4%
	% of Total	35.2%	35.2%	70.4%
borehole or protected well	Count	4	3	7
	% within HH access to drinking water source	57.1%	42.9%	100.0%
	% within Household grow Irish potato	4.0%	3.0%	3.5%
	% of Total	2.0%	1.5%	3.5%
unprotected well	Count	9	7	16
	% within HH access to drinking water source	56.2%	43.8%	100.0%
	% within Household grow Irish potato	9.1%	7.0%	8.0%
	% of Total	4.5%	3.5%	8.0%
River	Count	16	20	36
	% within HH access to drinking water source	44.4%	55.6%	100.0%
	% within Household grow Irish potato	16.2%	20.0%	18.1%
	% of Total	8.0%	10.1%	18.1%
Total	Count	99	100	199
	% within HH access to drinking water source	49.7%	50.3%	100.0%
	% within Household grow Irish potato	100.0%	100.0%	100.0%
	% of Total	49.7%	50.3%	100.0%

## Sanitation (%)

**Table 94d: Access to sanitation**

HH access to sanitation		Household grow Irish potato		Total
		Yes	No	
flush toilet to septic tank or sewer	Count	3	1	4
	% within HH access to sanitation	75.0%	25.0%	100.0%
	% within Household grow Irish potato	3.0%	1.0%	2.0%
	% of Total	1.5%	.5%	2.0%
private latrine with a slab or platform made from cement or wood, with a squatting hole or seat	Count	23	9	32
	% within HH access to sanitation	71.9%	28.1%	100.0%
	% within Household grow Irish potato	23.0%	9.0%	16.0%
	% of Total	11.5%	4.5%	16.0%
private latrine without a slab or platform,	Count	69	89	158

just a mud floor with a hole in the ground	% within HH access to sanitation	43.7%	56.3%	100.0%
	% within Household grow Irish potato	69.0%	89.0%	79.0%
	% of Total	34.5%	44.5%	79.0%
public/shared latrine	Count	5	1	6
	% within HH access to sanitation	83.3%	16.7%	100.0%
	% within Household grow Irish potato	5.0%	1.0%	3.0%
	% of Total	2.5%	.5%	3.0%
Total	Count	100	100	200
	% within HH access to sanitation	50.0%	50.0%	100.0%
	% within Household grow Irish potato	100.0%	100.0%	100.0%
	% of Total	50.0%	50.0%	100.0%

## 23 Means of communication and transportation (Form D-5)

**Table 95: Ownership of Mobile phone, Radio and Television**

ownership			Household grow Irish potato		Total
			Yes	No	
Ownership to mobile phone	No	Count	17	40	57
		% within Household grow Irish potato	17.0%	40.0%	28.5%
	Yes	Count	83	60	143
		% within Household grow Irish potato	83.0%	60.0%	71.5%
Total	Count		100	100	200
	% within Household grow Irish potato		100.0%	100.0%	100.0%
Ownership to radio	No	Count	14	43	57
		% within Household grow Irish potato	14.0%	43.0%	28.5%
	Yes	Count	86	57	143

		% within Household grow Irish potato	86.0%	57.0%	71.5%
Total		Count	100	100	200
		% within Household grow Irish potato	100.0%	100.0%	100.0%
Ownership to television	No	Count	85	97	182
		% within Household grow Irish potato	85.0%	97.0%	91.0%
	Yes	Count	15	3	18
		% within Household grow Irish potato	15.0%	3.0%	9.0%
Total		Count	100	100	200
		% within Household grow Irish potato	100.0%	100.0%	100.0%

Table 96 present ownership of Motorcycle, Car, and bicycle about 17% and 6% of potato and non potato producers respectively owned a motorcycle. During the study Motorcycles were used as household means of transport but for some especially use as an income generating asset used to transport people at a cost (commonly known as *boda boda*)

**Table 96: Ownership of Motorcycle, Car and bicycle**

			Household grow Irish potato		Total
			Yes	No	
Ownership to motorbike	No	Count	83	94	177
		% within Household grow Irish potato	83.0%	94.0%	88.5%
	Yes	Count	17	6	23
		% within Household grow Irish potato	17.0%	6.0%	11.5%
Total		Count	100	100	200
		% within Household grow Irish potato	100.0%	100.0%	100.0%
Ownership to car	No	Count	98	100	198
		% within Household grow Irish potato	98.0%	100.0%	99.0%
	Yes	Count	2	0	2
		% within Household grow Irish potato	2.0%	.0%	1.0%
Total		Count	100	100	200

			Household grow Irish potato		Total
			Yes	No	
Ownership to motorbike	No	Count	83	94	177
		% within Household grow Irish potato	83.0%	94.0%	88.5%
	Yes	Count	17	6	23
		% within Household grow Irish potato	17.0%	6.0%	11.5%
Total	Count		100	100	200
	% within Household grow Irish potato		100.0%	100.0%	100.0%
Ownership to bike	No	Count	28	54	82
		% within Household grow Irish potato	28.0%	54.0%	41.0%
	Yes	Count	72	46	118
		% within Household grow Irish potato	72.0%	46.0%	59.0%
Total	Count		100	100	200
	% within Household grow Irish potato		100.0%	100.0%	100.0%

**Table 97a: Access to mobile phone if not owned**

Specify access to mobile phone if not owned by HH						
Household grow Irish potato			Frequency	Percent	Valid Percent	Cumulative Percent
Yes	Valid	not applicable	1	5.9	5.9	5.9
		borrowing from neighbours	13	76.5	76.5	82.4
		No access	3	17.6	17.6	100.0
		Total	17	100.0	100.0	
No	Valid	not applicable	3	7.5	7.5	7.5
		borrowing from neighbours	29	72.5	72.5	80.0
		No access	8	20.0	20.0	100.0
		Total	40	100.0	100.0	

**Table 97b: Access to radio if not owned**

Specify access to radio if not owned by HH

Household grow Irish potato			Frequency	Percent	Valid Percent	Cumulative Percent
Yes	Valid	borrowing from neighbours	6	42.9	42.9	42.9
		No access	8	57.1	57.1	100.0
		Total	14	100.0	100.0	
No	Valid	not applicable	2	4.7	4.7	4.7
		borrowing from neighbours	13	30.2	30.2	34.9
		No access	27	62.8	62.8	97.7
		Phone radio	1	2.3	2.3	100.0
		Total	43	100.0	100.0	

**Table 97c: Access to television if not owned**

Household grow Irish potato	access to television if not owned by HH	Frequency	Percent
Yes	not applicable	5	5.9
	Kijiweni (informal public place)	1	1.2
	Neighbour	9	10.6
	No access	42	49.4
	payment per watch	7	8.2
	Public paying	19	22.4
	to my son	1	1.2
	Ulembwe hall	1	1.2
	Total	85	100.0
No	not applicable	8	8.2
	hotel	2	2.1
	Kijiweni (informal public place)	2	2.1
	Neighbour	19	19.6
	No access	48	49.5
	Parish	1	1.0
	Public paying	17	17.5
	Total	97	100.0

**Table 97d: Access to motorcycle if not owned**

Household grow Irish potato	access to motorcycle if not owned by HH	Frequency	Percent
Yes	not applicable	1	1.2
	Hiring from others	21	25.3
	No access	4	4.8
	paying per trip	1	1.2
	Public transport	56	67.5
	Total	83	100.0
No	not applicable	2	2.1
	Hiring from others	25	26.6
	No access	6	6.4
	Public transport	61	64.9
	Total	94	100.0

**Table 97e: Access to car if not owned**

Specify access to car if not owned by HH						
Household grow Irish potato			Frequency	Percent	Valid Percent	Cumulative Percent
Yes	Valid	not applicable	1	1.0	1.0	1.0
		hire public transport	1	1.0	1.0	2.0
		Public transport	89	90.8	90.8	92.9
		public transpot	7	7.1	7.1	100.0
		Total	98	100.0	100.0	
No	Valid	not applicable	3	3.0	3.0	3.0
		Hiring from others	1	1.0	1.0	4.0
		No access	1	1.0	1.0	5.0
		Public service	1	1.0	1.0	6.0
		Public transport	94	94.0	94.0	100.0
		Total	100	100.0	100.0	

**Table 97f: Access to bicycle if not owned**

Household grow Irish potato	Access to bicycle if not owned by HH	Frequency	Percent	Valid Percent
Yes	borrowing from neighbors	14	50.0	51.9
	Hire	1	3.6	3.7
	No access	1	3.6	3.7
	no need	1	3.6	3.7
	Public transport	10	35.7	37.0
	Total	27	96.4	100.0
	Missing not applicable	1	3.6	
	Total	28	100.0	
No	borrowing from neighbors	26	48.1	53.1
	No access	5	9.3	10.2
	Public transport	18	33.3	36.7
	Total	49	90.7	100.0
	Missing not applicable	5	9.3	
	Total	54	100.0	

**24 Expenditure and saving (Form E-1)****Table 98a: Descriptive statistics for consumer and production annual expenditure**

Descriptive Statistics <sup>a</sup>					
	N	Minimum	Maximum	Mean	Std. Deviation
Total annual amounts of expenditure per household (Tsh)	100	125000	22101200	2507082	2622996.04644
Total amounts of consumer expenditure per year (Tsh)	100	95000	9309700	1531077	1272295.99937
Total amounts of productive expenditure per year(Tsh)	100	1000	18190000	976005	1912890.82426
HH savings, amount per year (Tsh)	72	45000	3000000	544792	689539.26111
Valid N (listwise)	72				

a. Household grow Irish potato = Yes

**Descriptive Statistics<sup>a</sup>**

	N	Minimum	Maximum	Mean	Std. Deviation
Total annual amounts of expenditure per household (Tsh)	100	25000	8398000	1155287	1196513.96119
Total amounts of consumer expenditure per year (Tsh)	100	23000	8036000	962358	1121129.55164
Total amounts of productive expenditure per year (Tsh)	88	2000	1077000	219237	189662.48807
HH savings, amount per year (Tsh)	50	5000	1600000	208400	241311.12951
Valid N (listwise)	46				

a. Household grow Irish potato = No

Three main types of consumer expenditure (%)

**Table 98b: Descriptive statistics for consumer annual expenditure (Tsh)****Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
Household grow Irish potato					
Consumer expenditure on own food production per year	97	20000	2895000	372220	393376.12881
Consumer expenditure on purchased food per year	94	10000	1500000	281149	263127.05780
Consumer expenditure on drinks per year	80	.0	1040000	111840	154926.80967
Consumer expenditure on clothes per year	96	.0	700000	182604	135088.62426
Consumer expenditure on utilities per year	71	.0	360000	31028	61068.34154
Consumer expenditure on rent per year	33	.0	1000000	133103	196065.16851
Consumer expenditure on transport per year	83	8000	621200	111677	119422.69601
Consumer expenditure on medical per year	92	.0	1200000	133380	195755.66978
Consumer expenditure on schooling per year	77	.0	5000000	337838	652465.97230
Consumer expenditure on social events per year	89	.0	2000000	111775	230471.53999
Consumer expenditure on other per year	20	.0	.0	.0	.00000
Valid N (listwise)	20				
Household don't grow Irish potato					



Consumer expenditure on own food production per year	100	15000	1000000	264013.	224690.55878
Consumer expenditure on purchased food per year	96	5000	3600000	233614	511943.87788
Consumer expenditure on drinks per year	79	.0	550000	73161	94600.50471
Consumer expenditure on clothes per year	94	1000	360000	96798	89308.88525
Consumer expenditure on utilities per year	66	.0	434000	33194	82582.56079
Consumer expenditure on rent per year	38	.0	150000	20658	42492.78242
Consumer expenditure on transport per year	82	.0	520000	69366	105562.63277
Consumer expenditure on medical per year	91	2000	1000000	81901	149732.20948
Consumer expenditure on schooling per year	66	.0	2100000	165667	382091.46442
Consumer expenditure on social events per year	96	.0	500000.	57063	79404.33668
Consumer expenditure on other per year	27	.0	.0	.0	.00000
Valid N (listwise)	27				

Three main types of productive expenditure (%)

**Table 99: Descriptive statistics for productive annual expenditure (Tsh**

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Household grow Irish potato					
Productive expenditures on hired labour per year	66	.00	810000	234348	206758.61008
Productive expenditures on hired equipment per year	56	.00	880000	101446	167603.01252
Productive expenditures on transport per year	71	.00	1800000	137739	263826.41559
Productive expenditures on membership fee cooperative per year	19	.00	250000	16053	57604.46904
Productive expenditures on seeds per year	42	.00	2100000	149119	351115.17132
Productive expenditures on fertilizers per year	92	1000.00	15450000	598196	1613259.16954

Productive expenditures on irrigation per year	29	.00	540000	95517	149004.22350
Productive expenditures on other per year	32	.00	500000	71906	141780.23871
Valid N (listwise)	18				
Household don't grow Irish potato					
Productive expenditures on hired labour per year	39	.00	450000	61026	109731.60730
Productive expenditures on hired equipment per year	56	.00	150000	24964	31744.41356
Productive expenditures on transport per year	51	.00	250000	31490	47891.69972
Productive expenditures on membership fee cooperative per year	29	.00	192000	11034	38394.08693
Productive expenditures on seeds per year	43	.00	250000	39395	57841.79554
Productive expenditures on fertilizers per year	77	2000.00	480000	151291	121504.73045
Productive expenditures on irrigation per year	26	.00	198000	7615	38830.99476
Productive expenditures on other per year	30	.00	30000	1583	5589.52736
Valid N (listwise)	24				

### Main person of household to decide on expenditures

**Table 10053: Person in household to decide for productive annual expenditure**

HH member that decides on expenditures		Household grow Irish potato		Total
		Yes	No	
Head	Count	70	87	157
	% within HH member that decides on expenditures	44.6%	55.4%	100.0%
	% within Household grow Irish potato	70.0%	87.0%	78.5%
	% of Total	35.0%	43.5%	78.5%
Spouse	Count	9	9	18

	% within HH member that decides on expenditures	50.0%	50.0%	100.0%
	% within Household grow Irish potato	9.0%	9.0%	9.0%
	% of Total	4.5%	4.5%	9.0%
Other family member	Count	1	0	1
	% within HH member that decides on expenditures	100.0%	.0%	100.0%
	% within Household grow Irish potato	1.0%	.0%	.5%
	% of Total	.5%	.0%	.5%
Both	Count	18	4	22
	% within HH member that decides on expenditures	81.8%	18.2%	100.0%
	% within Household grow Irish potato	18.0%	4.0%	11.0%
	% of Total	9.0%	2.0%	11.0%
don't know / no answer	Count	1	0	1
	% within HH member that decides on expenditures	100.0%	.0%	100.0%
	% within Household grow Irish potato	1.0%	.0%	.5%
	% of Total	.5%	.0%	.5%
not applicable	Count	1	0	1
	% within HH member that decides on expenditures	100.0%	.0%	100.0%
	% within Household grow Irish potato	1.0%	.0%	.5%
	% of Total	.5%	.0%	.5%
Total	Count	100	100	200
	% within HH member that decides on expenditures	50.0%	50.0%	100.0%
	% within Household grow Irish potato	100.0%	100.0%	100.0%
	% of Total	50.0%	50.0%	100.0%

## 25 Reflections:

- Irish potato is important in the study area both for consumption and as a source of income. Over time residents of the study area have observed changes in the crop in terms of levels of production and productivity. However evidence that this change has improved purchasing power and or income is weak. This is because there are many factors that influence incomes as well as purchasing power, including general inflation levels.
- The extent of migration in the study site is low in current years (compared to previous years) as observed by respondents. Most common in the area is commuting to urban as well as rural areas. Few household members who are usually absent remit in cash or kind to "sending households. Search of livelihood opportunities is one of the reasons to

migration/mobility. Remittances are generally used for both consumption purposes as well as productive purposes.

## SOCIO-ECONOMIC DYNAMICS, MOBILITY AND LIVELIHOOD DIVERSIFICATION OF HOUSEHOLDS IN THE NORTHERN CORRIDOR OF TANZANIA

### PARTICIPANTS

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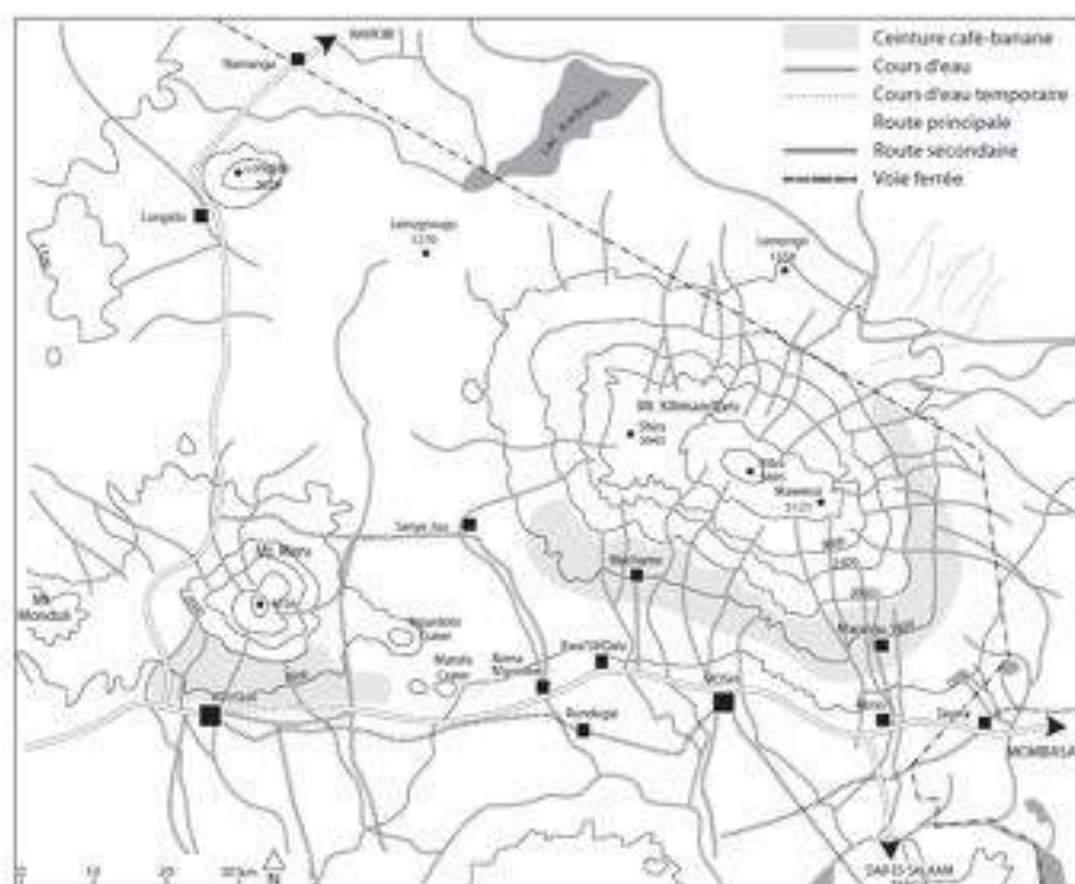
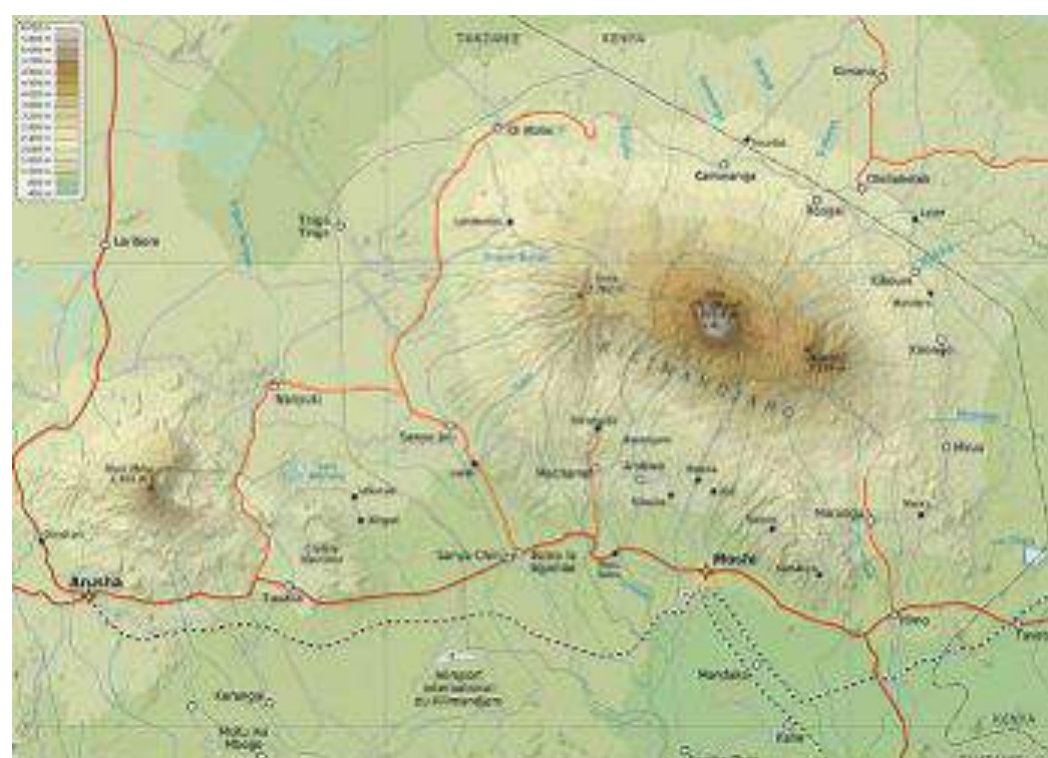


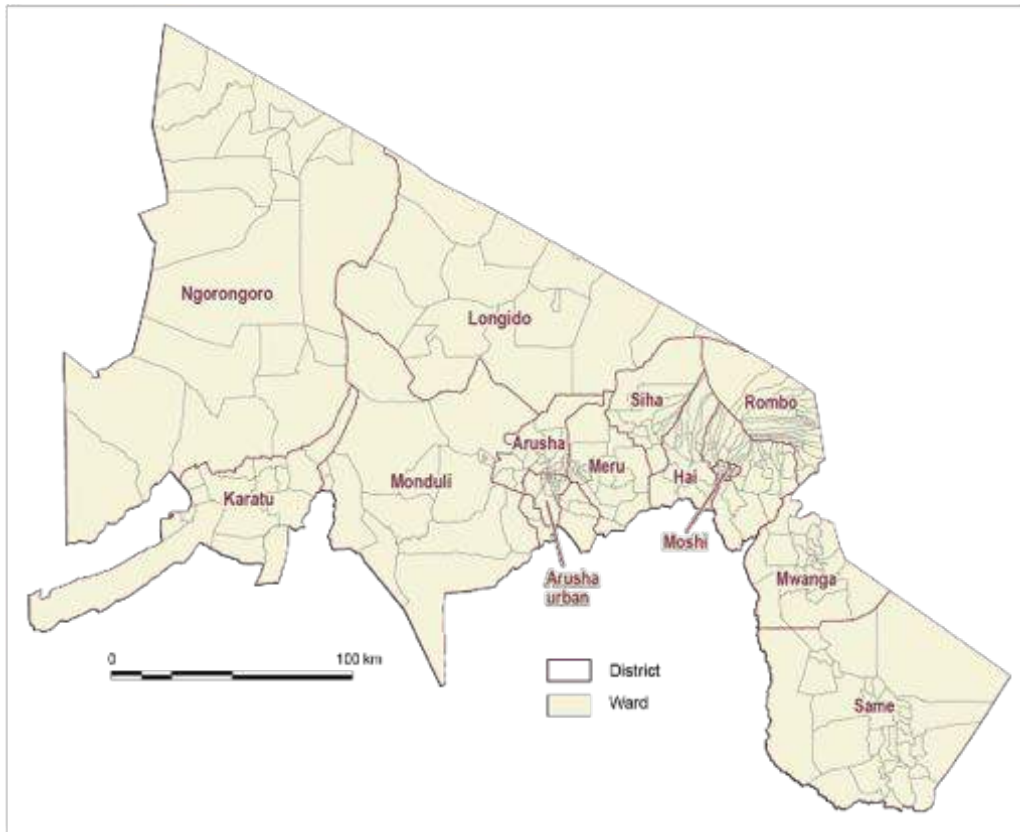
### 4. DESCRIPTIVE ACCOUNT OF RELEVANT CONTEXTUAL CHARACTERISTICS OF THE RESEARCH AREA.

#### • **TOPOGRAPHY/ELEVATION/SOILS/HYDROLOGY/ENVIRONMENTAL ISSUES**

In this northern part of Tanzania, the two highest mountains, Mount Kilimanjaro (Kibo, 5895 m) and Mount Meru (4556 m), are in the heart of very high density rural areas, mainly situated on the south-eastern slopes of those volcanoes between 800 m. and 2000 m. altitude contour lines. Those volcanic soils are very fertile. The annual amount of rainfall is much more important on the highlands (generally 1000-2000 mm) than on the lowlands (500-1000 mm), with a main rainy season in March-June, and a short rainy season in October-December. The hydrology is characterized by many streams coming from the upper part of the mountain, digging deep *barrancos* separating the *planezes*.

In term of environmental issues, the main one is water, in term of climate change (water resource) and socio-economic change (water use) as well. One of the most noticeable feature of the water management is the “traditional” system of furrows, going down from the upper slopes down ward to lowlands, used for “irrigating” crops and cattle and human consumption.





**Arusha and Kilimanjaro regions: districts and wards limits (source NBS)**

- **AGRICULTURAL SYSTEM (CROPPING PATTERNS; LAND USE; LAND TENURE, ET CETERA)**

On those very fertile and humid “terroirs”, high rural population densities are associated with complex farming systems where a wide range of food and cash crops are grown, mainly banana, maize, coffee, beans etc. together with cattle rearing and poultry breeding. Those “coffee-banana belts” have been for long the basis of the Chagga system on Mount Kilimanjaro and of the Wa-Arusha system on Mount Meru. Most of the farmers are smallholders, whose *shamba* (less than 2 acres) are made usually of very small plots, scattered along only one or two acres plots

In fact, there used to be some geographical and seasonal complementarities of the coffee banana belt production (two crops cycles each year) and of the lowlands system (one crop a year, mainly maize, plus cattle rearing).

- **RELEVANT HISTORICAL BACKGROUND**

One of the main features of the historical background is the differentiation of mountain farmers (mainly Chagga in Mt Kilimanjaro) and lowlands pastoralists (mainly Maasai). There are both complementarities, and more and more competition (especially for land) between those two groups of population, in a context of strong population growth. The history of mountain farmers was strongly influenced by the development of coffee cultivation since the colonial period.

Each of the two high-density mountains has their own towns; Germany established a military camp in Moshi (*Neu-Moschi*) in August 1893. Moshi is generally known as “the Kilimanjaro

town”, and Arusha as “the Meru town”. The first step of urban development in those rural areas consisted in a backwash or polarization effect of those new urban centres, in a feature of core-periphery relationships where the core is urban and the periphery is rural.

- **GENERAL SETTLEMENT AND MOBILITY PATTERN**

In this spatial model, “imported” urbanization mainly resulted in moving the core downward from highlands to lowlands. It is noticeable that the first German base in Mount Kilimanjaro was Old Moshi (about 1400 meters high), before Moshi was created in the lowlands (800 m.) a few years later, when the railway from Tanga reached the region (1912). It means that, in the first stage of urbanization, most of the rural population was living on highlands, in scattered settlements, and the urban development started in lowlands, attracting some population flows downward. The geography of those high mountains was such involved in growing up-down complementarities and flows, which may be considered as common in most mountains, in terms of altitude levels, physical and human characteristics. But it signifies also that a new phenomenon started then: formerly, the core (highest population densities, agricultural production...) was on the mountain slopes and the periphery in dry and quite empty lowlands (*pori*, which means bush); subsequently, the core started to slide down the slopes.. Arguably, urbanization started in the periphery of the rural core.

Since the colonial period, the extensive development of road transport and the growing flows and mobility of goods and persons have led to an increase in the number of market places along the main roads: in this part of Northern Tanzania, stretched on about 100 kilometres from the Eastern slopes of Mount Kilimanjaro (Himo), to the Southern piedmont (Moshi) and to Mount Meru (Arusha) and Monduli Mts (Monduli), the main road is an international one, from the Indian Ocean (Dar es Salaam and Tanga) to the mainland (Nairobi, Kampala, Rwanda, Burundi and Congo). This key trunk tarmac road now carries a heavy traffic of trucks, buses, and tourist vehicles; as a result, there is a growing number of market places and bus stops all along the route, especially in the areas where people and goods coming from the highlands have convenient access to the international road. In fact, the previous spatial backwash scheme is gradually replaced by a linear model, with more and more small and mid-sized urban centres and market places, each of them being both a local or regional polarizing centre (depending on its size) and linear a roadside built-up area which is highly involved in large-scale (international) business. Even the two main towns, Moshi and Arusha, combine both polarizing structures around such central hot spots as the main bus station and the market and, outside of the city centre, along the highway with transit traffic, many new shops and modern buildings, which may be considered as strong symbols of the mountain’s outward development.

- **Infrastructure, connections to nearest urban settlements and/or major towns (e.g. roads, transport, trade, etcetera, market facilities**

The population growth along the southern piedmont highway of Mount Kilimanjaro, with a growing number of urban centres scattered along the road, is a very clear example of this phenomenon. According to census population data (1978-2012), we can notice two main trends:



- A significant growth of the two main cities: the population of Arusha was 55 000 in 1978, 416 000 in 2002 (an almost eightfold increase). Moshi Municipal District is now (2012) 184 000. The two cities were roughly the same size thirty years ago, whereas now Arusha's population is more than twice that of Moshi. This can be explained by the fact that Arusha has benefited from a good situation and more important activities (tourism, East African Community headquarters, ICTR - International Criminal Tribunal for Rwanda etc.).
- Emerging new small towns, most of them along the highway, especially near junctions with local roads leading to the mountain: one of the most characteristic is Hai (Boma n'Gombe), situated on the Moshi-Arusha highway, which is a new district small town (17 000 in 2002, 34 000 en 2012); too Usa River, Hedaru, Himo, Sanya Juu, Kwasadala are other examples. Most of those localities provide market facilities, services to farmers and sometimes to tourists, banks, shops, petrol stations and car repair workshops.

- **LEVEL OF HUMAN DEVELOPMENT RELATIVE TO NATIONAL AVERAGE**

This region is generally considered as having a better level of Human Development relative to national average

- **PUBLIC SERVICES (INCL. EDUCATIONAL AND HEALTH CARE FACILITIES; TRANSPORT AND COMMUNICATION)**

This area benefits from many educational and health facilities, mostly in urban areas (example of KCMC hospital in Moshi, scatted too in rural areas, especially in the coffee banana belt (Machame, Kibosho...). Many of them were created by catholic or Lutheran missions.

- *INSTITUTIONS AND REGULATIONS (INCL. INHERITANCE SYSTEMS, COLLECTIVE CONTROL; POLYGAMY; ETCETERA)*

- **LAND CONFLICTS**

In a context of strong demographic pressure, land scarcity is now a big issue. especially for youth. The inheritance system contributed to break up the small farms, so that most of the young men cannot find any sufficient land for farming activities. Moreover, the competition of farming and other activities (especially construction of new houses) becomes so strong that access to and is more and more restricted and the price of land has increased both in rural and urban areas. Land conflicts occur mainly in the rural-urban or rurban continuum which stretches along the main highway.

- **(OBSERVABLE) SOCIAL NETWORKS (E.G. PRODUCER ASSOCIATIONS, COOPERATIVES, CLUBS)**

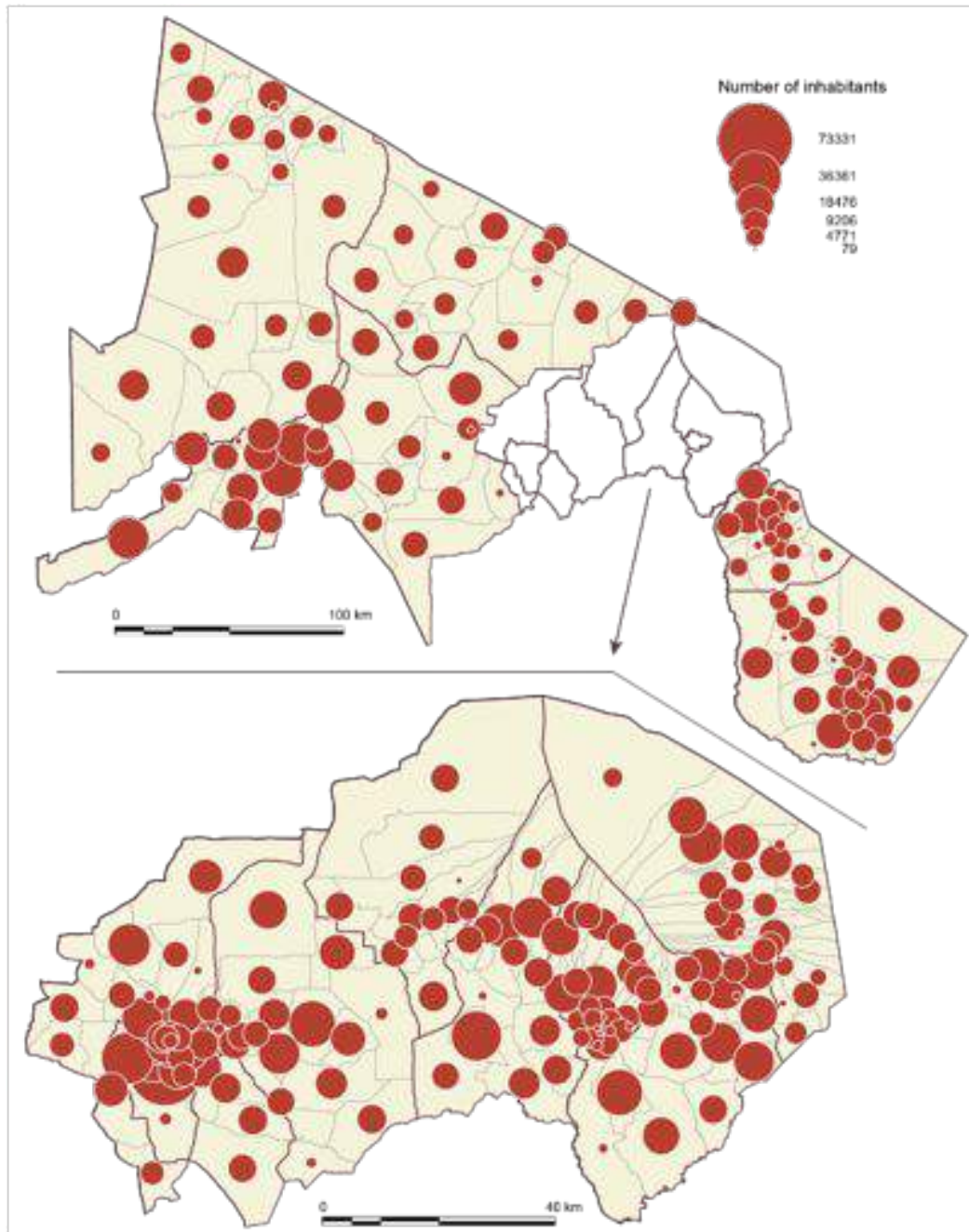
The mountain coffee-banana belt population is based on strong social networks in a context of high density: KNCU (Kilimanjaro Native Cooperative Union, founded in 1933) is, for example, one of the most famous and important cooperative (coffee) of the whole country.

- *Description of main transformations of the local and/or regional economy, including their causal factors (e.g. state policies, innovations, foreign companies; etcetera)*
- *Local labour market (which are large employers, if any?)*

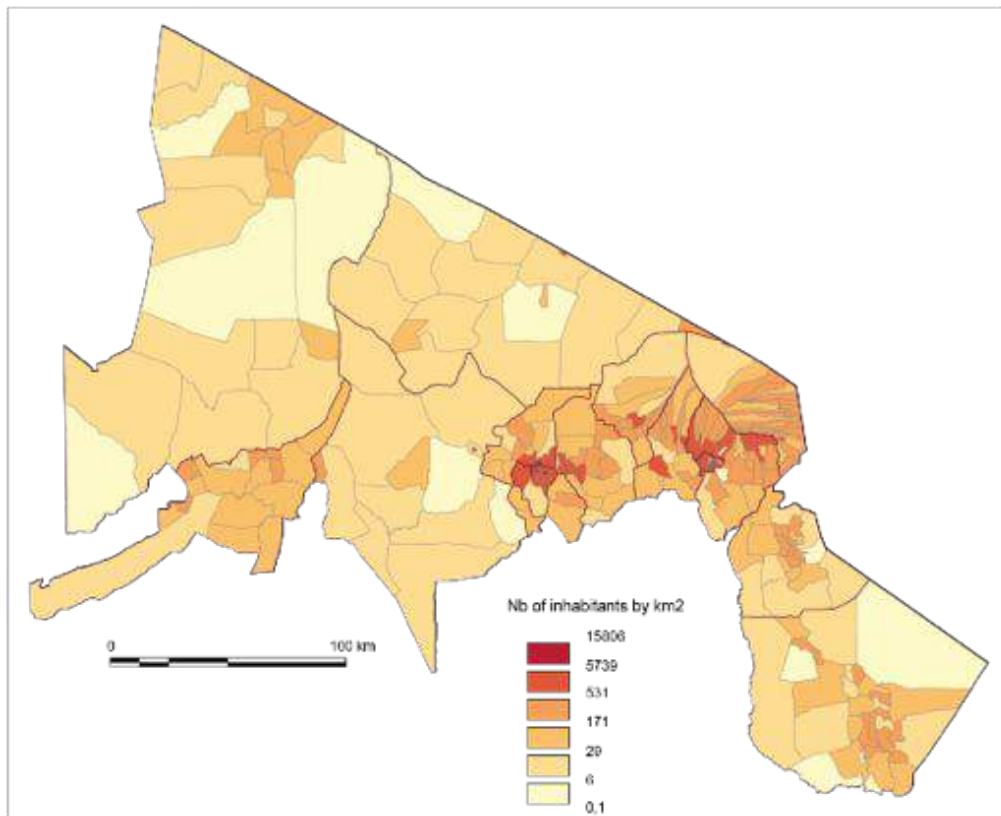
- **IMPORTANCE OF NON-FARMING ENTERPRISES IN THE AREA (E.G. MINING, MANUFACTURE, CONSTRUCTION, COMMERCE, SERVICES; ALSO: PUBLIC SECTOR INSTITUTIONS)**

Non-farming enterprises are now numerous, especially in urban areas : they are involved in new growing activities, mainly services (education, health...), commerce, tourism.

## 5. POPULATION CHARACTERISTICS (FORM A-1 – HOUSEHOLD ROSTER)

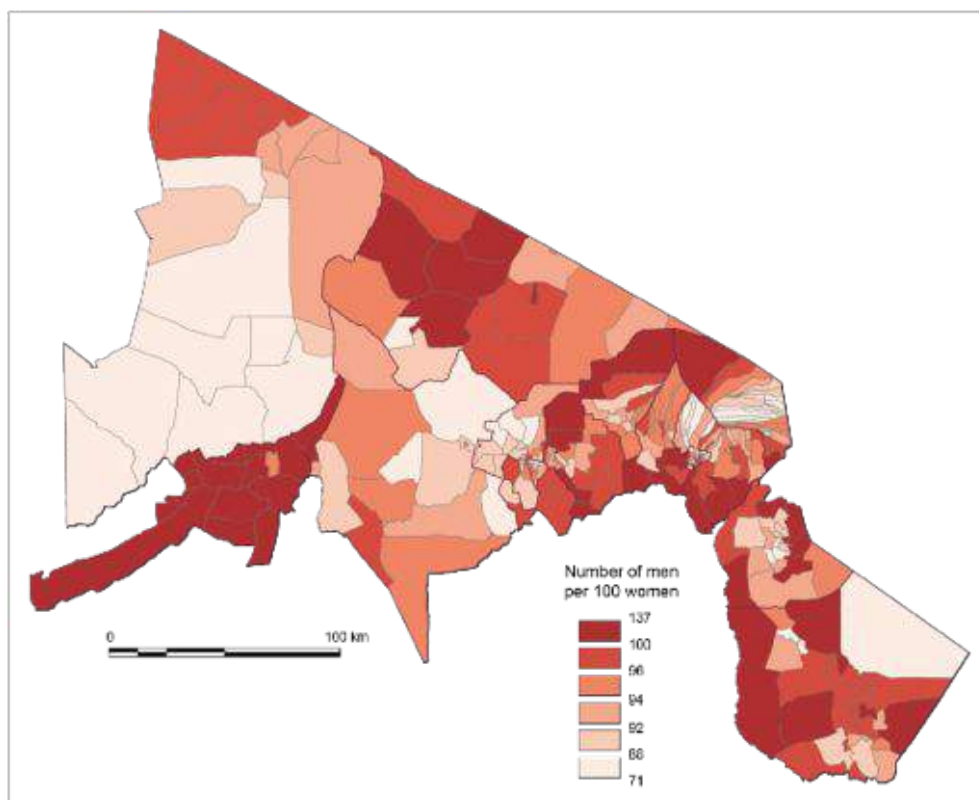


**Arusha and Kilimanjaro Region: Population 2012**  
**With a special focus on Mount Meru and Mount Kilimanjaro surroundings districts**  
*(source: NBS)*



**Population density 2012** (source NBS)

- **Sex Ratio**, in both regions, are quite similar to the national one: 94,6%



**Sex ratio 2012** (source: NBS)

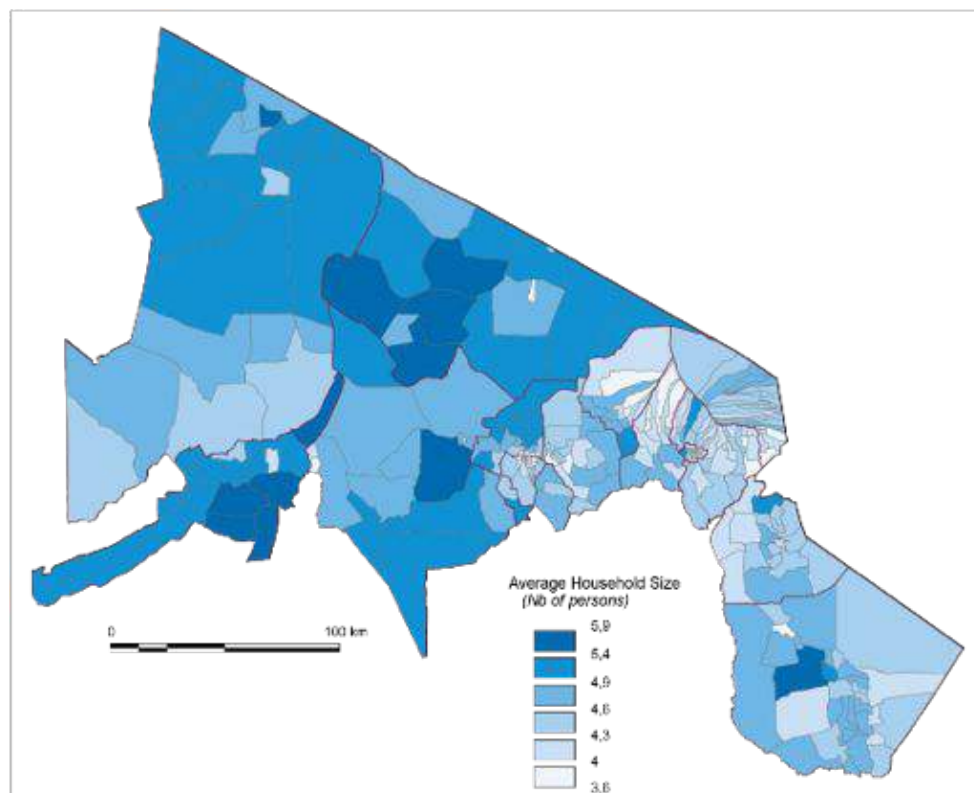
- **Population pyramid**

Both Arusha and Kilimanjaro Regions, according to the results of the 2012 census, have some specific population characteristics:

In terms of age classes, the percentage of children (0-14 years) is lower than in the whole country: 37, 8% in Kilimanjaro, 41, 7% in Arusha vs 43,8% in Tanzania. Kilimanjaro Region has the second lowest percentage of children of the country, after Dar es Salaam (31,6%).

On the other hand, in both regions, the percentage of adults (15-64) is a little higher than at the country level (52,2%): 55,1% in each of them (compared to 66,3% in Dar es Salaam). But what is most remarkable is that Kilimanjaro by far has the highest rate of elders (9,7% > 60 years, 7% > 65) in the country (respectively 5,6% and 3,8%), while Arusha (4,7% and 3,2%) is more similar to the country level.

- **The average size of the household** is a bit lower in urban areas than in rural.



**Average households size 2012 (source NBS)**

- **Educational attainment levels (%) by age and gender):**

One of the most significant indicator of education level is the adult literacy rate: for the whole country, according to 2012 Census, it stands (persons of age 15 years and above) at 78,1% (males 83%, females 73%). But in Kilimanjaro it reaches 92,2%, the highest in Tanzania Mainland after Dar es Salaam (96,1%). This region is famous for the numerous primary and secondary schools scattered mainly in the coffee-banana belt. The coffee production incomes allowed many children to attend school since the colonial era, and after independence the government continued to build many schools.

## **2. METHODOLOGICAL BACKGROUND OF THE STUDY**

Fieldwork took place along the Northern corridor of Tanzania, from the surroundings of Monduli Mountain eastward to Mt Kilimanjaro area. This site is made up of three case studies:

- Monduli area (West of Arusha) (see separate report)
- West Hai-Kwa Sa Dala (Southwest Mt Kilimanjaro, in both highlands (Machame) and lowlands (Rundugai))
- Marangu area

This general shape suits to the main three objectives of the study, which aims to analyze new types of rural-urban linkages in those densely populated mountain areas scattered along the main highway of Northern Tanzania, with two main towns, Arusha and Moshi. The main issue was to investigate the major changes of agricultural systems in relation with urban growth and socio-economic dynamics in the selected rural areas.

### ***CONCEPTUAL FRAMEWORK***

African countryside used to be seen as an area embedded in the heterogeneousness of its own cultures that are patrimonial and patronising. Between stagnation, self-sufficiency, simple reproduction of cultural cycles, and innovation, reorganisation of family agriculture, rural urban migration, social promotion or access to new jobs ..., individual or collective itineraries certainly demonstrated the farmers' ability to transform their production systems in the long run, but without providing them with sustainable alternative perspectives. Markets remained out of bounds to small scale farmers confined to their production sphere. By being supervised from above as demanded the strict vertical hierarchy of cooperative societies, the peasants' means of being integrated into the main trend of the historical process of development were limited. Indeed, in the cash crop growing areas, the peasants have tried to link the town and the countryside from below, by using social promotion as well as investment strategies which went through the income generated from the crops and by the education of their children. This movement has been politically very contained and influenced more the rural world's logic of "exit" than the harmonisation of the two spheres (rural and urban). After the 1980s, the movement was constrained by urban employment crisis, both in the public and private sectors. The right to access urban food markets has been blocked for a long time by the policies of dumping carried out giant countries, exporters of agricultural surpluses. Rural development projects and projects linked to the implementation of structural adjustment programmes have remained territorial or organisational enclaves given to the expansion of western technical system.

In the Northern Corridor of Tanzania, the old agricultural systems, which supported the households' livelihood and determined the forms of rural-urban linkages, are "in transition" if not brought to a breakdown. This specific juncture leads to very complex and diversified situations within the households and the farms and among individuals and communities in general. It is very difficult to capture this diversity and to give meaning to it, with the use of a closed questionnaire. Before going to data collection, it is important to have a first idea of the analysis framework within which any information could be given sense and significance. What we understood is we have to go beyond the rural - urban dichotomy through "the relationship between different types of agricultural transformation and their consequences for rural dynamics, mediated by a plethora of rural-urban

connections” out of which rural-urban mobility for rural livelihood has become increasingly important.

One of the objectives of the RurbanAfrica project is to reconsider the nature of the connections between rural and urban areas. The colonial and neo-colonial model of development was mainly based on the control and the separation of territories by the State, which build the rural-urban divide. At the global level, the contemporary neoliberalism has established a new “territorial game” which is economically very competitive and supposes the breakdown of the former system of territorial regulations. At the local level, different blockages lead to the redefinition of the reference areas within which people organise their systems of resources in order to sustain their livelihood, to survive and/or to accumulate. The current situation is very complex and diverse as these new areas are very flexible according to the circumstances, opportunities individuals or collectives persons face to. The former social and geographical categories are not very useful to understand the new dynamics. Then, we need to break the rural-urban divide and to integrate both city/town and countryside in the same continuum, as new areas of life, as *continuous areas of movement* (Haggett, 1968). We will consider the idea of “*continuous area of movement*” as a key notion to set our WPs 1 & 2 analysis framework up. In the Tanzania Northern Corridor, according to the state of arts, the main blockages refer to the land problem. To deal with, small and big farmers or investors, etc. have to reconsider the way they will follow to access to, to utilize and/or to allocate the land or the space in general as a resource (Birch-Thomsen and alii, 2001, about the livelihood strategies). This process leads to new forms of differentiation amongst the actors. The main methodological difficulty is that the effects of that process are not predictable, as they are often the result of temporary, limited, flexible, unstable...interactions.

We could summarize the analytical framework as such:

### **1. Key notion**

- *Continuous area of movement*: in order to develop new livelihood strategies, people have to overstep the limits of the former territorial categories (like the rural-urban divide, the family farm, etc.) to define a new geographical scope of their activities which could be “truncated, distorted, fragmented” etc. The hypothesis is: a new socioeconomic spatial model is under construction and this process cannot be predictable; then, questions must be opened.

### **2. Dimensions**

- *Land problem*: Land is the key factor as most of the people are still involved in agricultural activities and as newcomers are interested in investing in agriculture and are looking for land. Access to land must be more flexible.
- *Agricultural transformation*: Farming used to be and generally remains the main source of incomes. The colonial and neo-colonial model of farming came to a crisis in the nineties. The conditions for running a farm have dramatically changed: intensification, diversification, integration into the market, integration to new activities, etc.
- *Livelihood diversification*: Beyond the diversification of incomes and strategies, the understanding of livelihoods, as quoted by Birch-Thomsen and alii, must be seen as an approach to the study of rural change, including a multiscale perspective from global to local level, social differentiation, and diverse types of capital and resources.

- *Mobility*: the *continuous area of movement* supposes the areas of live in general are defined by the way people utilize their capacity to move and to relate different places of resources through mobility. Mobility could be seen not only at the individual level but as a chain of mobility. Like “livelihood”, mobility could be seen as an approach to the redefinition of the relationship to space.
- *Interconnectivity*: mobility is not the only way to relate separate areas or places, separate actors, and/or to animate and sustain social networks (family, domestic, professional ...). The use of mobile phone, internet ... contributes to build a specific relation to the space through networking, by creating, sustaining, taking advantage of, different types of solidarity.

KEY NOTION	DIMENSION	COMPONENTS
Continuous area of movement	Land problem	Land scarcity
		renting
		Contract farming
	Agricultural transformation	Diversification
		Intensification
		Labelling, certification
		Integration into the market
	Livelihood diversification and sustainability	Business
		Rural tourism
		Off farm jobs
	Mobility	Transport network
		Multi locality
		commuting
	Interconnectivity / Flows	Use of mobile phone
		Family solidarity

- **IN THE FIELDS**

As agreed within the WP1, we started from the transformation of the agricultural systems. Then, we specifically investigated:

- The transformation of a very pastoral system to a more diversified agro-pastoral system: Monduli District (Joseph Lukumay)
- The transformation of a farming system - coffee-banana belt (Machame), maize belt (Rundugai) - to a complex new marketing food crops system (Prof. Charlery, Prof. Bart, Joseph Lukumay, Adriana Blache).
- The transformation of the coffee-banana belt farming system vs the development of tourism activities (Marangu) (Prof. Thibaud, Dr. Rémi Bénos)

### **Monduli District**

The study explored how the processes of livelihood transformations and changes influence the evolutions in social relations, power distribution, decision making processes, resources acquisitions, uses and management at different levels (individuals, households, societies,...) within the Maasai societies. In Monduli area, as part of Joseph Lukumay’s thesis, the Rurban WP1-WP2 common

questionnaire has been adapted to the real situation in the field (many questions were not relevant and/or answerable).

The main questions which led the study were:

- What are the new livelihood strategies being employed by the Maasai people (in urban and rural areas) and how they came into being?
- How do the opted livelihood strategies differ between individuals, between generations and between genders?
- How is the livelihood transformation process affecting social relations, power distribution, decision making processes and means of acquisition and management of new resources and livelihoods opportunities, new identities formation within the Maasai communities?

A total of 200 questionnaires have been filled and 4 focus group discussions conducted in 4 different villages.

### **Machame-Rondugai (West Hai)**

This case study aims to take into account the development of market gardening in order to supply the growing towns and cities food demand. In West Hai and Marangu areas, available time and money lead to a qualitative approach in order to identify trends and tendencies, as a snapshot of a dynamic but paradoxical development.

We decided to focus on one of the main vegetable chains: the tomato chain. We started from the main tomato market place of the area: Kwa Sa Dala, located on the Dar es Salaam-Arusha highway, to identify the producing system, the different actors and the global network (i.e. the relationships, the linkages, formal and informal contracts), and the main characteristics of the flows (origin, destination, means of transport, prices etc.). From these places, we conducted interviews (18) in two producing areas: Masama-Machame in the neighboring coffee banana belt, Rundugai in the southern lowlands.

### **Marangu area**

The role of the coffee sector and its development has been at the heart of studies carried out along a Marangu/Moshi transect, from the area of production (small farms in the mountains) to the marketing places (cooperatives, coffee shop in town).

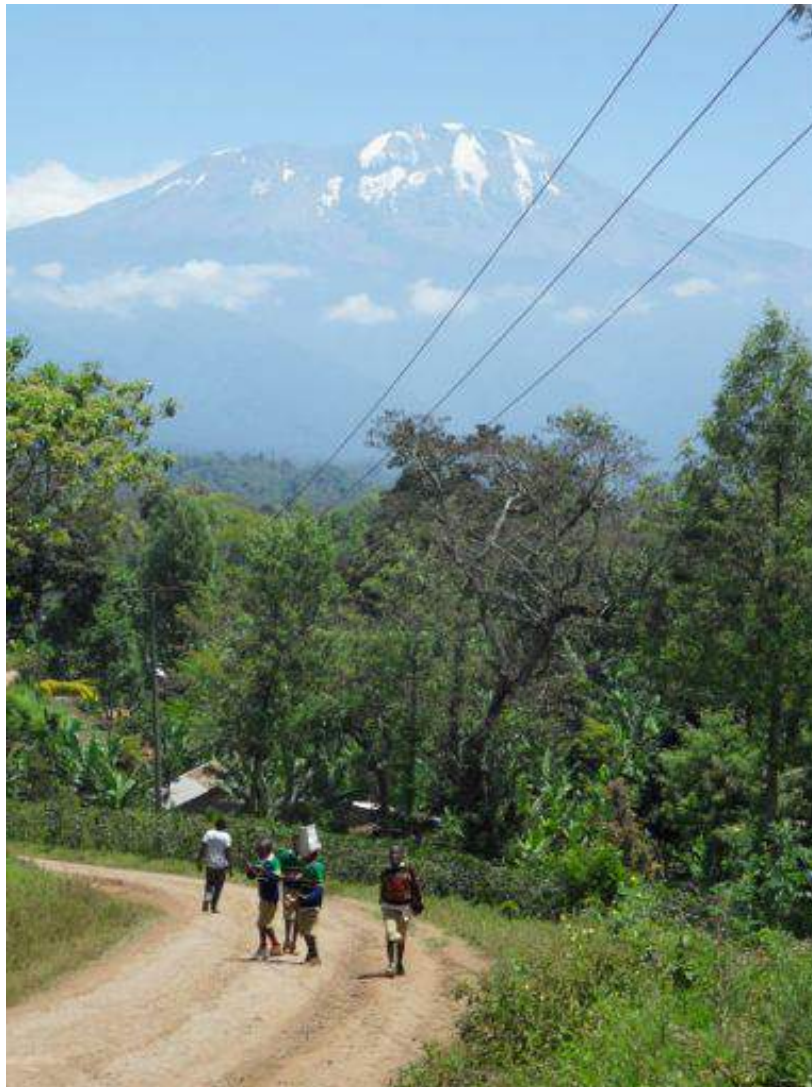
We took an interest in the place and the role of tourism today in the construction of new systems of resources within the smallholders' sector. The current systems of production are not able to ensure the needs of households: coffee farming no longer providing sufficient revenues, the sustainability of the farms is compromised

Tourism, which has been directly linked to the ascent of the mountain, is not a new activity in Kilimanjaro region. Today, the opportunity to benefit from the tourism activity seems to growing up in the countryside around Marangu in the form of cultural tourism, based on the introduction to coffee production and the discovery of remarkable natural sites.

25 interviews were conducted, with the various stakeholders (small producers, traders ...), allowing us to distinguish two types of activities:

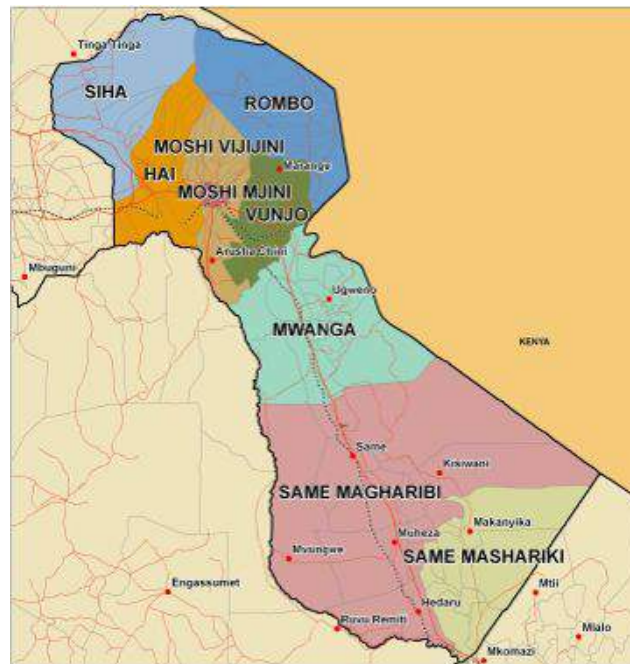


1. In situ (= in the farms)
  - « Resorts » (investment from large farms with a tradition of mobility and openness to the outside); marketing organized around coffee, agricultural museum...
  - Rural accommodation, as *Bed and Breakfast*, or discovery farms with direct sales of coffee
  - Tours organized around the farm
2. Out-farms activities (= livelihood diversification)
  - Employment as guides or porters
  - Local handicrafts
  - The multiplication of coffee shops in the downstream of the chain attests to the new strategies being currently implemented, bridging the gap between town and country and boosting the coffee production in Marangu.



***Machame route***

## Report on Kilimanjaro sites (West Hai and Moshi rural districts)



### LAND PROBLEM, AGRICULTURAL AND RURAL TRANSFORMATIONS

(10, 11, 12, 13, 14, 15)

Along the coffee banana belt on the mountain and its maize periphery in the plain, the Chagga farming system has already been well documented for a long time. Ten years ago, it could be described by François Devenne, Odile Chapuis and François Bart<sup>1</sup> (among others) as such:

“Mount Kilimanjaro is characterized by small family farms where family dwelling, production and consumption are nearly indistinguishable. The nuclear family settled on the *Kihamba* hardly differs from its means of production and what it consumes [...]. The basic family unit consists of a monogamous husband, who runs the farm, and his wife and their children. The children usually leave the farm when they reach adulthood. The daughters marry, and the sons move to a farm of their own or find work in the city. Formerly, the youngest son continued to live with his parents on the *kihamba*, which he would inherit when his father passed away [...].”

They pointed out:

- The farmers have limited manpower at their disposal: in the farms where they conducted the survey, the majority of them survived solely on two adults, except in the area closed to the city of Moshi.
- The size of the farm was still very small, between 0.7 ha to 1.30 ha. Some farmers cultivated land in the plains (small plots, less than 1ha), but the high cost of renting land and the

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<sup>1</sup> Chagga farm Systems, Strengths and Stumbling Blocks. In: BART F., MBONILE M.J., DEVENNE F., *Kilimanjaro. Mountain, Memory, Modernity*. Mkuki na Nyota Publishers, Dar es Salaam, 2006, p:177-199

distance between kihamba and plain dissuaded numerous farmers (37% in Machame *chefferie* for example) from cultivating plots down below.

- Coffee growing, which was an exclusively male domain, led to the decline of zebu breeding, supplanted seasonal farming, exiling it to the lower slopes of the mountain or to the plain. Banana, today the private domain of Chagga women, little by little, had acquired market value. Coffee and Banana are the two pillars of the socioeconomic domestic system, which was made vulnerable by the decline of the coffee prices during the 1990s.
- Most farmers had less land, often not enough to feed the family. They combined parcels from various altitudes and a variety of complementary activities. Some of them succeeded in land speculation, especially on the lower slopes.
- Most farmers had outside work, and the range of activity and social status was enormous: forest wardens, field hands, civil servants, cooperative employees, etc.
- The changing physiognomy of the area and the limitless capacity for innovation of its indefatigable inhabitants: variety of land acquisition strategies, strategies for diversifying income.

Land blockage was seen as the main blockage on the mountain: it splintered farms and made farming all but impossible. In response to this, the Chagga farmer, whose attachment to the land is visceral, sprang into action and partook of the mountain's multiple networks. Roads, city and the willingness of the younger generation to move away are essential to success.

More recent papers based on field surveys emphasized the same factors of evolution and the same trends and tendencies, which means the Kilimanjaro farming system and the model of development to which it refers, have been in transition for more than 20 years. More than this, we can suggest the emergence of a new model according to the fact that:

- The farming system is no longer based on colonial commodities (coffee) but it is completely reorganized to face the boom of the commercial food sector. Coffee production has declined dramatically (less than 4000 tons)
- National policies support commercial small scale farming and mainly large scale commercial farming, based on public/private partnership (PPP)
- On the farmers' side, the diseconomies of scale related to the small landholding, which prevent the accumulation of sufficient volume and quality to gain access to lucrative markets, and on the investors' side, the difficulties to have access to additional land and labor lead to new contract farming which change dramatically the social relations of production.
- An increasing number of young people do not inherit any land. Then they have to start accumulating relying on their own initiative and strength. Then they are looking for fast earnings.
- Family members are disseminated in different places, often far away from the others
- Rural livelihoods have become increasingly multi-occupational on the basis of rural-urban mobility.

## **The land issue (10,12)**

KEY NOTION	DIMENSION	COMPONENTS
Continuous area of movement	Land problem	Land scarcity
		renting
		Contract farming
	Agricultural transformation	Diversification
		Intensification
		Labelling, certification
		Integration into the market
	Livelihood diversification and sustainability	Business
		Rural tourism
		Off farm jobs
	Mobility	Transport network
		Multi locality
		commuting
	Interconnectivity / Flows	Use of mobile phone
		Family solidarity

### ***Land scarcity***

According to the National Sample Census of Agriculture (NSCA), 2007/2008 Small Holder Agriculture (Volume Vc: Regional Report: Kilimanjaro Region, July 2012), the average size of a family farm is 1ha, less than the national average (1,3ha). According to the fieldwork, the situation is worth. The subdivision of land into individual plots due to successive inheritance procedures makes it is virtually impossible for many farmers to live on the farm income. No collaborative system could be implemented to maintain a relative economical size to the farm even within brothers and sisters: people say “it is cultural”. The situations are contrasted and refer to each family farm lifecycle, but in average the farm size is around 1 acre in the coffee-banana belt. Here are few examples:

- A widow inherited a 1 acre plot on which she planted tomatoes working with a friend of her.
- A 50 year man received his plot from his father. The father’s land was divided in 6 parts; as his five brothers, he inherited one acre. The land is now used only for residence and bananas growing.
- An old lady still works on one “*shamba*” she inherited with her young brother; sometimes she can rent a piece of land in the plain. Another brother just builds a house on his part.
- Etc.



***A traditional coffee-banana small plot in Machame***



For some farmers, especially those living along the main roads on the mountain, the coffee-banana belt will become a residential area even if it is still densely cultivated. The system of ownership and inheritance in the coffee-banana belt is completely blocked. For long, young people have moved to the plain to grow maize. They have to find other ways to access to land.

### ***Land access***

To have access to land, flexibility is the keyword. Renting a land permanently or for one or two growing seasons (to grow vegetables for example) is more and more common. The price is fixed according to the geographical location, to the access or not to the water. In Machame (coffee-banana belt) for one growing season (from planting to harvesting, 5 months in average), renting two acres costs 150 000 Tsh (75€) + the charges after the harvest. In Boma N'gombe (in the plain), it is less expensive (100 000 Tsh without charges). The owner preferred to rent on the basis of a fixed price instead of a percentage of production. Generally the agreement of the Village Council is requested. There is no formal "contractualisation" of the exchanges.

Flexibility means the people who want to rent a piece of land, have to move even far away from their homeland. Some Chagga farmers for example rented land in Babati over two hundred kilometers from Kilimanjaro on the road to Dar es Salaam. Others may rent land even further, in Iringa region for example to grow tomatoes when it is the right season, before to go back to Kilimanjaro when the season is better there.

Renting is possible because some owners have available land. In the low densely populated areas (like in Rundugai in West Hai district), it is easy to understand land is available. It is less understandable in the high densely populated slopes of Kilimanjaro Mountain. Actually, the availability of land reflects the extreme complexity of the land question in Kilimanjaro. Some people have land they are not able to cultivate for any reasons: because they are too old, they have a job in town, they don't have the capacity to invest, etc. Then they are ready to rent it out, preferably, to relatives: for example a young man in Machame has an inherited land which is too small; he has had the opportunity to rent 2 acres from his aunt and to start growing tomatoes. The owners benefit from the lease through the rent itself but also through improved land use and land management; sometimes they could be employed by the investors as workers in their own land. The contract is for one year, under the aegis of the Village Executive Officer.



***A banana-tomato plot rented in Machame***

Just below the coffee-banana belt on the lower slopes of the mountain, some big farms or some former estates have often available land which may be rented to the small farmers: we had the case of a farmer who rented 4 acres from Dekka Flower Company on an annual basis. Big Investors, who are not native to that area, sometimes who are foreigners, are also looking for land to start or to expand the growth of one or two specific crops. As available land is difficult to obtain and additional labour hard to find, the investors can achieve their goal through contract farming: Rüş, Ohlde, and Rankin (2013) describe the case of “Meru”, a privately owned medium size farm estate located in the vicinity of Mount Meru, which decided to contract commercial small farmers (1 700) through an horticultural cooperative, in order to be able to supply lucrative city or foreign markets.



***Machame – Rundugai Transect***



## Machame Rundugai Transect



Machame route, Coffee Banana Belt



Kwa Sa Dala Market

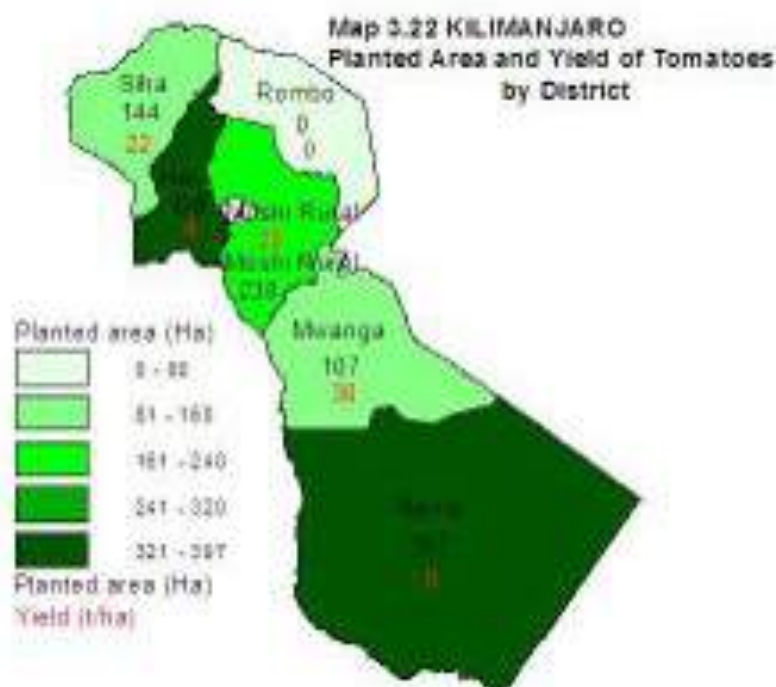


Rundugai

## Agricultural transformation (13, 14, 15, 16, 17)

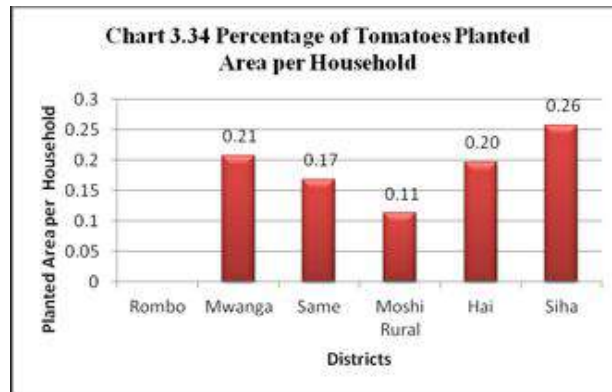
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		Multi locality
		commuting
	Interconnectivity / Flows	Use of mobile phone
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As time was short to investigate the agricultural transformation, we decided to focus on the tomatoes chain. According to the NSCA, the main annual crops are maize, beans and Irish potatoes. Within fruits and vegetables which cover roughly 5 000 ha in the Kilimanjaro region, tomatoes is by far the most important crop (62%) and are cultivated essentially by smallholders. Kwa Sa Dala, located between Moshi and Boma N'Gombe, is the main tomatoes market. Then, we decided to study the production along a North-South transect from the wet coffee-banana belt in Machame to the semi-arid land in Rundugai, in Hai District, on both sides of Kwa Sa Dala market and of the main road Arusha- Moshi - Dar es Salaam.



Source : NSCA 2007/2008





Source : NSCA 2007/2008

According to a report on *MUVI-SIDO Iringa Tomato Value Chains Analysis for Local (National) Market* (2009, p. viii), “There had been consistent growth in national output up to around 2000 where production has been staggering at around  $\pm 140,000$ mt. With 107,190 mt in 2008, Iringa accounts for 72% of tomato produced in Tanzania. Average regional yield is around 17.5 mt per hectare or about 7mt per acre. Tanzania is a net exporter of fresh tomato; between 2004 the country’s annual export averaged 1.05 million kgs against an average import of 6,824 kgs though the pattern is highly uneven for both exports and imports”. The production in Kilimanjaro (17 500 T) remains small compared to Iringa Region, but it is significant at local or regional level (62% of the vegetables and fruits production) and yields (maps 3.22, NSCA) are higher than in Iringa (17, 5 t/ha). It must be noted that some Chagga farmers cultivate tomatoes in Iringa region too.

Tomatoes are produced to supply the city markets and for export. Dar es Salaam is the main Tanzanian city market. According to the same report, “Reflecting seasonality of supply of Tomato in Dar es Salaam prices do fluctuate significantly, note in Fig. no 3.1 of higher prices between March and May and a trough (low) from June through September. The spike in December is assumed to be caused by year-end festivals when consumption is highest. Traders who take the risk at farm gate indicate that the major risk in tomato marketing is oversupply caused by weak market intelligence and inability to forecast”. The other risk of tomato is “over dependency on rainfall, therefore weather or rather climate change is the major risk and producers have indicated experiencing erratic rainfall pattern over the past 10 years. Poor water management and pollution water sources adjoining the tomato fields are two other important risks”.



**Tomatoes at Kwa Sa Dala market (november 2014)**

All the farmers who were interviewed have started tomatoes production for less than ten years, and one can consider tomatoes as a new important cash-earning commodity. The main reasons are:

- Tomatoes are in high demand.
- Tomato production is a fast cash earning activity which attracts especially young farmers who do not have received any inheritance (land, coffee trees, etc.). Some of them, who were interviewed, explained that they had first to find a way (selling workforce, doing small business) to accumulate a primary capital before starting farming. They could get a fast seasonal return on investment from tomato production which allows them to invest again and to grow. According to the report on Iringa tomato value chain, "Return on tomato cultivation can be improved if yield is enhanced from around 15mt reported in the field to at least 20mt", which is the case in Kilimanjaro region. Generally, tomato farmers are used to growing green pepper, onions, cucumbers, etc., too.
- Farmers could easily invest in new skills and in new stages of the value chain. Many women are already involved in marketing in different local places and especially in Kwa Sa Dala market, which is the main market to export tomatoes out of the region. Women could be producers and retailers at the same time; they could wholesale first to middlemen or to transporters, and sell the left over directly to the local consumers; When their own production is finished, they could also buy tomatoes from other producers and sale them. Even if they are involved in business, they prefer to be identified as farmer or peasant.



Kwa Sa Dala market

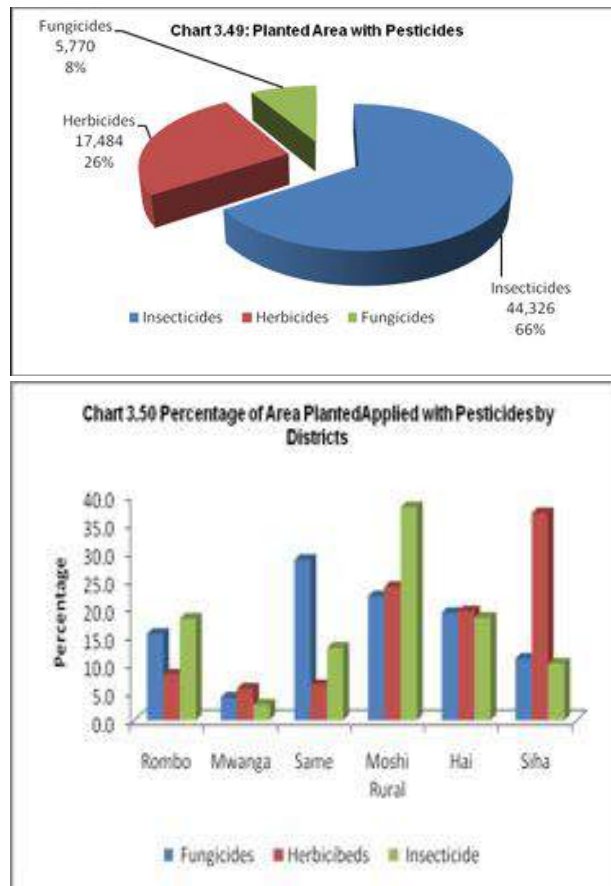
- Some farmers with good skills could also become middlemen as a main activity. Then they rent their farm to other producers or they employ workers to cultivate their land. Robert, whom we met in Kwa Sa Dala, is representative of this category of brokers, which is at the core of the chain, at the core of the rural-urban linkages, linking producers, transporters, wholesalers and retailers. He is responsible of his father's land in Machame Juu, a former coffee plantation which has been replaced by tomatoes in the shade of banana trees, and rented to neighbors. Mobile phone is the main tool to manage the business: during the one-hour interview, Robert gave or received several telephone calls (every 5 minutes in average). Mobile phone allows

him to get information on the state of the market in any places, to give an order to a transporter to come and to collect the goods immediately, etc. Then, he has to sustain a quite important network of professionals. He is paid a commission by either party, generally 10% of the contract. He lives in the small town of Boma N'gombe.

Tomato production is relatively input intensive, including seeds, fertilizers and pesticides. Local storekeepers generally provide these inputs as an advance in kind which could be refunded in cash after the sales. Then, farmers have to set up a network of trustworthy in town to be able to get credit. We did not have time to collect information about the cost of production but we can refer to the situation in Iringa: "Variable costs incurred include land hiring Tshs 43,333 per acre, seeds acquisition Tshs 33,667, nursery preparation and management is Tshs 64,850 per (about 10m2), land preparation is Tshs 51,833, transplanting task Tshs 14,000, fertilizer acquisition for planting and boosting Tshs 129,500, pesticides and fungicides Tshs 66,834, labour for spraying and fertilizer application Tshs 50,001, irrigation cost Tshs 154,667, harvesting Tshs 75,200, sorting and packaging Tshs 8,400 and transport Tshs 152,017 (to where?)". The tomato plant is affected by a number of diseases. High incidence of pests and diseases, especially during the wet season, results in low productivity and supply. There are no extension services to help farmers to choose the right treatment especially when the pest is not common: in Rundugai, a lady faced a new pest problem, she was sold a pesticide "just to try", but it did not work and finally she gave up and went back to maize production. Shambas are full of used chemicals plastic bags.



***A shop in Kwa sa Dala***



Kilimanjaro Region, Source : NSCA 2007/2008

The use of equipment is not very common, especially on the mountain where plots are very small and slopes quite steeply. In the plains, tractors could be used. Some owners can hire their equipment and their workforce to others (to plough for example).

**Table 3.9 Number of Households that Used Agricultural Equipment by Type and District**

District	Equipment/Asset Name											
	Ox cart		Tractor		Tractor plough		Tractor Harrow		Castrated bulls		Uncastrated bulls	
	Number	%	Number	%	Number	%	Number		Number	%	Number	%
Rombo	324	0.8	108	0.3	108	0.3	0	0	540	1.3	757	1.8
Mwanga	206	0.5	155	0.4	52	0.1	0	0	413	1	774	1.8
Same	88	0.2	1,232	2.9	1,232	2.9	1,056	2.5	0	0	1,144	2.7
Moshi Rural	212	0.5	5,922	14.1	3,384	8.1	635	1.5	423	1	1,058	2.5
Hai	521	1.2	6,336	15.1	3,646	8.7	174	0.4	1,736	4.1	1,823	4.3
Siha	438	1	688	1.6	563	1.3	313	0.7	3,689	8.8	2,251	5.4
Total	1,789	4.3	14,442	34.4	8,985	21.4	2,177	5.2	6,801	16.2	7,806	18.6

Source : NSCA 2007/2008





***A tractor in the Rundugai plain***

Having access to water is necessary to grow tomatoes. The coffee-banana belt has had a very well organized furrows system for long, to supply the domestic needs, to water livestock and to irrigate the shambas, especially the coffee plantation to avoid the hydric stress. Having plots closed to the rivers or to the furrows is a comparative advantage more than before, even if the rapid reduction of glaciers at the top of the mountain, due to climatic change, is problematic. In the semi-arid plains, tomato cultivation depends on the implementation of an irrigation scheme: it is the case in Rudungai (USAID/TAPP project) and in Ngabobo (west Kilimanjaro), two sites where we had interviews. The basic investment in equipment is a water pump.



***A water pump in Machame...***



***... to irrigate a tomatoes plot***

Organization and management of tomato production can be very diverse:

- In Ngabobo (West Kilimanjaro, semi-arid area, Maasai village), tomato cultivation is dominated by men who manage the irrigation system. They can organize the production at individual (household) or collective level. At collective level, they could form a kind of farmers' group on the basis of understanding links, friendships, but never on the basis of lineages (to avoid conflicts). The objective is to share the initial capital, financial capital or capital-labor. Profits are distributed to households according to the contributed capital.
- In Machame (Coffee-Banana Belt, small plots), the farmers we met works with a friend of them or with a relative, no more.



***Wooden crates waiting for tomatoes in Machame***

- In Rundugaï, a small farmer cultivates half an acre of tomatoes under a drip micro-irrigation system, with his wife. Not far from this farm, there are big farms (> 5 acres), which can be managed directly by the landlord or the tenant, who can also employed agriculture workers under a seasonal contract. Workers generally come from the mountains (Mount Meru or Mount Kilimanjaro); their objective is to get sufficient money to start their own farming.



***Tomatoes under a drip irrigation system in Rundugaï***

## LIVELIHOOD DIVERSIFICATION AND SUSTAINABILITY

KEY NOTION	DIMENSION	COMPONENTS
Continuous area of movement	Land problem	Land scarcity
		renting
		Contract farming
	Agricultural transformation	Diversification
		Intensification
		Labelling, certification
		Integration into the market
	Livelihood diversification and sustainability	Business
		Rural tourism
		Off farm jobs
	Mobility	Transport network
		Multi locality
		commuting
	Interconnectivity / Flows	Use of mobile phone
		Family solidarity

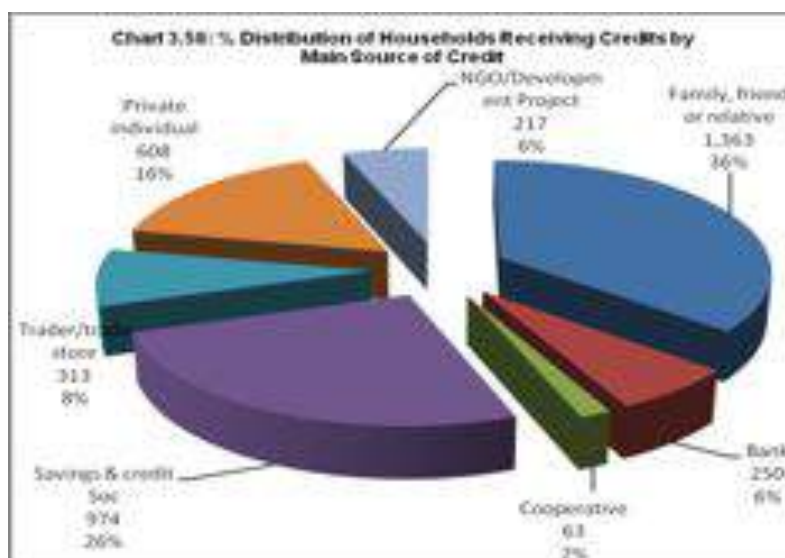
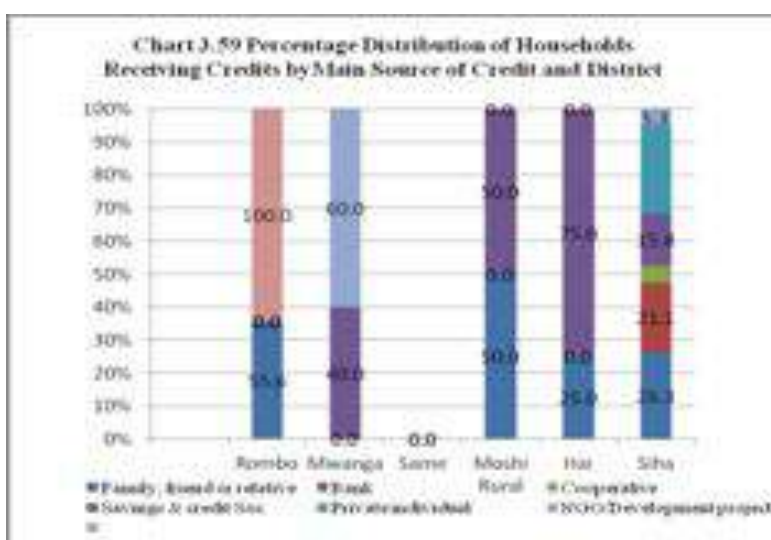
“Household” is a controversial and relative concept, especially at a time when rural people are more and more mobile. According to the Tanzanian Household Budget Survey 2011/2012 (NBS 2014), *Household* “refers to people who live together and share income and also basic needs. In other words, residents of a household share the same centre of production and consume from that centre”. This definition is problematic as family members sharing income may live in different places. NBS clarifies that a household may be one-person or multi-person-household. There are two types of common households used. These include;

- a) *One person household* which is a person who lives alone in whole or part of a housing unit and has independent consumption;
- b) *Multi-person household* is a group of two or more persons who occupy the whole or part of a housing unit and share their consumption. Usual households of this type comprise husband, wife and children. Other relatives, borders, visitors and their persons are included as members of the household if they pool their resources, share their consumption and have been living with the household for at least two weeks. Other than family members, the following can be counted as members of the households: Household servants will be counted as members of a household if and only if they are taking their meals in that household and recognize the head of household as their head; a person who shares residence and meals by paying will be considered as household member. But if he does not contribute and share meals with his resident he will be counted as different household. A household with more than five lodgers will be counted as guest house and not included in this survey.

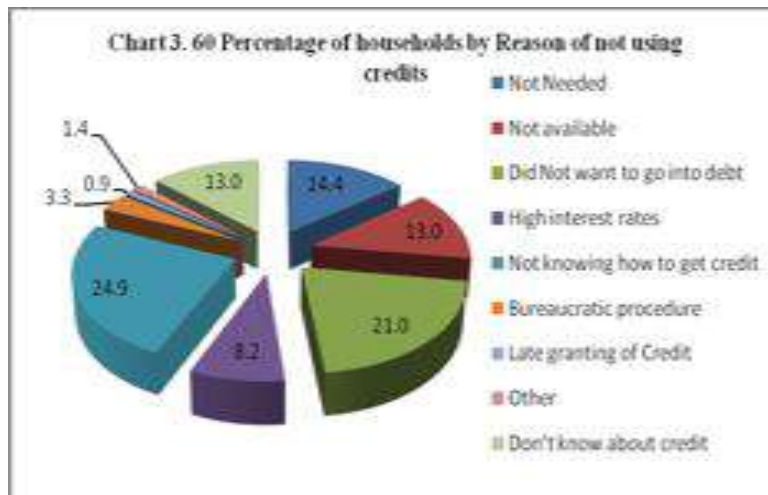
Then, as usual, a household is defined in terms of shared residence and common arrangements. But we think that the relations between family members are more complex. To understand the question of livelihood, we must know first “who is sharing what?” within the extended family or even within the social networks. Time was too short to conduct a survey to better understand the evolution of these relationships. Then, we will refer to the NBS household definition. According to the NBS Survey, in rural areas, the average number of Household members is 5.9, and 46.7% are under 15, and 70.5% under 29.



Most of the persons we interviewed generate their income from farming and/or from marketing. Generally farming is conducted on a family basis, which means there is no distinction between household and farm budgets. The following charts (NBS 2007/2008) show the use of credits. In Moshi rural and Hai districts, the sources of credits are quite simple: family, friends and relatives or Savings & credit Societies (like SACCOs), but in general there is a lack of access to appropriate financial services for farmers and traders, resulting in lack of working capital to invest in moving up into the chain or invest in farming. The number of households receiving credits is very low: 22% in Moshi Rural district, 9% in Hai district, mainly because they don't know how to get credit or they did not want to get into debt (Chart 3.60). It is in accordance with our own survey: farmers don't want to be dependent on someone, except family members, friends or relatives.







### ***Revenues from tomato marketing***

Tomato farming and/or marketing help the farmers to improve their livelihood:

- In Ngabobo (Maasai land), benefits are invested in the purchase of cows, goats, etc. Cows are sold and the money collected is reinvested in tomato production (it is a kind of sustainable economic cycle). The youth invest in motorcycles too.
- In Masama Market (Machame), a wooden crate of tomatoes is sold (in October) at 25000- 28000 tsh
- In Machame, farmgate price was (in October) 15 000 Tsh. For the farmer it is a poor price: to cover expenses and to make profit, the right price could be 19 000 / 20 000 Tsh. Then, the farmer told us he will carry the upcoming productions to Dar es Salaam by himself.
- In Kwasadala Market, one wooden crate is sold at 12 000Tsh (for local consumption, low quality) and 18 000 Tsh (best quality, city market). In Dar es Salaam, the wooden crate can be sold at 27000 Tsh.



***Kwa Sa Dala market***

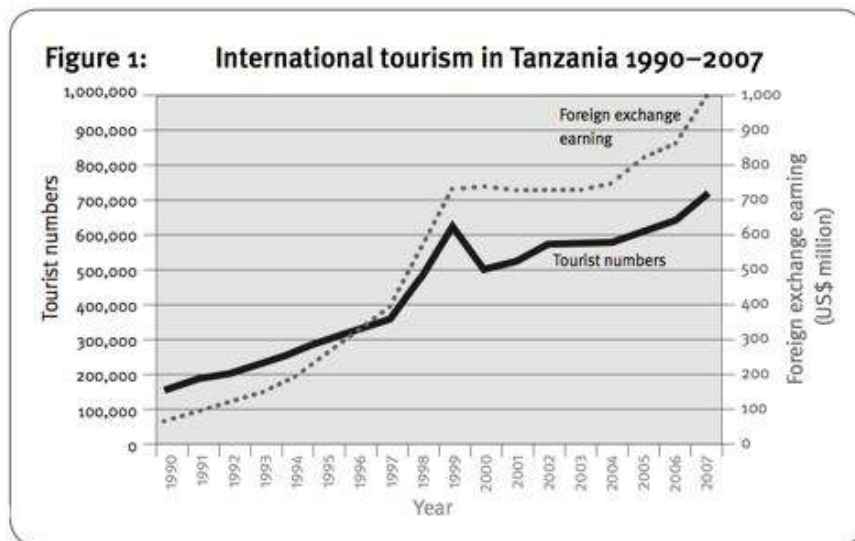
## RURAL TOURISM

This question was dealt with from the Marangu area field survey, as Marangu is the main gate to climb Kilimanjaro.

### 1. The importance of tourism for rural communities of Tanzania

Many researches have focused on the economic benefits of tourism to rural communities in Tanzania. This work enables to understand the attendance levels of visitors and the associated financial amounts. We use here the main results:

- *In 2007, the tourism sector directly and indirectly contributed US\$1.6billion – or almost 11% of the entire Tanzanian economy. This equates to US\$43 for every man, woman and child in the country. Perhaps even more striking is the effect of tourism on Tanzanian exports because most tourist spending is made by foreigners. International tourists spending money in Tanzania are an ‘export’ because they bring money into the country from overseas. In 2008 it is estimated that foreign tourists contributed US\$1.1billion of foreign exchange – nearly 33% of all the goods and services sold by Tanzania abroad.<sup>2</sup>*

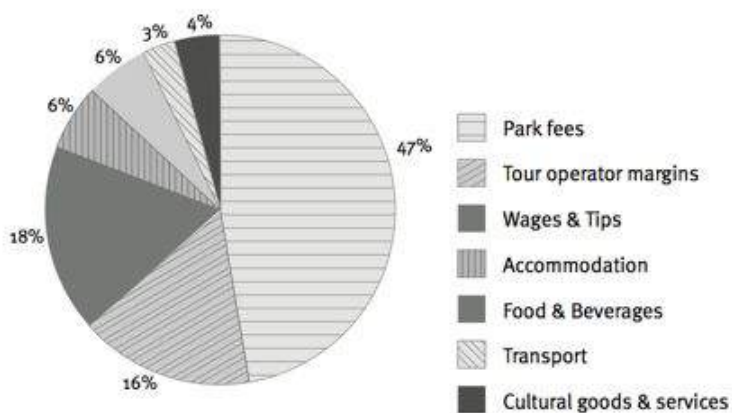


- *International package tourists climbing Mount Kilimanjaro and visiting the Northern Safari Circuit deliver significant benefits to the poor. Approximately 28% and 18% of in-country tourist spending respectively is reaching poor people at the destination. International comparisons suggest that poor Tanzanians are capturing a relatively large share of tourist spending.<sup>3</sup>*

<sup>2</sup> MITCHELL J., KEANE J., LAIDLAW J., 2009, *Making success work for the poor: Package tourism in Northern Tanzania. Final report.* Overseas Development Institute

<sup>3</sup> MITCHELL J., KEANE J., LAIDLAW J., 2009, *Making success work for the poor: Package tourism in Northern Tanzania. Final report.* Overseas Development Institute

**Figure 2: Cost components of a typical Mountain-climbing holiday (US\$1,376 in-country)**



- The largest single item of tourist expenditure is National Park fees at 47% of the total cost. Each climber pays an average of US\$649 in National Park fees as part of their tour operator package. The second largest item of expenditure is payments for climbing staff, which amounts 18% of total spending when wages from tour operators and tips from tourists are combined. Mount Kilimanjaro climbing staff receive an average annual income (including both wages and tips) of US\$1,830 for guides, US\$842 for porters, and US\$771 for cooks. Porters wages vary significantly between different tour operators and routes. Using a large sample in 2007/08, the Kilimanjaro Porters Assistance Project found very widespread abuses of porters working conditions and day rates that vary from US\$3.50 to \$10.60 per day.<sup>4</sup>

**Table 1: Average Mount Kilimanjaro climbing staff pay (wages plus tips)**

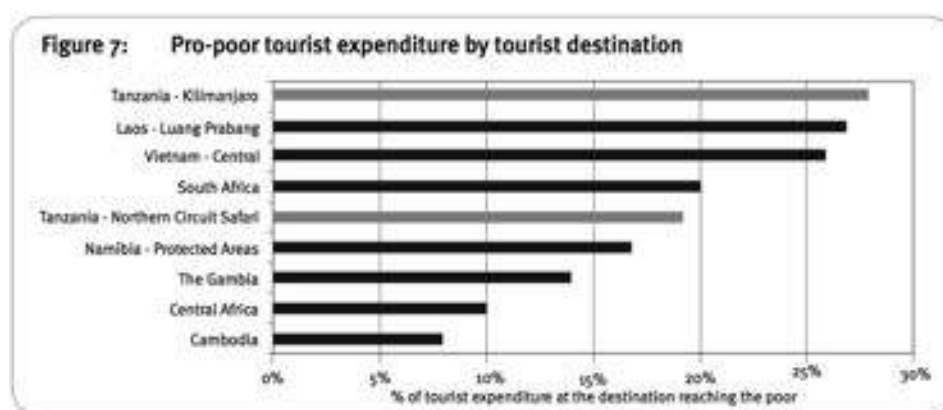
Staff	Daily wage (US\$)	Daily tip (US\$)	Pay / trip (US\$)	Trips / year	Staff annual income (US\$)
Guide	10.00	5.38	108	17	1,830
Porter	5.00	3.59	60	14	842
Cook	5.00	2.87	55	14	771

- A special report to the economic impact on cultural practices and memories. They seem very low compared to the benefits safaris and ascents. « US\$58 per climber per trip is spent on average on cultural goods and services, including US\$24 on souvenirs, other shopping and donations (...). 50% of expenditure on cultural goods and services is considered to be pro-

<sup>4</sup> MITCHELL J., KEANE J., LAIDLAW J., 2009, *Making success work for the poor: Package tourism in Northern Tanzania. Final report*. Overseas Development Institute

poor. Interviews with craft shop retail outlets suggest that poor producers receive approximately 50% of the retail price – a typical retail mark-up for the craft sector »<sup>5</sup>.

- Finally, the published research helps to realize that tourism is a major source of income in Tanzania compared to other countries. And this is especially true in the Kilimanjaro area. « Climbing Mount Kilimanjaro is more pro-poor than visiting the Northern Safari Circuit in terms of the percentage of in-country spending that reaches the poor (28% and 18% respectively). The total pro-poor impact of Kilimanjaro (US\$13million) is dwarfed simply by the numbers of tourists who go on safari in Northern Tanzania (US\$103million). The implications of this are that, if the aim is to use tourism to help lift people out of poverty at scale, then mainstream tourism should be the primary target for pro-poor interventions. A small, incremental change in the distribution of benefits in a large tourist flow can have a larger pro-poor impact than a large change in a niche tourist product ».<sup>6</sup>



But these results are for tourism safaris and climbing Mount Kilimanjaro, which does not truly understand the linkages between the tourism revenues and those of agricultural production in rural areas. That is why we had to conduct a qualitative study that integrates the various rural / urban dimensions at the level of mobility and income levels. It is therefore necessary to look specifically at what comes under the category of "Cultural Tourism" to understand how small farmers are trying to supplement their income through tourism.

## 2. The importance of "cultural tourism" as providing an income supplement within the coffee value chain: the renewal of rural / urban relationships

What the authorities and local tourism players call "cultural tourism" is one of the strongest recent dynamics of these years in the Kilimanjaro area. « Clearly, the development of these significant and increasingly widespread local sources of revenue holds important implications for

<sup>5</sup> MITCHELL J., KEANE J., LAIDLAW J., 2009, *Making success work for the poor: Package tourism in Northern Tanzania. Final report*. Overseas Development Institute

<sup>6</sup> MITCHELL J., KEANE J., LAIDLAW J., 2009, *Making success work for the poor: Package tourism in Northern Tanzania. Final report*. Overseas Development Institute

rural development and poverty alleviation. The income from tourism represents a growing source of economic »<sup>7</sup>. Several interviewees consider that "without tourism, there is no life for Chagga in Kilimanjaro."

The structuring of a cultural tourism offer must be linked with the rise of the concept of "sustainable tourism", designed as a repository of collective action. Sustainable tourism is not a practice which one can assess the reality: E. Rodary considers that it is primarily a "political objective of changing power relations that characterize the tourism system today in Suds ". This leads him to do "the hypothesis that diversification is the element that would establish this sustainability" (Rodary 2010).

There is little scientific research on "Cultural Tourism" in northern Tanzania. A significant contribution was made in 2003 and can be the basis for our thinking. AKUNAAY (and others) then spoke of "*community-based tourism (CBT) [which] refers to tourism that involves local communities, occurs on their lands, and is based on their cultural attractions and the natural assets found in their areas*".

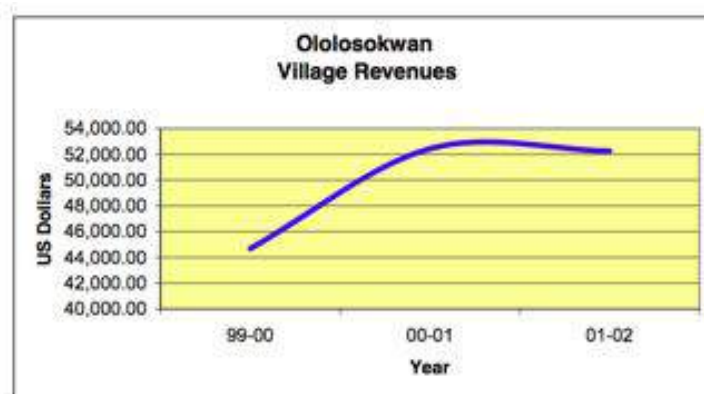


Figure 1: Income to Ololosokwan village, in Arusha region from payments by companies using areas set aside for tourism and wildlife. (Source: Wildlife Working Group)

Unlike publications on tourism safaris and ascents, the work of AKUNAAY and others help us to better understand the sources of income that can bring tourism to rural communities: « *CBT represents a diversification of the tourism product by integrating nature-based and cultural attractions. For example, Longido village in Monduli District, Arusha region participates in the Cultural Tourism Programme<sup>1</sup>, which includes activities such as mountain climbing, visits to markets and Maasai homesteads. The number of tourists visiting Longido has grown from only 25 in 1995 to nearly 600 in 2000, when the village earned over US\$11,000 from these activities* ».<sup>8</sup>

Working on the diversification of income in the coffee sector in Marangu questions the mutations of a resource system based on agricultural products to the integration of income from tourism. « *Diversification for rural communities and a form of economic empowerment,*

<sup>7</sup> AKUNAAY M., NELSON F., SINGLETON E., 2003, *Community Based Tourism in Tanzania: Potential and Perils in Practice*, Second Peace Through Tourism Conference 7th – 12th December, 2003, Dar es Salaam, Tanzania

<sup>8</sup> AKUNAAY M., NELSON F., SINGLETON E., 2003, *Community Based Tourism in Tanzania: Potential and Perils in Practice*, Second Peace Through Tourism Conference 7th – 12th December, 2003, Dar es Salaam, Tanzania

providing a direct implementation of the aims of government documents such as the Rural Development Strategy »<sup>9</sup>.

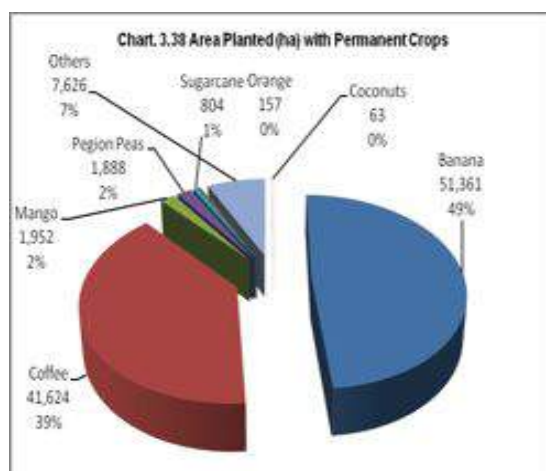
Two major types of factors must be taken into account to understand the evolution of the resources system:

- Changes in the coffee sector: lower prices and production
- The development of the tourism industry: diversification of models and creations of new resources

To that end, we will analyze the coffee sector as a whole, trying to identify the articulation of agricultural production to tourism revenues, at each level.

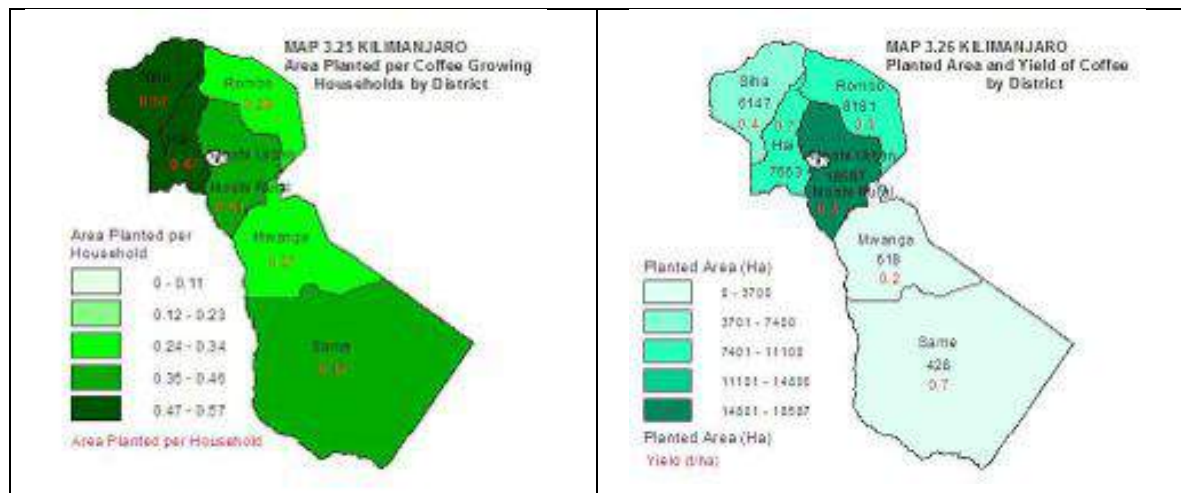
- ***Diversification of coffee income: an obligation for the small producers***

As for small producers the crisis in the sector continues to be very present, they can no longer rely on coffee as a unique resource and now always associated with other agricultural crops: bananas but also tomatoes, peas, etc. Worse, most of them have gradually been led to totally replace coffee earnings by other resources. Coffee is not an indispensable resource for small producers, not by choice but by necessity: the prices but also the production are too low and too irregular to be able to rely on it. Small producers nevertheless continue to maintain their coffee trees on their land. This allows them to be able to draw casual and irregular income when production is particularly good or when market prices are exceptionally interesting. These casual incomes are always used in the same way by small producers: they help to finance the education of children or used to buy clothes, shoes, etc. Coffee revenues are not reinvested in the farm. This seems all the more topical that by continuing to focus on selling their products to large Moshi cooperatives, small coffee producers do not directly invest themselves in the search for new markets and organizational innovation. Their role is limited to that of production (although most of them consider that they would need most today is marketing).



<sup>9</sup> AKUNAAY M., NELSON F., SINGLETON E., 2003, *Community Based Tourism in Tanzania: Potential and Perils in Practice*, Second Peace Through Tourism Conference 7th – 12th December, 2003, Dar es Salaam, Tanzania





- ***The weakness of direct sales in local markets***

Few are coffee producers who also mastered the sale of their product. It seems to print some disconnection between food crops sales outlets and coffee sale. There are very few sales outlets in rural areas. In local markets, which multiply and are the signs of the vitality of agriculture in the Chagga peasantry and the development of mobility, coffee is almost absent. The sale continues to be overwhelmingly via KNCU cooperative, even if some farmers could sell directly to private companies (through agents who are base in the mountain area). We never met coffee farmers who sell their produce directly in local markets. The few encountered retailers (in Moshi market) are not producers: they buy coffee directly from the primary cooperatives. One would think they could buy directly from small producers too. This confirms 1 / limitations in mobility; 2 / the purchasing monopoly of KNCU and private companies. A retailer installed in the market Moshi explains it buys coffee at a price of 6000 SCH / Kg from the cooperative, and resells it at 7000 SCH / Kg. The coffee is modestly packaged in small plastic bags of 4 different sizes: the gain is largely performed on the complete lack of packaging and the absence of large formats. Stakeholders of this trade are almost exclusively Tanzanian and local (Moshi). The argument usually presented by this type of shopping is qualitative: it is "the better coffee you can find here", better than the coffee exported in pretty bags whose quality is impossible to verify. Coffee retailers installed in the markets do not necessarily link with the production: they sell a commodity bought wholesalers. They represent an infinitely marginal share of coffee revenues.

Some coffee farmers have diversified their income by shifting to tourism industry. What combination of these two sectors and what are the profiles of the producers concerned?



« Selling coffee in local urban market (Moshi Town) » © R.Bénos / B.Thibaut

- ***In rural areas, youths from coffee producing families want to work in tourism***

Small coffee producers who are turning to tourism are not necessarily the poorest or the most affected by the crisis in the sector. Developing a tourist activity is not considered as an obligation for them, but rather a chance. Our investigations reveal how coffee is now frowned upon by Chagga: it is an agricultural production associated with decline, uncertainty in the past. Young people in rural areas do not absolutely identify themselves with coffee and do not want to do it even if they can develop the production. Conversely, tourism is seen as a dynamic, modern, Western activity. The work is less painful, less physically demanding. If tourism is a chance for them, few small producers are directly engaged in tourism activities. It is mainly young people who benefit from tourism. In the area of Marangu, it is estimated that more than 2/3 of men younger than 35 years work as guides and porters on the ascent of Kilimanjaro. Similarly, young women find employment in cleaning and maintenance occupations (maid, cleaning) of tourist accommodation facilities around Marangu (hotels, lodges). These individuals are usually from family producers but they do not work themselves in the family plot. They seek income from outside.



« Young guides and porters are waiting for Killimanjaro climbing » © R.Bénos / B.Thibaut



- ***The small coffee producers who benefit from « unwarranted earnings»***

Some small producers manage to take advantage of tourism directly. For example they value their land by promoting natural (including waterfalls) or cultural (Chagga caves for example) curiosities present on their property. These sites are key elements of the «cultural tourism" offer in Marangu area. International tour operators exploit this tourist offer very much. Today, the sites of "cultural tourism" are increasing thanks to the improvement of road access in rural areas. Data on cultural tourism sites are scarce and unreliable. The analysis of several notebooks of these sites shows that attendance is highly concentrated in time and space. It can reach 10,000 visitors a year in the case of Chagga caves near Marangu. Producers who are lucky to have such resources on their land are rare, but their role is very important. Other jobs are created around these sites, as independent guides' job for young men. These small producers have completely abandoned the production of coffee and now depend on tourism revenues. In most of these cases, tourism revenues replace coffee (it is actually quite rare that tourism revenues are only a supplement to those of coffee).



« Visitor's Book of Chaggas Caves » © R.Bénos / B.Thibaut

- ***The touristic valorisation of the "Chagga lifestyle" as an additional income for coffee producers***

Other producers have directly developed an offer of "cultural tourism" based on the lifestyles of the Chagga peasantry. This seems particularly interesting to incorporate this activity into the value chain analysis of the coffee sector. We will see later that coffee is now a widely mobilized marketing emblem, which demonstrates its attractiveness to foreigners (Western particular). For small producers, the objective is to welcome visitors to their homes to show them the Chagga specific expertise, organization of the habitat, gastronomy, etc. Their strategies are manifold to bring tourists to them. Some develop this activity in close proximity to cultural tourism sites such as waterfalls, caves. Tourists spending in front of them are solicited and tourism revenues are thus dependent on the attractiveness of natural / located on neighbouring plots, which does not belong to them. Others are involved in this activity with the support of the government's valuation of "cultural tourism". They do not operate on a "captive" audience, passage. They are groups of persons who have booked and

with whom they have designed a customized service. This is the case of "Mamba and Marangu Cultural Tourism", initiated in 1990 and supported by a community of 4 people and supported by the government program for the TTC. In general, local tours-operators integrate them into their tours. Other profiles of Cultural Tourism community exist around Marangu. For all of them, the relation to coffee seems relatively ambiguous. On the one hand, it is at the heart of their tourism offer: they show the farm and the various productions, they extensively emphasize on coffee (the most important in their speech), on traditional technics to roast and dry it a then the grilling, grinding, etc. But on the other hand, most of them have completely abandoned their coffee trees and no one expect something about coffee production. These reflections fuel the idea of a decoupling between the actual coffee production and its growing importance in terms of image for the tourist attractiveness of the area.

These considerations fuel the idea of a decoupling between the actual coffee production and its growing importance in terms of image for the tourist attractiveness of the area.



« Mamba and Marangu Cultural Tourism Programme » © R.Bénos / B.Thibaut

- ***Investment in cultural-oriented touristic infrastructures by businessmen within their family coffee farms***

Among those who control the land (property), the most important signs of tourist development is the number of different hotels / lodges that have been built over the last fifteen years (Mountain Resort in 2003, Banana Lodges in 2000, Babylon Lodges in 1998, etc.). They are usually of high standing. They work with tour operators in Arusha, which are not necessarily Tanzanians. These hotels / lodges are the main destination for foreign tourists. But they also work with local or national tourism in the form of business seminars (a growing activity in the Kilimanjaro region) and family celebrations receptions of the affluent (weddings, birthdays, etc.).



« Kilimanjaro Mountain Resort » © R.Bénos / B.Thibaut

These facilities are generally newer and built on the properties of one of the family members, a son / brother (male) having been particularly successful in the business world, Tanzania or Kenya, but also in Europe. In general, the owner does not live on site and continues its business in Arusha or Dar (or abroad). He left his siblings care to run the business. Incomes from tourism supplements return directly into the daily life of his own family remained on the family farm. This is a strictly patrimonial logic that dominates so. The development of tourist business for creating new resources is very important in the case of large resorts. But it also allows people to continue the exploitation of the land, plantations. Some of these investors continue to be important coffee producers.



« Chagga Live Museum in Kilimanjaro Mountain Resort » © R.Bénos / B.Thibaut



Finally, it will be noted that in the resorts / lodges are found the only "museums" in honor of the traditional lifestyles Chagga: habitats, tools, expertise etc. The owners have invested in these high class accommodation facilities where visitors want to come not only for sleeping or swimming in the pool of the hotel. That is why these museums are located in the grounds of the venue. They are additional sources of income (entrance fee), and also can accommodate schools, students, and tourists mingle. They become showcases for Chagga, long remained by tourists in favor of the Maasai.

- ***When the coffee sector capture the urban trend toward tourism: the case of coffee shops***

Moshi town is experiencing an original and important dynamic: that of the proliferation of coffee shops. To what extent can they be a source of new revenue for the coffee industry? And can industry players benefit from them?

In 1994, the first coffee shop opened in Moshi, in the city center near the bus station and the market. He wears an eponymous name ("Coffee Shop"), proof that there was no need of differentiation at that time. The Coffee Shop sells about 30,000 packets of coffee per year, mainly to tourists. Its director-manager, a lady, played an important role in promoting coffee to the tourists. Noting that in her shop several tourists bought cloth bags Masaai and Coffee distinctly, she somehow "invented" in 1996 "Maasai" packaging to the delight of the tourists today. She went straight to meet the "mama"(married women) communities which produce tissue, so that they organized production directly for coffee sachets. This pioneering structure is now developing commercial relationships with cultural tourism structures in Machame. Therefore, the small coffee producers are progressively integrated into a dynamic that associates them with tour operators located in town, Moshi, and in rural areas, Machame.



There are now a dozen coffee shops in the town of Moshi. This number is remarkable, considering that local people do not practically consume coffee. Our investigation led us to the detailed analysis of different owners, concepts of each store, networks of actors in which they are integrated. We also analyze the type of clientele accustomed to these places. These coffees are designed for tourists and upper class that does business (business class). The owners of coffee shops are not always Chagga. These are primarily investors who are launching their first Moshi Coffee Shop, before going to other places like Arusha, Dar Es Salaam, Zanzibar. This is a phenomenon indicative of the "modern» image the business attributes to coffee in Tanzania today. It also shows that, beyond the production itself (and its peasantry), coffee is a global challenge for the country and the private sector.



« Kilimanjaro Coffee Shop Lodge » © R.Bénos / B.Thibaut

The rise of the actors in the coffee sector in the tourism economy is a strong trend that is just beginning. As such, it is significant that, in 2010, KNCU itself has opened the Union Coffee Shop, in a symbolic and historical building in Moshi. This structure employs 19 people and allows them to sell 60 kg of coffee per day (250 customers in average). This is a new market for the cooperative, so for small producers. KNCU plans to open two similar bars in Moshi, next to the University and to the Coffee Board where one can find the most modern business of the city. The opening of other coffee shops is also planned in Arusha and Dar Es Salaam. KNCU differs from other coffee shops in its historical legitimacy and the fact that it delivers exactly the same coffee than the one it exports. A "Tourism Department" has been mounted in parallel in 2012 to organize "Coffee Tours" and to bring tourists from the city to small farmers in rural areas. The strategy of "Tourism Department" of KNCU is to become a real tourist operator shortly, which means a tour operator that organizes itself articulation between safaris, the climbing of Kilimanjaro and the discovery of coffee as a "cultural heritage".



« KNCU Union Café » © R.Bénos / B.Thibaut

- ***The symbolic capital of coffee as a resource for the tourism industry***

At the Kilimanjaro Airport arrival area, souvenirs (curios) shops reflect the importance of tourism in this region of Tanzania. In the streets of Arusha or Moshi, Curios Shops, as they are called, are multiplying. It seems interesting to us to conclude by analyzing some products sold to tourists in these shops. Indeed, all Curios Shop - without exception - sell coffee, alongside statues, jewellery, clothing and other sunglasses "Made in Tanzania". The first Curio Shop in Moshi dates from 1970. At that time, this shop opens to tourism are emerging in the grounds of the KNCU building, close to the Coffee Board. This is a strong symbol: the main actor in the coffee sector, bringing together tens of thousands of small producers, was the first to open a shop to tourists. At that time, the owner of the store was proud to be enthroned amid the aisles of the most prestigious and the highest building in the city. Today, the building has aged, it is almost deserted, and the store is struggling to be visible unlike his ten of competitors directly overlooking the adjacent busy streets.

The example of "Maasai" coffee packs is quite interesting. From the perspective of a symbolic resource, coffee has gradually become a powerful image identifying Tanzania (along with Masaai, large animals, Kilimanjaro) and the combination of several of them will constitute an important resource based on the representation of the territory. In this regard, there is no doubt that coffee is now a resource mobilized by very different actors, but above all for the upper classes. As usual, the "identity" and "heritage" gain for the coffee value chain seems relatively inaccessible to small producers. It is the leaders who choose what must be said about the territory through the images and the words found on packages, labels, postcards, etc. The heritage is a matter of visibility and space.



« Tourism coffee » © R.Bénos / B.Thibaut

Conversely, there may be a total absence of the coffee image on the products traditionally sold to tourists as well as Curios Shop by street vendors. As such, it is quite interesting to note that coffee is absolutely not represented in the *tinga tinga*, these Tanzanian paintings produced throughout the country for tourists. Large animals (Big Five), Kilimanjaro, Maasai and the fishermen are the four entities represented by the artists on their canvas. Coffee is considered as one of the «identifying image" of the territory. Throughout our investigation, we found only one painting of coffee cherries eaten by a bird of the region: but the picture highlights the bird and coffee remains just a simple support.



« Tanzanian Tinga Tinga Paints of bird's coffee » © R.Bénos / B.Thibaut

## **MOBILITY**

KEY NOTION	DIMENSION	COMPONENTS
Continuous area of movement	Land problem	Land scarcity
		renting
		Contract farming
	Agricultural transformation	Diversification
		Intensification
		Labelling, certification
		Integration into the market
	Livelihood diversification and sustainability	Business
		Rural tourism
		Off farm jobs
	Mobility	Transport network
		Multi locality
		commuting
	Interconnectivity / Flows	Use of mobile phone
		Family solidarity

In the northern corridor, rural-urban mobility in order to improve the rural livelihood has become increasingly important, which is confirmed by the study carried out in Marangu area.

The demographic growth of the Chagga people put considerable pressure on land resources on the slopes of the highest mountain of the African continent. Until the end of the 1990s, all districts were concerned with high annual growth (> 2%/an). However, the highest densities are found in the South and East of the mountain. Thus, the Moshi Rural district has densities greater than 250 persons per km<sup>2</sup> (Mbonile, 2003). The durability of a strong in situ demographic pressure, until now, is explained by the high mobility of people, between the mountain and the plains near and far, between the countryside and the city and finally, between the “local” and the “national”, or even the “international”.

What currently characterizes mountain rural societies, specifically Marangu area, is the construction of new systems of resources, in order to meet the households’ needs, farm incomes generated by the traditional association coffee/bananas being no longer sufficient, especially for the smallholders. Thus, on Marangu site, the development of tourist activities on the initiative of individuals, families or village communities seems to take a significant part in the searching for sources of additional income. If traditional tourist activities (climbing, National park...) are still in place, new forms of tourism development, for national but especially international tourists who have substantial incomes, are in progress; they are based on the existence of a strong rural identity amongst those who want to develop this kind of initiatives. Mobility is facilitated by the improvement of communications infrastructure (tarmac road), as well as of the diversity of the means of transport (bicycle, motorcycle, Boda Boda, bus...) as reflected by the importance of bus stations in urban centres, like Moshi. The use of mobile phone, internet... also contributes to build new relationships with the external environment: rural people are now connected to the city and to the world.

Whatever the types of mobility, we have seen the permanence of family ties (between those who remain on-site and those who leave), or even their revitalization through the current construction of the new systems of resources.



The 25 small-holders survey shows a great diversity of situations, of types of mobility, of concerned people, as well as of the duration of these movements.

Three major types of mobility seem to be distinguished, according to the distance, the type of transport and the income level of households, which actually means the capacity (physical but also intellectual) to invest.

### 1. Short distance mobility

This kind of mobility reflects the smallholders' daily commuting and concerns all members of the household, except for the elders; it can refer:

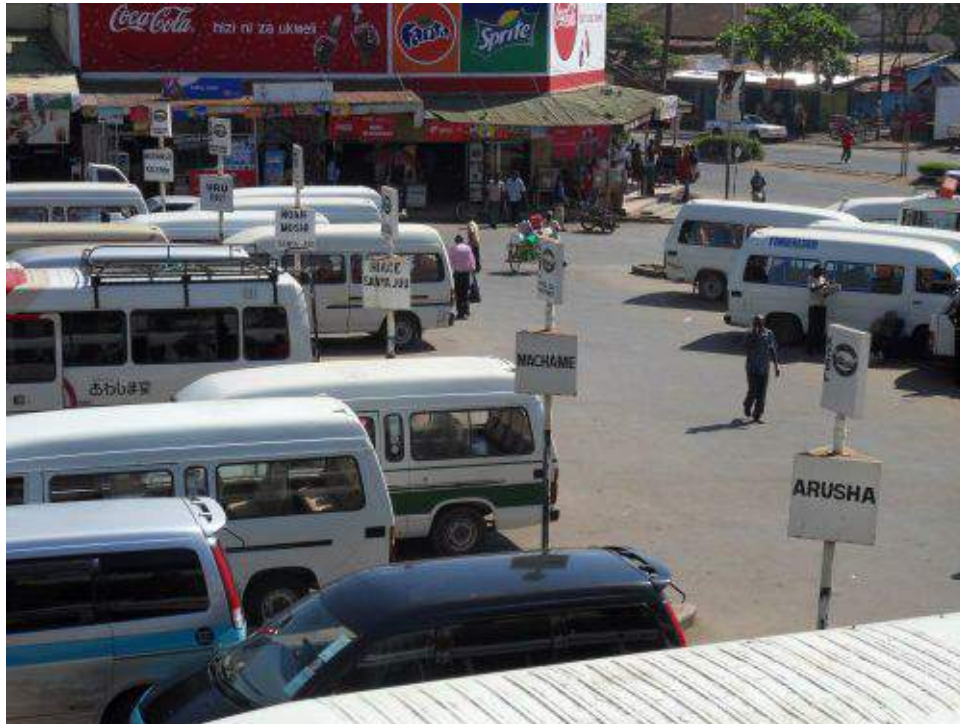
- **to rural/rural relationships**, at the local level:
  - Men and women move according to the location of fields, particularly when they have plots on the slope of the mountain and additional plots in the plains downstream. Whether by foot, bicycle or motorcycle, the trip is operated once daily and takes half a day.
  - Children who are enrolled in local elementary schools, move daily mainly by foot.
- **to rural/urban movements** in order to go to the market selling and buying agricultural or domestic products. These movements take place twice a week, and, given the heavy weight of the loads to be carried, rely on collective means of transport (mainly minibus *dala dala*, 90%), the most affluent households using motorcycles or cars.



© R.Bénos / B.Thibaut

This mobility concerns men and women in each household; moving generally occupies the entire day to reach the markets like the one of Moshi (role of the bus station). This type of mobility depends on the accessibility of the main roads, along which the agricultural

products can also be put on sale in the small urban centers especially those located at the crossroads, like Himo (Marangu road/main road of the northern corridor).



Moshi bus station

## 2. Medium distance mobility

This category of mobility is the most difficult to be observed as so many different cases can be found. The distances are longer than those linking different rural areas or rural areas to the nearest small urban centers. This mobility has a regional but also a national dimension. The time scale also varies significantly. But, in all cases, the level of households' livelihood regulates this type of mobility.

- ***Mobility of children and young adults going to school: rural/urban mobility***

Many of our respondents (average income households) have told us that their children follow their curriculum in the nearby regional cities, Moshi or Arusha. They stay there for several months and come back only for holidays.

Continuing education is often related to tourism (Hotel School of Arusha for example); then the choice of school direction is linked to the interest in intensifying tourism activities in the country of origin, like in Marangu area. The transport used during the AR between city and countryside are mainly collective (bus).

- ***Mobility of young adults looking for a job.***

In the hotels of Marangu area, many employees have undertaken temporary work migration under an *urban/rural* or *rural/rural* mobility. The most frequently cited region of migrant's origin is Mwanza, closed to the Victoria Lake, which means this mobility is interregional. Even

if it is not a permanent migration (the wish to go back to the region of origin is very often mentioned), the duration of migration is quite long: many years without returning to the family home. It should be noted that the level of education of these people, mainly young adults, men and women, is relatively high: tourism studies were often mentioned.

Young adults try to find job opportunities in town: activities in connection with trekking in Kilimanjaro Mountain are especially attractive, although they request a physical commitment and remain low income-generating. These potential jobs are the source of diversified types of mobility between towns and countryside. Two main cases can be distinguished:

- During the tourist season (June/Oct., Dec./Feb.) rural-urban movements are frequent, several times a week according to the needs of the trekking agencies. Young adults with a low level of education generally use the less expansive means of transport as the expected revenues are quite low.
- During the off-season, when the climbers are very few, many young adults return to their village of origin (*urban/rural* mobility) because it is too expensive to live in town, like in Moshi.

This *rural/urban* mobility can also involve women going to town, looking for low-skilled work in hotels and restaurants. Contrary to the young men, the women have a more regular return trip between city (Moshi) and country (Marangu area) to join the family unit. Public transport is the most common type of travel.

- ***Rural/Urban mobility for coffee selling in Moshi***

This mobility concerns all the producers of coffee. This mobility is not regular and so the frequency is very difficult to be appreciated.

### **3. Long-distance mobility**

This type of mobility involves a small part of the households surveyed (5%) because a very high level of income and education is requested. This concerns families whose all the children have gone out to settle elsewhere: in the main regional cities (Arusha), but more often in the country's economic capital Dar es Salaam; some of the children also reside outside.

Settlement far away from the place of origin is permanent and could be quite old (several decades). However, links with the land of the ancestors are preserved, as elderly parents remained in the family home.

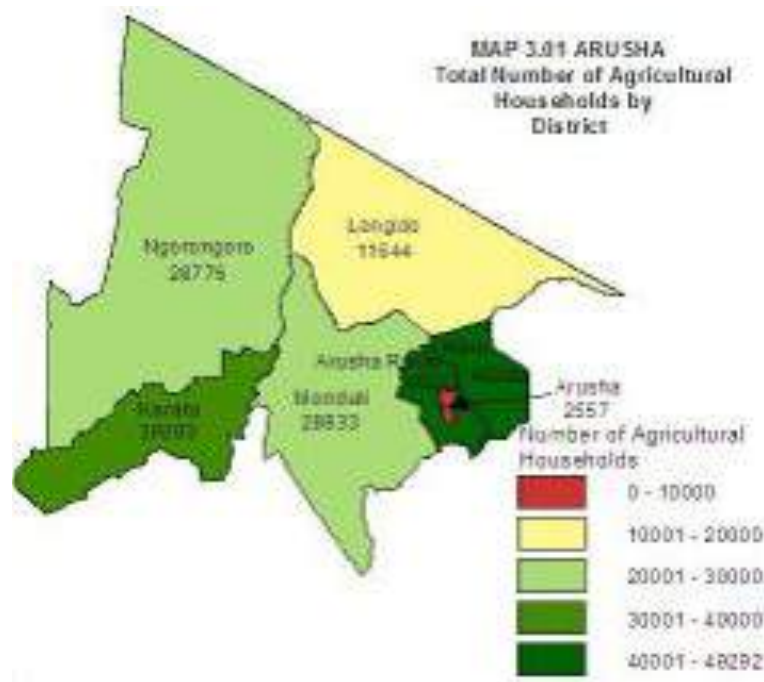
The family land is never sold. The land use can change, giving rise to new mobility. In many families, one of the children (a son) supervises the proper management of the farm. He may stay on-site but sometimes he may live far away, in Dar es Salaam for example. In these very well educated families, mobility is directly linked to the investments made on the family farm; investments that have been multiplied during the recent years. Thus, the survey shows that children residing in Dar es Salaam or abroad have started to build new hosting infrastructure, for the needs of the national and international tourism industry. The standing of these buildings is directly correlated to the capacity of investment; that is why small and cheap bungalows stand along high-standing lodges. Local museums are often associated to these hotels, in order to valorise the history and the traditional management of the Chagga farms and territories. This new way to optimize the Chagga land therefore introduces new forms of mobility. Trips are

irregular (according to the needs of the management); they are over very long distances (at national and international level) and they use the most rapid means of transport, then the more expensive (private 4 x 4 car with driver...). The proximity to the international airport contributes to the development of this type of mobility.

Finally, this long-distance mobility, often at the international level (the survey indicates children settled in Australia or in Holland, for example), occurs also when large families gather at the family farm, once a year during the festivities of Christmas or during more casual ceremonies (marriage and death).

The last decade shows a net increase of medium and long distance mobility due to a high degree of interest in the development of tourism activities, which are related to identity development. In this area, urban/rural interconnections have multiplied, through a greater valorization of rural handicraft production in the city and the construction of hotels owned by Chagga people. The tarmacked road that now connects the main road downstream to Marangu and, beyond, to the gate of the National Park of Kilimanjaro, seems to drive the renewal of the urban/rural relationships and therefore of the mobility.

## Report on Monduli site



### MAASAI LIVELIHOODS STUDY METHODOLOGY (JOSEPH LUKUMAY)

#### Design of the Study

In order to gain a deep understanding on the Maasai livelihoods and the livelihood diversification process which is taking place among the Maasai, this study adopted a descriptive case study research design, which involved both qualitative and quantitative data collected during the study period.

Stage one involved the preparations for data collection. This involved first the development of the analytical frame work to be used (with the main concepts, dimensions and variables) and later, the development of data collection tools. These included questionnaires, observation and interview guides. The questions on the developed data collection tools were then coded on the SPSS data base, and the process of acquiring the research permit was initiated.

Stage two started with testing and making the necessary adjustments on the data collection tools and the developed SPSS data base. Then the followed the process of identifying the specific locations/sites within the study area (Monduli District) where the data will be collected, and decision making process on who should be the respondents and how should they be identified. The stage also involved hiring of research assistants, training and familiarizing the research assistants on the objectives of the research, the data collection methods and the tools to be used in the collection of the data.

Stage three was the actual data collection process, which was preceded visiting the administrative office in each study village and introduce ourselves and the purpose of being there. The self-introduction process was carried out in each selected study village.

Stage four of the study involved analysis of the data collected and writing of the thesis.

### **Choice of the Study Area**

The study was about the Livelihoods of the Maasai people. Hence it was logical to choose a site whose majority of inhabitants are Maasai, and Monduli District is one of them. Other districts which are also considered as Maasai districts (due to the majority of its inhabitants being Maasai) are Ngorongoro, Kiteto, Simanjiro, Longido, and Loliondo. However, Monduli District was specifically chosen due to its proximity to Arusha city, as the study believe that rural livelihoods can be influenced by neighboring Urban centers, towns and cities, especially through the flow of goods, materials and people between the two (the rural and neighboring urban area). Monduli town is 40km North-West of Arusha city.

Although Monduli district has a total of 39 villages, only 7 of them were chosen as the study villages. These are Makuyuni, Mbuyuni, Meserani Juu, Migombani, Mswakini Juu, Naiti and Selela Villages. Factors like accessibility of the village (especially by public transport), composition of its inhabitants, composition of livelihood and economic activities in the village were considered in choosing the listed villages.

### **Area of the Study : Monduli District**



### **Location and size**

Monduli is one of the five districts of Arusha region, with most of its inhabitants being the pastoralist Maasai. It is bordered to the North by Longido district, to the East by Kilimanjaro region and Arumeru district, to the South by Manyara region, and to the west by Ngorongoro and Karatu districts. It has a semi-arid climate, with average annual rainfall of 500-900mm. It covers an area of about 6,419 square kilometers.



### ***Socio-economic characteristics***

The economic activities in Monduli are rapidly changing from pure pastoralism to Agro-pastoralism. Increasing cultivation on grazing land and changes in land tenure from communal to individual ownership is forcing the natives (Maasai) to abandon their traditional economic activities of pure pastoralism and embark on the new ones. These include practicing agro-pastoralism, engaging in business and others migrate with their cattle to other places with bigger and favorable grazing lands like Handeni in Tanga region and Kilosa in Morogoro. Others opt to migrate to cities in search of wage employments. Tourism is also practiced in the district but the industry is heavily dominated by foreign investors and a few rich and elites natives who own camp-sites, hunting blocks and cultural tourism canterers. Few Maasai are employed as drivers, tour guides, watchmen and cooks in the tours companies, hotels and campsites. Others opted to establish and run own cultural tourism centres along the roads leading to the National Parks and display their culture for the tourists to see after paying the entrance fees. Within such cultural centres, the Maasai also sell various traditional handmade items and decorations to the tourists. They can also perform traditional dances and pose for photos for the tourists but for money.

### ***Population***

Monduli has a population of 111,163 with an annual population growth rate of 3.9 percent (Tanzania Population and Housing Census, 2012).

### ***Population of the Study***

Although Tanzania has conducted 5 national censuses since independence (1967, 1978, 1988 and 2002), the last time that ethnic group totals were published was the 1967 census. A total of 79,649 Maasai were recorded in 1967. Thus it has been not possible to estimate accurately how many Maasai are in Tanzania currently, let alone estimating the number of Maasai only in Monduli District. The Tanzania Population and Housing Census of 2012 database does not display information about villages populations. Therefore, it is difficult to know the total population of the 7 villages which the study was carried out.

### **Sample and sampling procedure**

218 general questionnaires were administered in the 7 villages, 20 specific (for migrants) questionnaires were administered at Meserani market, and a special (for persons aged 50 years and above) Focused Group Discussion was conducted at Makuyuni village, which comprised of 25 participants. Therefore, total formally interviewed respondents sum to 263.

The study used various sampling techniques to select the respondents to be interviewed. These include both probability and non-probability sampling techniques.

- **Probability sampling**

Adam (2005) defines probability sampling as a type of sampling in which a probability of selecting an item is attached to each member of the population. This type of sampling includes; simple random sampling, systematic random sampling and stratified random sampling. This study specifically used the simple random sampling technique.

- **Simple random sampling**

All the 218 respondents were chosen at random in the 7 villages. This makes an average of 31 respondents per village.

- **Non Probability Sampling**

Adam (2005) defines non probability sampling as the one which does not afford any bias for estimating the probability that each item in the population has a chance of being included in the sample. Under the non-probability sampling, this study specifically used Snow ball sampling and Purposive sampling to get the respondents.

- *Snow ball sampling*

This method was used to get the respondents who were migrants at Meserani market. It had to be the case since it was difficult for the researcher to know who is a migrant in the area who is a native. After identifying and interviewing one migrant, he volunteered to give leading information about who else is a migrant in the area. The same technique (asking who else is a migrant here?) was repeated for every interviewed migrant. As will be explained in the following section, this method was not easy to use (sometimes led to the wrong respondent or the respondent denying knowing any other migrant). Despite the difficulties encountered, a total of 20 migrants were identified and interviewed.

- *Purposive sampling*

This method was used after all the questionnaires were filled, and preliminary analysis of data was done. It was realized that, very few respondents had information on the livelihoods of the Maasai before 1980's (the adopted bench-mark year for analyzing changes of livelihoods of the Maasai) mainly due to their young ages by then and some were not even born yet.

To solve the problem, the researcher decided that, the right persons to have information of Maasai livelihoods in 1980's should be Maasai who were at least 16 years old by the year 1980. A person who was 16 years old by the year 1980 must be 50 years old by the year 2014 (the year when the research was conducted). Therefore, the age criterion was used to choose the right respondents to provide the required information (purposive sampling).

With this method, 25 respondents (18 males and 7 females) were identified and interviewed in Focused Group Discussions (one for Males only and one comprised of Women only) conducted at Makuyuni village.



**Meserani Market**



## **Data Collection Techniques**

- **Questionnaires**

White (2002) defines a questionnaire as a series of questions, each one providing a number of alternative answers from which the respondents can choose.

In this study, two different types of questionnaires were used; one for the general respondents in the 7 interview villages, and one for the migrants at Meserani market area. Although the questionnaires were intended to be self-administered, due to illiteracy reasons (and for purpose of clarifying unclear questions to the respondents), the research assistants were reading the questions and the anticipated answers to the respondents, who were required to choose the correct answer for them.

- **Focused Group Discussion**

This method was used when interviewing the elders (50 years and above) at Makuyuni as questionnaires were seen inadequate in soliciting the required information. The main aim of the Focused Group Discussion was to know the livelihoods of the Maasai before and up to 1980s, and compare with the current livelihoods. The information required included; livelihood sources and activities, modes of pastoralism and production in general, what were the resources by then (how they were acquired and shared at the household and community level), problems and challenges faced, opportunities which were present, etc. therefore, all the asked questions were open ended and each participant had a chance to contribute to the answers of the question. Some answers to some question led to new questions.

All the discussions were being recorded using a voice recorder and were later transcribed and analyzed. The language used during the discussion was “Maa”, the language of Maasai people. Therefore, prior to the discussions, the main/leading questions were translated to “Maa” language. After the transcriptions, the answers were translated to English to fit into the SPSS data base and analyzed.



***Makuyuni***

- Documentary Reviews

The study utilized both primary and secondary data. Secondary data were collected from various reviewed literatures (books, journals, reports, papers, dissertations, policies, Census reports and reports from various departments of Monduli district council) related to Maasai livelihoods and diversifications, districts information, populations migrations and various development programs and projects.

On the other hand, Primary data were collected from the questionnaires and the conducted Focused Group Discussions.

- Observations

Adam (2005) defines observation as a method of data collection that demands a researcher to be physically present in the field during the process of data collection.

Although the researcher did not participate physically in the interviewing process (filling of questionnaires and during the conduction of the Focused Group Discussions), he went with the research assistants to each interview sites and was doing various observations and conducting informal interviews/conversations with people who were not on the interview list on the same subject; Maasai livelihoods and diversification processes. The major issues which were being observed are the economic and livelihood activities taking place at the area. Particular attention was paid to the question “who was doing what and why?”

### **Administration of Research Instruments**

The questionnaires were originally planned to be filled by the respondents themselves but due to problems of illiteracy and for the purposes of saving time, they had been filled by the interviewers after reading the question to the respondent and the respondent giving the response. In some cases, interviewers had to give narrative explanations to questions which were not clear to the respondent and in other times, the interviewers had to ask the questions in “Maasai” language (in situations where the respondents were not conversant with Kiswahili). The structured interviews (focused group discussions) were conducted when the individual interviews were over. However, the questions asked were not limited to only those listed in the interview guide. In some cases, the responses given generated new questions which were also asked. Language used during the discussions was “Maa”. The use of “Maa” language was very useful, due to the fact that participants in the Focused Group Discussions were all 50 and above years old, and the majority of them were not conversant with “Swahili” language. All the discussions were recorded using a voice recorder and later transcribed and translated to English for analysis.

### **Validation of Research Instruments**

Before going to the field, the questionnaires were developed and translated to Kiswahili. There after followed a pilot study which aimed at testing the validity of the tools. Twenty copies of each set of questionnaires were produced and administered to the thirty randomly selected respondents (not only Maasai people, but people who were familiar with Maasai livelihoods) in Monduli District. The respondents were asked to fill the questionnaires first and thereafter asked to give their comments on the questionnaire (the questions asked, how they are asked, ambiguity in the questions). The comments given were incorporated in the second version of the questionnaire, which were re-

administered to some of the former respondents and asked to give their comments. The given comments were incorporated and the final version of the questionnaire was developed, and the developed SPSS database was adjusted accordingly to incorporate the changes in the final version of the questionnaires.

### **Limitation of the Study**

A lot of problems were encountered during the research. According to the Maasai it is a shame for a Man to be poor (having a small herd size or having no cattle at all), and they never count their cattle. Asking quantitative questions like how many cattle do you have was somehow embarrassing, and probably the answers given were not always true.

The age of a Man is not measured by the number of years he has, but by the age-set he belongs. This problem was tackled by using age ranges (which correspond to various age-sets of Maasai people). A problem was how to deal with the age of Women (they do not have age-sets) and they rely on the age-sets of their spouses (which does not reflect their actual ages as sometimes the age range between the husband and wife can be over 20 years).

Definition of a Household was a serious problem (who is a household member, and when does he/she cease to be a member of the household?). Parents were referring to all their children as household members (whether married or not, and whether living in the same place with them or not)! For societies like the Maasai, interpretation of a household was even more problematic. A Man lives with his wives and children in one enclosure “Boma” (but each wife has her own house and live with her young ones), grown up males of the whole “boma” live in one hut of their own and the same is true for grown up girls, with the man living also in his own hut. The married sons create their bomas close to their father’s and live with their wives and children. However, the whole family (including the bomas of married sons) is still referred as one boma. Due to that fact, the elder (the father) is considered as the Head of the whole Boma (including those of his sons). Questions about household (which were directed to the household head; the father in that case) were not correctly answered as he was including data concerning his married sons (another household head).

The same problem was faced when collecting data about acquisition and use of resources at a household. Children of the same mother were considering themselves as one family which excludes those of the other mothers, and materials and resources sharing always followed the lines of mothers (not father). The problems on definition, and the applicability of the definition in the Maasai culture forced the researcher to abandon “a household” as the unit of analysis, and adopted “individual” instead.

Problems of language were also severe but fortunately the assistants were also conversant in Maasai. However, several translations (from English to Swahili to Maa) during the data collection and from Maa to Swahili to English during the data entry and analysis laborious, difficult and probably may have caused some errors.

Accessibility to some areas was very difficult, time consuming and expensive. In addition, data concerning incomes earned especially out of businesses (shop, boda boda, cattle trade, etc.) were not easily given, due to the fear that it can be made available to the Taxes collection agents and authorities. In other places, respondents presented situations which make them look so poor, with expectations that maybe the study was a baseline survey for a donor funded project which is on the way (on the preparatory stage).

### **Delimitation of the Study**

Culture studies require longer periods of study than the time which was available for study, and other methods of data collections like “participant observations” and “ethnology” could have been more ideal than the methods adopted in this study.

Lack of accurate population of the Maasai in general, and current villages’ populations may have affected the size of the sample chosen.

Concentrating in the 7 villages in Monduli District can affect the generalization of the findings since Maasai are spread over many districts whose economic situations and opportunities differ.

However, the study assumes that the choice of the study areas (Monduli district) remain valid since they are true representation of the home areas of the Maasai. The same is true for the chosen villages of study.

The choice of the year 1980 as a boundary time between old and new times may not be very correct. However, the choice was made in the assumption that, the changes in Maasai livelihoods were accelerated by the adoption of the liberalization and Structural Adjustments Programs and policies adopted by Tanzania in early 1980’s. In addition, the correctness of the information provided about the livelihoods of Maasai before 1980’s would require longer time, more interviews with more people to prove. However, the study did not have enough of any of the requirements and therefore assume the collected information to be true.

### **AGROPASTORALISM TRANSFORMATION (10-15)**

The Colonialists restricted the Maasai into the « Maasai District » in early 1920s. By then, it comprised the current Monduli, Longido, Kiteto, Ngorongoro and Simanjiro districts, but the headquarters of the Maasai district were situated at the current Monduli district. After independence, the Maasai district was divided into the subsequent districts as listed above. However, Monduli district is still officially recognized as a Maasai district, with most of inhabitants being Maasai. The district has a population of 111,163 inhabitants. 90% of the inhabitants engage themselves with agriculture and livestock keeping activities. The district covers a land of 6,414 square kilometer, and 30% of that land is considered as agriculture land, while the remaining 70% covers forests, water bodies, and grazing land.

Traditionally Maasai used to live depending entirely on their cattle for food and other livelihood needs. Whenever they needed something which could not be provided by the cattle, they sold the cattle to buy it, or exchanged it with the item/product/service they wanted. They practice it with a high degree of resource utilisation mobility in order to respond to temporal and spatial variation in the distribution and quality of rainfall and forage (Homewood and Rodgers, 1991). However, Spear, T. and Waller, R. (1993) report that the Maasai who lost their herds (as a result of wars or natural calamities) joined farming activities around the Slopes of Mount Meru in the 18th Century. Arhem (1993) and MacGregor (2002) noted that, Maasai practiced the farming activities when their herd size was too small to support livelihood needs, and later abandoned it when the herd size resumed its size.

During the Focused Group Discussion conducted with 25 randomly selected elders (55 years old and above), 25% of the respondents reported to have been practicing both farming and pastoralism before 1980’s. However, the followed general survey which included other 218 randomly selected respondents (of different ages) revealed that about 79% of the respondents reported to be currently

doing both pastoralism and farming as their main livelihood activities. It was further found that, 99.5% of the respondents were involved with either Pastoralism or Farming or both (pastoralism and farming) as their livelihood activities.

**Note :** The study assumes that many changes in the livelihoods of people started when the African Governments (including Tanzania) started to implement the proposed Structural Adjustment Programs (SAPs) in 1980's. Therefore, the study took the year 1980 as the « bench mark » time of tracking the changes in the livelihoods of the Maasai.

The drastic increase in the number of people involved in agriculture (as compared to data in many literature and information provided by the elders) has been facilitated by the number of factors.

- Biased Government policies which put more emphasis in promoting crop farming as compared to pastoralism. For example, the District Agricultural Development Plan and Budget for the 2007/08 in Kiteto District (where the majority of the inhabitants are livestock keepers) has directed about two-thirds of its budget to support crop production. Also many policies perceive pastoralism as not the most efficient use of land, and thus, other forms of land use have always been given priority over pastoralism, leading to large areas where pastoralists had depended for their livelihoods have been given over to alternative land uses.
- State encroachment through establishment of national parks and game reserves on traditional pastoral lands, and the subsequent exclusion of pastoralists.
- Deliberate government efforts to modernise the pastoralist system through sedentarisation policies. These efforts have been executed through various ways, including the enacting laws and drafting policies to limit the movement of pastoralists and their movements. Examples include ;
  - The Agricultural Sector Development Strategy of 2001, which aim at promoting private sector driven modernisation and commercialisation of the whole agriculture sector, including the livestock sub sector by guaranteeing easy access to large parcels of land for large scale investment in agriculture. But easy access to land by large investors would mean increased ease of land alienation from local communities
  - The proposed National Livestock Policy which intends to modernize the livestock sector through extensive and sedentarised modes of livestock production and settling of pastoralists and giving titles to pastoral villages with hopes that titling will improve productivity and reduce resource conflicts with other land users. However, group ranches in Kenya proved the opposite.
  - The Land Act and Village Land Act, 1999. The Land Act categorizes land as General Land (all public land that is neither Village Land or Reserve Land, and lands that have been allocated by the government under entitlements), Village Land (all land within village areas) and Reserve Land (land set aside for special purpose in accordance with already existing laws) (Matee and Shem, 2006). The village land Act gives the president powers to transfer any are of village land to general or reserved land for public interest, and public interests include investments of national interest (*ibid*). this power has once been used to move pastoralists (Barabaig) out of their ancestral lands in Hanang district to give way for the Canadian financed wheat farm complex (NAFCO farms) (Matee and Shem, 2006). It is also likely to be used now to kick out the Maasai pastoralists out of their ancestral lands in to be used to evict 40,000 Maasai pastoralists out of their

ancestral lands (1,500 square kilometers) which has been leased to the Dubai Hunting Company (Turkana, 2014). In addition, Pastoralists' land is often considered idle, unoccupied and un-owned, which make it easy to fall into the category of general land, which makes the government to dispose it without their consent.

- The Tanzania Investment Act, 1997 has set aside 2.5 million hectares of land for prospective investors under TIC. Village authorities were asked to earmark land for that purpose, and pastoralists' land is more likely to be presented to TIC as land available for Investors as compared to land under cultivation.

These are just some of the policies which have influenced the expansion of farming in the former pasture lands by the Maasai themselves.



***Extension of farming in Monduli Juu***

The current purposes of farming activities by the Maasai are much different from the past ones. While in the past they cultivated only when the herd size was too small to cater for the food needs, farming has become the main (and in some cases the only) food source, especially for those who exited pastoralism. But apart from food needs, the farm products are serving as cash sources ; the excess food crops harvested are transformed into cash through selling. This is evident in many Maasai dominated rural markets where Maasai the main suppliers of food crops in the market.

Through the use of various techniques and equipment, they are now horticulture as well in their arid rural lands. Through the facilitation by the World Vision (Tanzania) in arid places like « Sironga » villages, individual households are being helped to dig irrigation dams, though which they can access water to irrigate various crops (but the most preferred are the fast growing and selling crops like vegetables and horticulture) throughout the year. The Organization also provides extension and

marketing services to the farmers (The project started about 3 years ago but is fast spreading within the village). Farming skills like « drip » irrigation and the use of « greenhouses » have also been introduced in the village. The Government officials at the district level are happily cooperating with the Organization to support and promote such kind of activities and what they term as modern ways of farming. The same is true for « Monduli Juu » village (a dedicated pastoralist's village) whereby women groups have been formed and are facilitated by Participatory Agriculture Development Programme (PADEP) to cultivate cabbage crop, with the aim of improving their Livelihood and financial sources. PADEP had different projects in 17 villages of Monduli, covering a population of 61,185 people. Apart from supporting community projects, it was also supporting « groups' projects ». Groups' projects included: modern and improved maize, beans and fiwi cultivation (19), improvement of goats breeds through cross-breeding the local breeds with Isiolo (14), improvement of cattle breeds through cross-breeding with Sahiwal (8), poultry (8), dairy (7) and horticulture (1).

In addition to growing food crops (whether for subsistence only or subsistence and selling the surplus), cultivation of purely cash crops has entered into Maasai lands. Introduction of JATROPHA farming in Selela and Engaruka villages are just examples. The crop is intended for production of bio-fuel, and many families, households and individuals quickly agreed to cultivate the plant after they were promised good prices and to be given the necessary inputs in-advance (of which its cost would later be deducted after the selling of the crop) by the Organization which was promoting it. However, the cultivation of the crop has not spread too many villages and individuals when the organization later failed to full fil the promises it made (inputs were provided at high prices and the buying price was lower than what most of the cultivators were expecting). The absence of alternative markets to sell the Jatropha further discouraged people to expand/continue with the cultivation.

Not many areas in Monduli District have sufficient water for irrigation agriculture. However, in places like Mto-wa-Mbu where irrigation is possible, many Maasai people are trying to buy land in such area and turn to farmers. Some have made it and continue irrigation farming in the area while keeping livestock in their home villages and some have turned to farmers stopping pastoralism. Crops being grown in such irrigable areas are mainly horticulture, bananas, vegetables and paddy.

When draught hit their home villages, the relatives and friends bring their cattle near the farms, with the aim of accessing the water and feeding on the plants' residues (after harvest). Due to the high influx of cattle, the water becomes no longer enough to irrigate the farms and conflicts arise. While it is true that conflict over the use of water (between pastoralists and farmers) existed in the area for many years, it is now taking a new shape and image. First the population in the area is increasing, leading to higher demand for water (for different uses). Second, the number of people who are opting for farming is increasing. Thirdly, formerly the conflict was labeled as between « Pastoralists Maasai » and the « Non-Maasai farmers », and the Maasai blamed the others as they did not know the value of cattle, and that is why they were denying them opportunity to water them. Currently however, the label does not work anymore, as there are also « Farmers Maasai ». In cases (Maasai Pastoralist and Maasai Farmer) fighting over the use of water, management of the conflict becomes more difficult and likely to take other shapes and dimensions like political, religious and the likes. Within the study sites, no big estates/plantations were identified. However, the size of farms owned by individuals differs because of various reasons.



Therefore one can describe the agriculture evolution in Maasai areas as follows.

- Started with temporary subsistence farming when herd size was too small to sustain livelihoods.
- Then turned to more permanent and expanded cultivation around settlement areas as a response to the sedentarization programs imposed by the government. The purpose of farming at that stage were to subsidize pastoral livelihoods sources (as restriction of movement of cattle reduced the number of herds due to shrinkage of possible grazing land and disappearance of possibilities to run away from draught and diseases in the settled areas) and to secure land from being taken by cultivators and state (as pastoralists land was seen as idle and un-owned land). However, the main crops being grown were mainly cereals and grains.
- Then followed more expanded cultivation with more crops diversity. The aim was more than just the supply of food, but also the source of finance. Surplus food crops were sold to finance other needs (formerly it was cattle which were sold to finance the extra livelihood needs). Types of crops grown depended very much on the market demands, climatic characteristics of the place being farmed, the soil quality and the available technology and skills in farming the crop. As technology and skills increase, more new types of crops are cultivated in the former grazing lands which were considered too dry to enable crop cultivation. Rain fed agriculture in such areas was too risk and unreliable. Introduction of irrigation dams, drip irrigation and greenhouses techniques are escalating cultivation in such areas. Crops grown changed from cereals and grains to more demanded, short term crops like horticulture and vegetables.
- Then came the current emerging era of cultivation of non-food crops like *Jatropha*. This is purely intended for money. The poorest individuals/families/households which exited completely (or on the way to exit) from pastoralism are easiest to attract to such farming. This is the case since already the great part of their livelihoods come either from farming (food crops) or from working for other people (either in rural or in urban areas). The incentives promised by the initiators/facilitators of such commercial farming (provision of inputs in advance and good prices after harvesting) seem to underestimate the risk they take when they grow food crops (Finance the inputs themselves at the time needed and no assurance of markets with good prices after harvesting).

Despite the evolution phases of agriculture in Maasai areas, there is strong evidence of their passion to cattle. Cattle are now used as banks: after the sales of crops, they buy cattle and later sell them to finance agriculture activities. Cattle are also kept in order to confront any emergence situation at any time of the year (especially when the crops are not ready for sale) like sickness, to finance education and the likes. On the other way, cattle feed on the crops residue after harvest. In addition to saving through cattle, they can still enjoy the other products from cattle like and manure, and when necessary, even the meat. Keeping cattle also facilitate them to claim and maintain their identity as Maasai. During the study, it over 80% of the respondents identified themselves as pastoralists, regardless of the scale of pastoralism they were carrying out. Hence, as agriculture has undergone evolution, the same applies to pastoralism. It has changed from being the main livelihood activity, to a subsidiary one due to its scale, but important especially for issues concerning identity and tradition. Cattle still serve as banks (as they used to be) and immediate and fast source of incomes in times of emergences among the agriculturalist Maasai.



## **MOBILITY (8, 9, 23)**

### **Maasai Mobility and migrations**

The Maasai are currently using migration to nearby cities as coping and survival strategies to the failing cattle economy (May, 2000). The current rural urban migration of the Maasai is the consequence of various government policies which led to the break-down of the belief that Urban areas were for Europeans and business was for the Asians (Mbonile, 1993).

(Homewood, K., Coast, E., Kiruswa, S., Serneels, S., Thomson, M. and Trench, P., 2006) observed that for pastoralists, diversification is more widespread for the poor and migration is increasingly being used as a diversification strategy. They conclude that; the confluence of these events has fueled the increasing livelihood diversification of Maasai pastoralists. (Bryceson D. F., 1990) add that, these groups are more likely to settle permanently in urban areas and increase the long-term rural-urban migration. (Mbonile, 1993) argue that, Some households may experience permanent loss of young and healthy members of the household leading to decline of agricultural production while others may gain from this departure. (Tacoli, 2002) add that; historically migration has been a key factor in shaping Africa's settlement patterns and households' livelihoods. (Wouterse, 2006) argue that the household foregoes the migrant's labor and may even finance migration in order to receive remittances later. Wouterse's views are in line with (Connell J; Dasgupta B; Laishley R; Lipton M, 1976) who argued that migration cannot be an individual decision, but that other household members are involved in it.

During the study area, it was found that apart from the rural-urban migration there are also cases rural –rural migration, which are mainly driven by shortage of land (for grazing and farming) and water. This is particularly the case of pastoralists from « Mti-Mmoja » village who are forcing themselves (with their cattle) to villages adjacent to « Manyara Ranch » and to « Kigongoni » and « Selela » Villages near « Mto-wa-mbu » in search for grazing and farming land and water for their cattle. In their home village (Mti-Mmoja) a big portion of formerly village land has been taken by the Military (Tanzania People Defense Force) for training and exercise purposes. The government promised to allocate them alternative land but so far the promise has not been full-filled. For those who have not moved to other villages, they still graze secretly (especially at nights) in the now military controlled land, although it is illegal and risk especially during the training seasons since the soldiers use live ammunitions during the trainings.



***Monduli Market***

On one of the market days at Meserani cattle market, the study tried to find out the areas of origin, age, marital status of 20 randomly selected migrants. Snow-ball technique was used to identify the migrants. The table below presents the findings.

SEX	AGE	MARITAL STATUS	AREA OF ORIGIN	YEAR OF ARRIVAL	ACTIVITY AT MESERANI	REASON FOR LEAVING HOME
M	17	Single	Makuyuni	2011	Boda	Land
M	22	Married	Musa	2011	Butcher	Land
M	20	Married	Olarash	2012	Boda	Land
M	30	Single	Ngarash	2007	Trader	No Land
F	22	Single	Lolkisale	2009	Restaurant	No Land
M	25	Married	Mswakini	2012	Watchman	No land
M	34	Single	Lashaine	2010	Butcher	No Land and cattle
F	25	Divorced	Olarash	2009	Trader	No cattle
M	19	Single	Makuyuni	2012	Trader	No cattle
M	20	Single	Olarash	2010	Commuter conductor	No cattle
M	23	Married	Lashaine	2013	Boda	No business opportunity
F	17	Single	Lolkisale	2013	Restaurant	No business opportunity
M	22	Single	Ngaramtoni	2012	Boda	No business opportunity
M	14	Single	Olarash	2013	Boda	No business opportunity
M	27	Married	Mti mmoja	2010	Butcher	No business opportunity
F	22	Widow	Mti mmoja	2009	Trader	No business opportunity
M	21	Single	Ngarash	2010	Boda	Business
M	27	Married	Monduli juu	2000	Tractor operator	Independence
M	35	Married	Ketumbeine	2003	Boda	Tough life
M	20	Married	Mti mmoja	2012	Watchman	Nothing to do at home
F	20	Divorced	Olarash	2010	Trader	Nothing to do at home

*Source: Field Survey, 2014*

As the table presents, reasons for migrating to Meserani can be summarized as follows; Land shortage (35%), business opportunities (30%), Independence (5%), tough life (5%) and nothing to do at home (10%) and no cattle (15%). It can also be noticed that, both males and females are migrating and the age range of the interviewed migrants was 14-35 years old.

However, during the analysis, it became difficult to categorize the activities being done by the migrants as the question of ownership of the activities was forgotten during the interview. For a example, a respondent who replied as working in a butcher or restaurant, is it business or employment?

Areas of origin also varied, but the majority (18) comes from different villages of Monduli, and 2 come from Longido and Arumeru districts. Years of migrating to Meserani varied also.

Meserani is one of the small growing trading/town centres which are found in Monduli District. Due to its population especially on market days, it has become a destination for many migrants, especially those who do not want to or unable to migrate to bigger towns and urban areas which are far away from their home villages. A similar concentration of migrants could also be found in other small towns like Mto wa mbu.

Big cities (Arusha, Dar es Salaam, Nairobi,..) and towns are also a destination for many Maasai migrants. The activities they do in such areas are roughly the same as those done by others in Meserani, but an employment as Watchmen is a common activity for the majority of the male migrants. In such urban areas, petty trading activities and selling of traditional herbs and Maasai beads-made decorations are among the activities preferred by female Maasai migrants.

It is a common phenomenon for the migrants to send remittances to their home areas. They also invest in various economic activities like farming, trade and buying cattle using the incomes they earn

in urban areas. Since they are absent, they heavily rely on their relatives and families to take care of the investments and activities. Other studies found that physical home visits are common among the Maasai migrants with the objectives of maintaining connections with their relatives and seeing the progress of the activities and investments they invested in.

Although Dar es salaam was not the study area, the Maasai migrants vending the traditional herbs and leather made products (shoes and belts) were found to be using mobile phones to order new stocks of the products they are selling from their home areas. News, information and money are transferred between Urban and Rural home areas through mobile phones.

With the presence of mobile phones, probably the reported frequent home visits by May (2000) has declined as communication with home areas has become easy. However, May (2000) also found that, the Maasai staying at rural areas get news and inspirations to migrate to rural urban from the home visiting migrants. With the use of mobile phones now, they do not have to wait for a home visiting migrants to get information about the urban areas, they can directly call the migrants in urban areas and get all the necessary information needed to make a decision of migrating or not.

May (2000) also found that it is mainly males who are migrating to urban areas, leaving the women back in the rural areas. Observations made in various towns (Dar es salaam, Morogoro and Arusha) and the interview conducted at Meserani market suggest that, the number of female migrants is higher than formerly reported by other researchers, including May (2000) and Joseph (2008). Age is also losing ground of being a determining factor in migration as reported previously (that it is mainly the young males who are migrating to urban areas). The interview at Meserani showed that, people aging 14 years are also migrating. However, age and gender may influence the distance from home area to destination area one chooses, with females, children and aged ones opting for shorter distances and the youth opting for distant destinations.

## **LIVELIHOOD DIVERSIFICATION (7, 16-20, 21)**

### **Maasai Livelihood diversification**

Diversification refer to an increasing multiplicity of activities (regardless of the sector) or a shift away from traditional rural sectors such as agriculture to non-traditional activities in either rural or urban space-i.e. Sectoral change (Start, 2004)

Pastoral diversification is the pursuit of any non-pastoral income-earning activity and it occurs in occupation, sources of income and residence (Little, 2001).

(Little, P., McPeak,J., Barrett, C., Kristjanson, P., 2006) trace the origin of pastoralists' diversification to the 1970s in some areas and from the 1980s in others and that, the poor are pushed out of pastoralism because they no longer have enough animals upon which to survive, and the wealthier are pulled out of pastoralism just partly to expand their assets and income. However, Ocha (2007) argue that the root cause of the process is the spiral resource depletion, and diminishing resilience against draught; loss of livestock and shrinking rangelands due to expansion of farming activities, population increases and land alienation by the state.

(Bryceson D., 1999) comments that, as a consequence of diversification, social boundaries have been redrawn to maximize entry of market participants and that, the scramble for cash has caused an upheaval in age-old gender and generational divisions of labor. Types of work ascribed strictly to men, or alternatively women, have broken down. (Mung'ong'o, 1998) adds that, in places men have taken on traditionally female tasks, such as beer brewing. (Mahmoud, B., Salmana, C., Bitrina, D., Gouro, D., Fred, L., David, O., Enoch, O., Janice, O., and Tacoli, C., 2003) remark that, out of the

income diversification strategies, a picture emerges of radical change in the structure and internal relations of rural households.

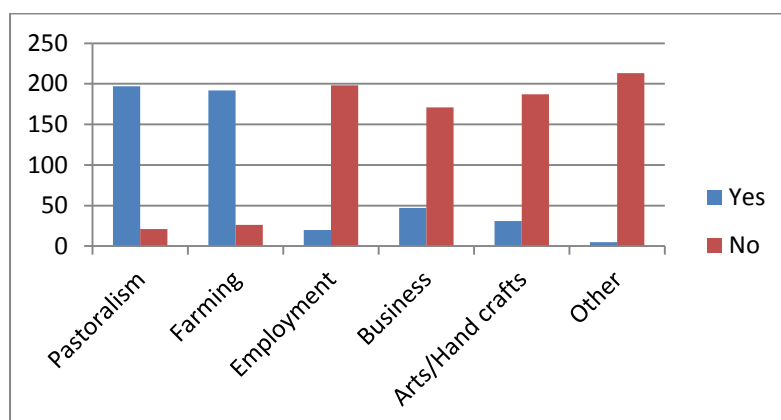
(MWEDO, 2000) explains that, for Maasai, this is a period of accommodation and exploration as many of them are entering into trades and professions not familiar to them and previously considered “taboo” in their tradition. Hauff (2003) concludes that, changes in Maasai lifestyles have brought about an increase in the status of Women (they have begun, will continue) to fight male dominated practices that constrains their freedoms and voices.

Despite the presence of a wide range of livelihood activities found in the study area, pastoralism and farming seem to be the most dominant activities. When the two are compared, 79% of the respondents reported to be doing both pastoralism and farming (without judging the scales) as their main livelihood activities at the same. This is the case despite Arhem (1993) views on Maasai involvement in agriculture:

*« For a society in which cattle were once the traditional foundation of worth and resource expenditure, the arrival of agriculture did more than just diversify a local economy: it completely revolutionized the way in which people thought about their livelihoods, their culture, and their landscape »*

However, Conroy (1999) found that, Maasai are moving to Agriculture as one of the strategies to protect their land from encroachment by other ethnic groups as farmers have more secure land tenure than livestock keepers as governments view grazing land as land available for development. (Little 1992, 2001) add that, there is considerable evidence that income from non-pastoral activities frequently is invested in livestock; while keeping animals off devalued markets. He concludes that; The table below present the major types of livelihood activities (and the number of people involved in each activity) found in the study area

**Table 1 :** Activities diversification in Maasai areas as found out of 218 interviewed respondents in Monduli District.



**Source :** Field Survey, 2014

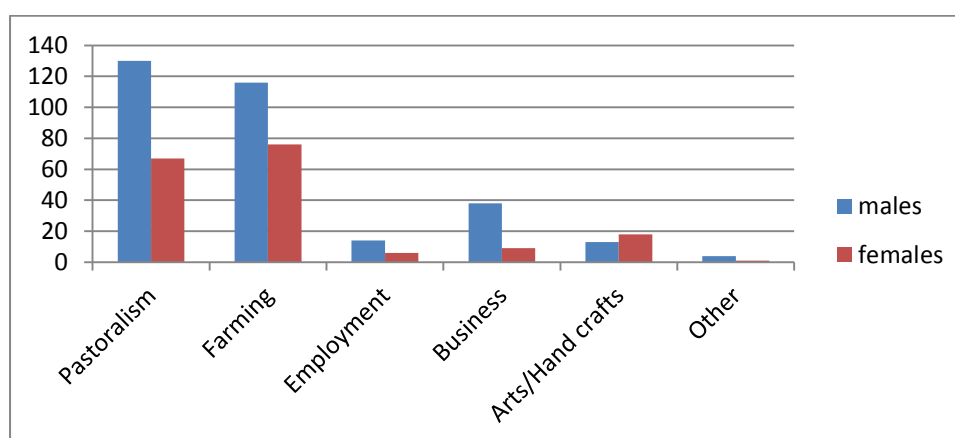
This information reveals the extent of activity diversification and the decline in dominance of pastoralism as the core activity in the society as compared to what literature suggested.

It is also important to note that, the respondents who identified themselves as engaged in businesses, were not necessarily doing it in the rural areas/homes where the interviews were conducted. About 38% of them had their businesses situated in nearby growing town centres and in

urban areas. The same applied to those involved in arts/hand crafts work, whereby they locate their business specifically to routes/roads used by tourists visiting the National parks. A good example is the Maasai cultural village/shop located adjacent to the « Meserani Snake Park » along the Arusha-Ngorongoro road. This brings on-board strategies of migration, multi-localities which are also being employed by the Maasai as their livelihood strategies (as was found by previous studies, and as was also found by this study).

Tacoli (2002) found that, diversification is often linked to mobility, and its patterns vary according to location, household wealth, gender and generation. Tacoli's findings are in perfect agreement with the study's findings that, the diversification process is not « linear » and « homogeneous » to all, but highly differentiated by « gender » and « generations » as the sections below explain.

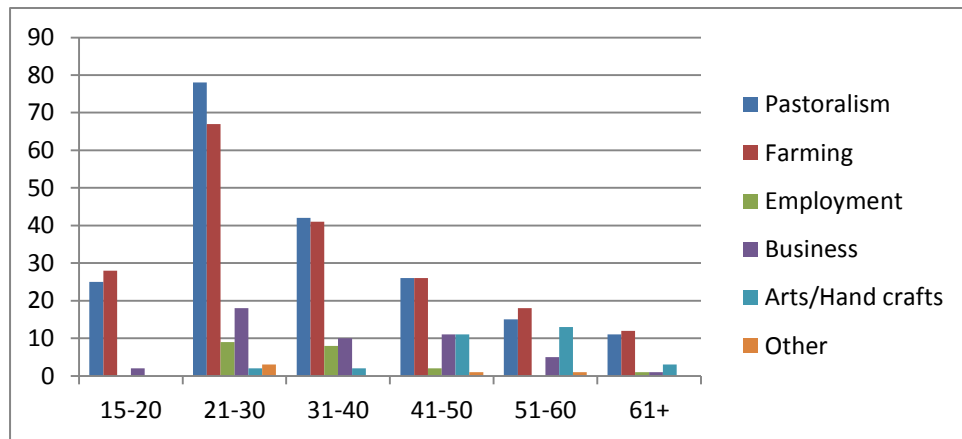
**Table 2 :** Differentiation of livelihood activities by gender as found out of the 218 respondents interviewed in Monduli District



**Source :** Field Survey, 2014

Despite the fact that the sample size was not equally balanced between males and females respondents (135 males and 83 females), the chart above suggests the presence of dominance of specific gender on specific activities. This can be the result of tradition of the society (for example ; men are considered as owners of the cattle in a household and the trainings women receive in « beads » work since childhood, in order to make the beads decoration for their lovers). The other reason could be the differing access (between males and females) to « capitals », « skills and knowledge » and other necessary entrance qualifications to the different livelihood activities.

The chart shows a wide diversification of activities among each age group. However, the level of diversification, and dominance of specific activities in different age groups suggest the presence of varying preference (and the differing access and capabilities) to different activities. Assuming that all the respondents are/were subjected to the same condition/situation, the chart further suggest a gradual transformation of preferences/choices of activities as one grows old. For example, the age groups of 51-60 and 61+ years old exhibited higher percentage in the Art/Hand crafts as compared to percentages exhibited by any other age group.



Apart from the question of Self-identification, which the majority of the respondents still claim to be, and would like to be recognized as “pastoralist”, the information suggest a shift (either temporary or permanent) from pastoralism to farming. Out of the 218 respondents, 9.6% of them were not involved with any pastoralism activity at all.

Maasai people are also diversifying the types of foods they take. The numbers of cattle available are too small to rely solely on them to get meat, milk, blood and fat to feed on. As a result, consumption of other types of foods is on the increase. Apart from the reduction of herds of cattle, consumption of other foods is also a result of education and trainings they receive schools and health centres/facilities, interaction with other societies especially in Urban areas but also in rural areas. It is common now to see a Maasai Moran ordering rice and vegetables in a restaurant (formerly it was taboo for a Morani to eat vegetables, it was food for Women only).

Diversification is also taking place in terms of types of crops grown. Since farming has become an economic activity, they respond to the markets demands on the types of crops they grow. Mbuyuni residents are now growing « egg plants », « Ocra » and tomato through their irrigation schemes, while cabbage cultivation in Monduli Juu village is a common practice nowadays. Selela and Meserani residents are growing « Jatropha » to respond to the demand.

Diversification of species of animals kept and improvement of inferior breeds is rapidly taking place within Maasai areas, and facilitated by the government. In Ngereyani (Longido district) the government has introduced fish keeping by putting the baby fishes (fish seeds) into the dam which people use to fetch drinking water and to water their cattle. Traditionally Maasai people do not eat fish and the move to put fish in the dam did not receive a good welcome from the natives (Maasai). In Ketumbeine (Longido), the government has introduced Camels keeping and is sensitizing the community to drink Camels’ milk and to use camels instead of donkeys in transportation purposes.

There are also noticeable changes in the dressing codes of the Maasai (diversification or change). They now dress according to the occasion taking place and according to the place being visited. It is common to find people dressed in western clothes when visiting offices and urban areas, and dressed in traditional clothes while in rural areas. The change in the dressing style is a result of many factors, but among the leading ones are ; the operation dress up conducted by the state in 1960’s, religious teachings (a Christian should wear western clothes) and education (to look educated and civilized one should dress in western clothes).

Therefore, Maasai diversification is not taking place only in terms of activities; it is also taking place in terms of food consumption, and dressing as well. In addition, it is both the rich (for accumulation, investment and insurance purposes) and the poor (for survival purposes). It is also important to note

that both males and females (of all generations) are diversifying their livelihoods in one way or another. Apart from decrease in herds sizes, globalization, technology, education and religions are among the other forces playing part in transforming the livelihoods of the Maasai people.