Baseline IHM Assessment:

Improving Smallholder Farmers Livelihood through Mango Production and Marketing Project

Salima, Central Region, Malawi

Self Help Africa (SHA) and Agriculture and Natural Resources Management Consortium (ANARMAC)

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Stella Ngoleka with SHA and EfD

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ANARMAC   Agriculture and Natural Resources Management Consortium

EfD   Evidence for Development

AEDO   Agricultural Extension Development Officer

AEDC   Agricultural Extension Development Coordinator

EPA   Extension Planning Area

IHM   Individual Household Method

MoAFS   Ministry of Agriculture and Food Security

SEP   Socio-Economic Planning

SHA   Self Help Africa

TA   Traditional Authority

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The purpose of the baseline survey was to provide information that will assist in the monitoring and evaluation of Mango projects implemented by Self Help Africa (SHA) in partnership with ANAMARC in Salima District, Malawi. The study used the Individual Household Method (IHM) for data collection and data analysis and included four whole village surveys, randomly selected for the assessment: Mfitiziyendrana village, Mnkhono village, Kuaseni village and Kuchiswe village.

A total of 48 primary project beneficiary households were interviewed; 9 from Mnkhono, 9 from Kuseni, 16 from Kuchiswe and 14 from Mfitiziyenderana1 village. Mnkhono, Kuseni and Kuchiswe villages are all located in the same livelihood zone, the Northern Cotton and Maize production zone and Mfitiziyenderana village is in the Lakeside Agro-Fishing zone, 30km from Lake Malawi. In Mfitiziyendrana, the study year ran from February 2012 to January 2013 and in Mnkhono, Kuaseni and Kuchiswe from March 2012 to February 2013.

In both livelihood zones maize is the main food crop grown. The main commercial crop is cotton followed by rice in the Lakeside Agro-Fishing area. In the Northern Cotton and Maize production zone the main commercial crop is ground nuts followed by cotton. Mango is among the 5 main cash crops in the Northern Cotton and Maize production zone but not among the top 5 cash crops in the Lakeside Agro-Fishing zone. Produce is mainly sold at village level in Mtitiziyenderana and in different local markets within Salima in Mnkomo, Kuseni and Kuchiswe villages. The produce is sold to vendors who sell outside and within Salima district. Currently, farmers in both livelihood zones earn most of their yearly cash income from employment (71 percent in Mfitiziyenderana and 89 percent in the Northern Cotton and Maize production zone) Sources of employment include both on farm and off farm work. Non-agricultural employment for poorer households includes mat weaving, brick moulding, making brick ovens, carrying water and mudding houses; activities for middle households include bicycle taxi, brick making, brick selling, selling local cakes, mat weaving etc. Non-agricultural employment for the better off includes selling groceries, skilled construction work, salaried work such as drivers and hiring

out bicycles. Major agricultural employment includes land clearing, weeding, ridging and cotton spraying all done by poorer households.

All households in the study area had access to sufficient income to meet WHO recommended food energy requirements- none fell below the 'food poverty line'.

Soil type and distance to water sources in Mnkhono, Kuseni and Kuchiswe villages are the main challenges faced by households that also have implications for the mango project. In Mfitiziyenderana the soil is good for mangoes and water is available. Key informants indicated that markets and cost of transport of produce to market centres is the main challenge faced by farmers in both zones.

CHAPTER ONE

This is a baseline study, designed to support the monitoring and evaluation of the 'Improving smallholder farmers' livelihoods through Mango production and marketing' project, implemented in Salima District, Malawi, by Self Help Africa (SHA) in partnership with the ANAMARC. The baseline study targeted two livelihood zones namely the Northern Cotton and Maize production zone and the Lakeside Agro-Fishing zone[1].

1.1. Description of the Project

The project aims at 'developing enterprise solutions that enable smallholder farmers to achieve a better quality of life'. It is targeting poor farmers, particularly women. Women are involved in many activities along the mango value chain; however it is understood that they do not get adequate economic benefits from these activities and for this reason have been targeted by the project.

Beneficiaries were selected based on the following criteria

- Smallholder farmer resident in the area for more than 10 years

- Should own land to grow seedlings

- Should have mango trees for top-working

- Should belong to Liwadzi or Chiluwa Cooperative

1.2. Objectives of the Project

The Mango project's ultimate goal is to reduce poverty and hunger among resource poor smallholder farmers in the targeted communities of TA Khombedza and Karonga/Mwanza in Salima district by the promotion of mango production, processing and marketing. The project is expected to increase mango production and raise income levels as well as increasing off season consumption of mangoes. The project started in 2012 and is due to end in 2015. During this three year project,

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[1] See appendix III for details of livelihood zoning

selected farmers will receive mango seedlings and others will provide their local mango trees for grafting with improved stock.

1.3. The IHM Study

The goal of the IHM study was to measure baseline economic and social indicators to help the implementation of the key components of the mango project. Data was collected on household income with reference to the year before project inputs were distributed. This will allow comparisons with data gathered in the mid-term and end of project period. In this survey whole village studies were carried out all four selected villages, located in the two livelihood zones. The methodology used will provide a simple monitoring system and evaluation for the project.

2.0. METHODOLOGY

The Individual Household Method (IHM) was used to collect and analyse data on household livelihoods. The IHM is a method for measuring household income, developed by Evidence for Development[2]. In common with other household budget survey methods, the IHM involves the collection of household income data for the purpose of policy development and planning. However, the IHM differs from other approaches in (i) the method of data collection (a semi structured interview, rather than a standard questionnaire format is used) and (ii) the use of specialised software, which allows data checking and analysis to be carried out in the field. Together these reduce the risk of errors in data collection and allow errors to be identified and corrected.

The steps in an IHM study are as follows. First, before any individual household interviews take place, a preliminary survey is conducted involving community leaders and other local key informants. This allows the team to explain in detail the purpose of the assessment, and to refine key research questions. It provides interviewers with basic information on the local economy and economic activities that subsequently allows them to identify inconsistencies in individual household interviews, and to cross question where appropriate. The preliminary survey also involves mapping the study area and drawing the sample.

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[2] See www.evidencefordevelopment.org

Second, individual household interviews are kept short (between 45 – 60 minutes) to avoid interviewer/ interviewee fatigue and where possible, appointments are made with households to arrange a time that does not interrupt normal working activities. Third, on returning from the survey site, data is consolidated and entered into the IHM database. This allows for cross checking and identification of apparent anomalies in the data which can be discussed with the interviewer and followed up the next day.

The baseline survey carried out in Salima district included an additional 'Livelihood Zoning' step. A livelihood zone (LZ) is defined as an agro-ecological area in which the population has access to the same range of economic opportunities, including crop and livestock production, access to markets and employment. In consultation with a local agricultural extension worker, the agro ecological and economic characteristics of different zones were identified. At the end of the process, four LZs were identified in Salima district[3] It was established that Mfitiziyenderana, the first randomly sampled village was in Lakeside agro-fishing area. . The second LZ sampled was the Northern Cotton and Maize production zone where three villages namely Mnkhono, Kuseni, Kuchiswe were randomly selected. As the three villages fall within the same livelihood zone, information from the sampled households could be combined for analysis. Additional information on the characteristics of the livelihood zones can be found in Appendix II [see Appendix file in this folder]

The contextual information for the Lakeshore Agro-Fishing zone was collected from Mfitiziyenderana village and for the Northern Cotton and Maize production zone from Mnkhomo village, through interviews with knowledgeable local key informants. Individual household interviews were conducted with all households present during the study's reference period. Household interviews focus on household demography, land and other assets and all sources of income, classified under five headings: crops, livestock and livestock products, employment, transfers/gifts and wild foods. Additional contextual information on farming practices (agricultural labour), business performance and wages, access to credit, input use and institutions and organizations present in the villages was also collected. The complete interview form

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[3] 4 LZs identified in Salima are Northern Cotton and Maize production zone, Lakeside Agro-Fishing zone, Salima South zone and Chipoka-Sengabay Lakeside zone

for both the household-level survey and the village-level survey are included in the Salima Mango Project Appendices file that accompanies this report.

The IHM survey instruments are designed to be user-friendly for the enumerators in the field, while also gathering extremely detailed data at both the individual and village levels. We developed a series of direct and indirect approaches to addressing sensitive labour issues, gathering data on workers on farms (including type of work, forms of payment and duration of employment), school attendance, and any periods of absence of household members eg for migrant work. Additional information was also gathered by the survey team on social interactions and individual policy preferences and priorities through observation and discussion with communities (e.g., the most important problems facing the village). In addition, the survey provided detailed information on crop yields and productivity, and current levels of knowledge of the bean market, the local economy and household coping mechanisms.

Besides collecting data from individual farmers and village leaders in an interview format, the baseline survey also incorporates data from direct observations recorded by the survey team (e.g. on road access and quality, building materials and maintenance). Finally, information on local measures was recorded converted to standard measures. The detailed nature in the data collected by the survey will allow us to examine the specific mechanisms by which different types of initiatives generate positive effects for Mango farmers over time. Field work was conducted over 7 days (11th August to 17th August 2013).

2.1. Sampling Strategy

The study locations were randomly selected from a list of 23 Farmers Clubs within the 13 GVHs in the ANARMAC Mango production project area.

The study villages were randomly selected from a list of possible study sites. Villages had to have enough project beneficiaries to allow a plausible assessment of project impact in subsequent follow up work. The final selection was made from a list of 6 GVHs that met the selection criteria in terms of number of beneficiaries per village.

One GVH was randomly selected from the list and one farmer's club was randomly selected from all the clubs in that GVH. When the team was in the field the exact number of households and project beneficiaries in the village was confirmed. As this was lower than anticipated it was possible to extend the area covered. To ensure a range of conditions were included in this baseline study a second livelihood zone was identified and 3 small villages within the zone were randomly selected to provide a wider representation or the project and its beneficiaries in the study.

The first selected site (Mfitiziyenderana village) has 22 households. Of the 22 households 14 households were interviewed[4]. During the study period it was established that there were a total of 16 beneficiary households in the village but they had not yet received mango project inputs. In the second site (Mkhono, Kuseni and Kuchiswe villages in the Northern cotton and maize production zone) 46 households (from a total of 57 households[5]) were included in the study, of which 34 were project beneficiaries.

2.3. Survey Implementation

To implement the survey, we worked with field researchers who have considerable experience conducting surveys using the IHM method of data collection. The survey followed a strict IHM protocol to ensure quality data and sensitivity to the local context and confidentiality. Interviews were conducted in the local languages[6]. Before the survey, a short refresher training was conducted by the team leader on first day of field work. The training encompassed explanations of the purpose and background of the study as well as a livelihood zoning exercise with the Agricultural Extension worker and a review of the contextual and household interview forms. The survey teams were given precise protocols for entering villages, obtaining approvals from district officials and village chiefs and explaining the purpose of the exercise. The team was comprised of eight interviewers three of whom were University of

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[4] Datails of reasons households were not interviewed are included in Appendix III
[5] Datails of reasons households were not interviewed are included in Appendix III
[6] As part of EfD's capacity building partnership with SHA, Lonjezo Masikini and Lovemore Chikalend took on the role of 'assistant leaders' working closely with EfD associate Stella Ngoleka who led the survey.

Malawi post graduates, two University of Malawi undergraduates, two SHA project officers and one from a partner organization[7].

The protocol we developed was for the survey team to meet with the village leader (the chief) when they first arrived in each of the survey sites, explain the research, describe the surveys, and obtain permission from AEDO to proceed. We interviewed a total sample of 14 households in the Lakeside agro-fishing area LZ and 46 households in Northern cotton and maize production LZ, gathering information from all households present in the reference year (both beneficiaries and non-beneficiaries). To collect context information, a minimum of eight to twelve key informants representing the farming community were interviewed, including both male and female farmers and village chiefs. General information on agriculture was gathered in the focus group discussions including crop and livestock production, markets, employment, business, petty trade, salaried work, wild foods, formal and social transfers, other projects in the area, locally defined wealth indicators and the cost of inputs. With the village head man and key village members a list of stage one MANGO targeted farmers in the selected villages was drawn up. Additional information was gathered from published sources including the Salima District Assembly socio-economic profile and data from Meteorological department.

Information on yields, production, and minimum and maximum prices for specific crops was obtained from the participants in the focus group discussion in the selected villages. The soil type, rainfall, potential markets, access to farm inputs and coping mechanisms in the event of shocks were discussed in focus group discussion and verified with local agricultural officers. This baseline survey therefore provides rich insights into conditions faced by mango farmers across the sampled livelihood zones.

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[7] See appendix IV. for study participants and their IHM levels

2.4. Definitions used in IHM

2.4.1. The household

A household was defined as those people resident in the house and eating from one pot during the reference year.

2.4.2. Household income

Household income is made up partly in food, and partly in money. In many cases some or all food income is not sold, so no price is available for that food. This means that total household income cannot be calculated in terms of money. Therefore a standardized presentation is used in terms of 'disposable income'/ adult equivalent. This is defined in the IHM as:

> *The money income remaining to the household after it has met its food energy requirement at a standard rate, for each 'adult equivalent' in the household.*

This is calculated from

1. The household's total food energy requirement, calculated from UN reference values[8]. This is based on the period individuals were actually resident in the household, so periods away from home e.g. at boarding school, doing migrant labour are excluded.

2. The cost of the proportion of the household energy requirement *not* met from the household's income as food (Kcal income) estimated using a set diet defined in discussion with poorer residents as being typical of the diets of poorer households. In this study the diet used was maize.

3. The disposable income is calculated by subtracting the cost of the minimum diet from the total household money income.

The result is standardized to take account of variation in household size by dividing the disposable income by the number of 'adult equivalents' in the household. The

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[8] Individual food energy requirement was calculated by age and sex from World Health Organisation 'Energy and protein requirements' (WHO technical report series 724, Geneva 1985) for the population of a typical developing country. Averaged over the entire population requirement approximates to 2100 kcal/ person/ day.

number of adult equivalents is calculated as the total household energy requirement/ the energy requirement of a young adult (2,600Kcals/day).[9]

3.0. THE STANDARD OF LIVING THRESHOLD

The cost of a basket of goods and services sufficient to achieve a minimum acceptable standard of living was established in discussion with residents (Table 1).

Table 1.1: Goods and services required to meet minimum standard of living

Expense type	Cost per year		Applies to:
	Mfitiziyenderana1 village	Mnkhono village	
Soap	1300	16000	The household
Paraffin/other fuel	1365	2400	The household
Clothes male	4200	5000	Adult male aged over 15 years
Clothes female	3150	4000	Adult female aged over 15 years
Clothes child male	1100	3000	Male child aged 4 to 14 years
Clothes child female	1800	2200	Female child aged 4 to 14 years
Primary school	3450	1050	All children aged 7 to 13 years
Matches	150	200	The household
Salt	1385	580	The household

Table 1.1 indicates that the cost of a basket of goods and services sufficient to achieve a minimum acceptable standard of living was higher in in the Northern

[9] See www.evidencefordevelopment.org

Cotton livelihood zone. This is because the zone is located nearer Salima town compared to the Lakeside Agro-Fishing zone. Note that the standard of living threshold reflects the amount actually spent by poor households to reach the locally defined 'acceptable standard'.

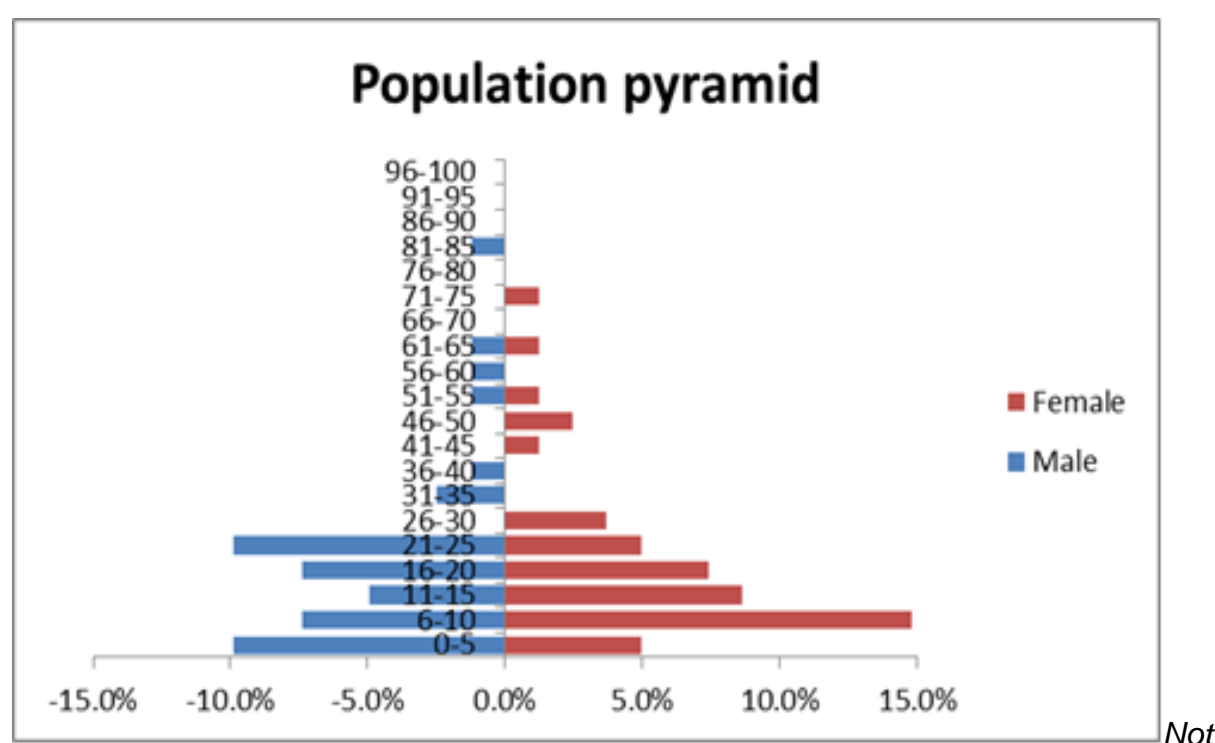## CHAPTER TWO: Survey findings, Lakeshore agro-fishing zone

2.0. Introduction

This chapter covers findings from Mfitiziyenderana village in the Lakeside agro-fishing livelihood zone.

2.1. Findings and Discussion for Mfitiziyenderana Village

The analysis was done using the open-ihm software version 1.5.1.The charts in this section show the result of the whole village survey, carried out in Mfitiziyenderana village.

Figure 2.1: Population pyramid for Mfitiziyenderana village

Not

Note that only 14 households were interviewed for this study, which may account for the 'gaps' in the population pyramid. The other survey site, which included 46 households, has a more typical population profile.

2.1.1. Household disposable income

Figure 2.2 shows disposable income per adult equivalent i.e. the money remaining to the household after it has met its basic food energy needs.

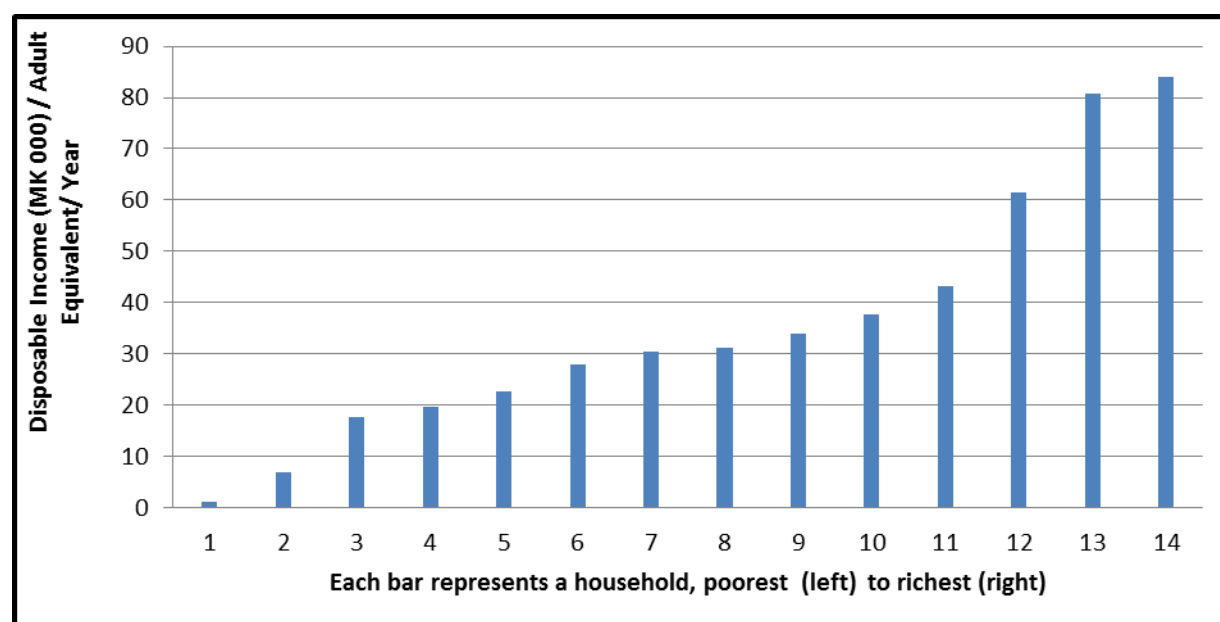**Figure 2.2: Household Disposable Income per adult equivalent**

Figure 2.2 shows the household disposable income per adult equivalent. Households are shown in order of annual household disposable income per adult equivalent. The poorest households lie on the left. All households in the village (100% of the interviewed households) were above the x axis. This indicates that all households are able to meet their food energy needs, based on WHO (1985) reference standards.

Table 2.1: Disposable Income median value by household income

	Number of HH	DI (MK)	Number of beneficiaries
Household number	14	30834.7	14

Table 2.1 shows median value-disposable income by household. As the table indicates during the reference year all households in the village (100 percent of households) were identified as beneficiaries.

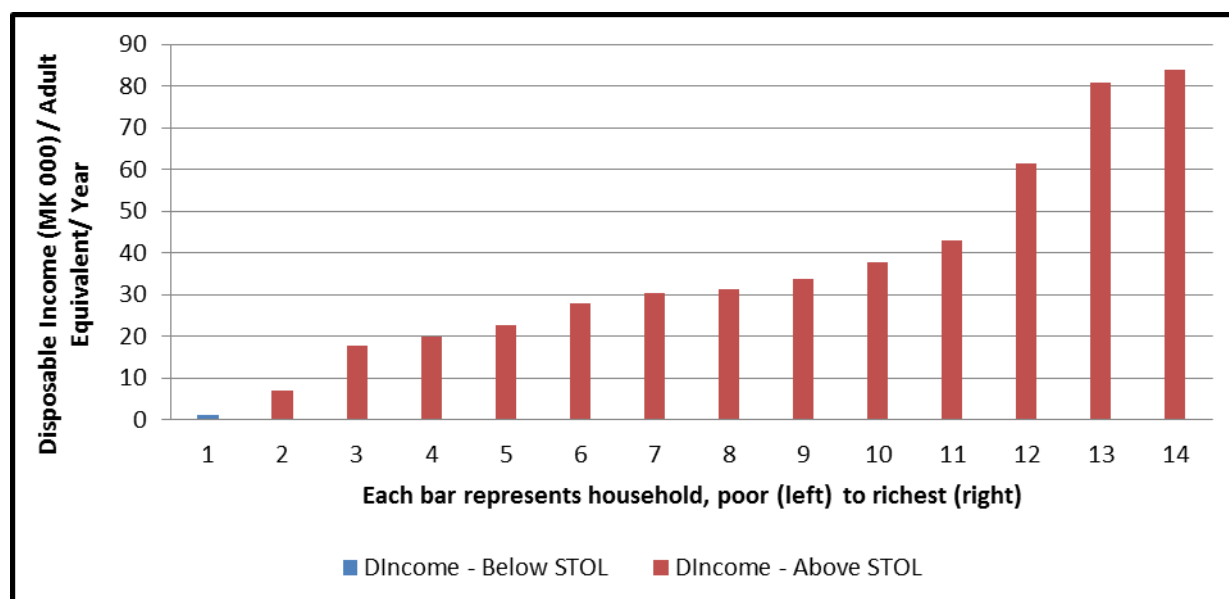**Figure 2.3: Standard of Living Threshold (SOLT)**

Figure 2.3 shows the standard of living threshold.. Household below the standard of living threshold are those that are not able to meet the set of basic non-food requirements identified by the local population as essential for social inclusion.

The costs used to set the standard of living threshold are allocated household by household. Only a single household (indicating 7 percent) in Mfitiziyenderana village fall below the standard of living threshold. This household is shown on the far left (blue bar).

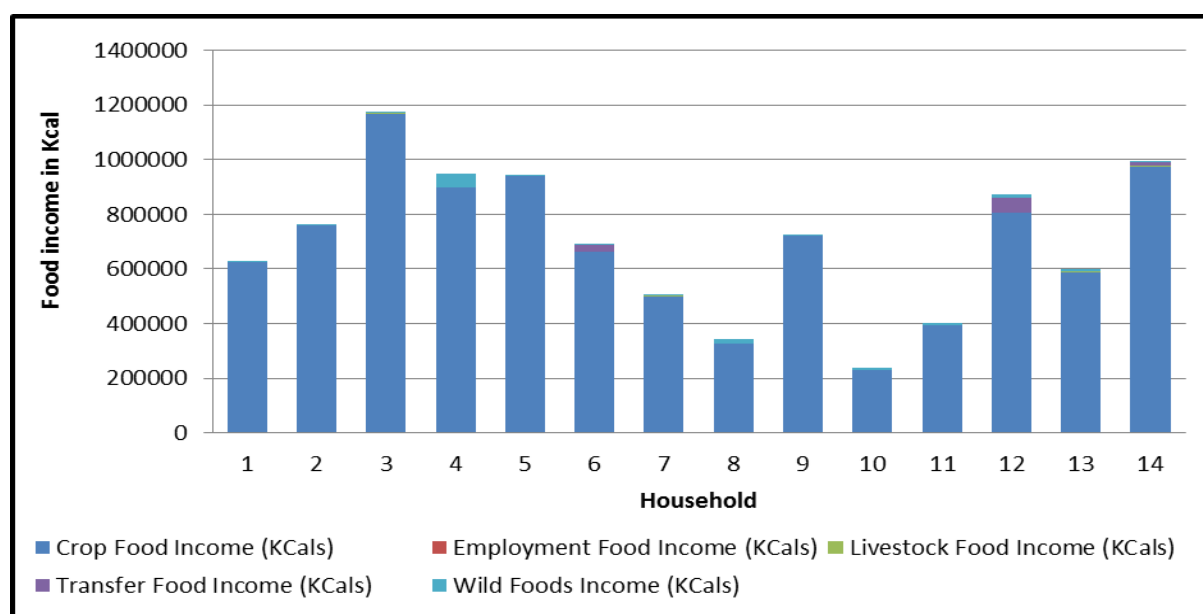**Figure 2.4: Food Income per Adult Equivalent in Kilocalories**

Figure 2.4 shows household income produced or received as food (Kilocalories) and retained for consumption by the household, classified by income source (crops, livestock, employment paid as food, wild food or food transfers). The households are shown in order of the level of the household's disposable income; food income does not increase with disposable income. Food transfers were reported in only two households and consumption of own livestock was not common.

Figure 2.5: Two main sources of Food Income per Adult Equivalent in Kilocalories
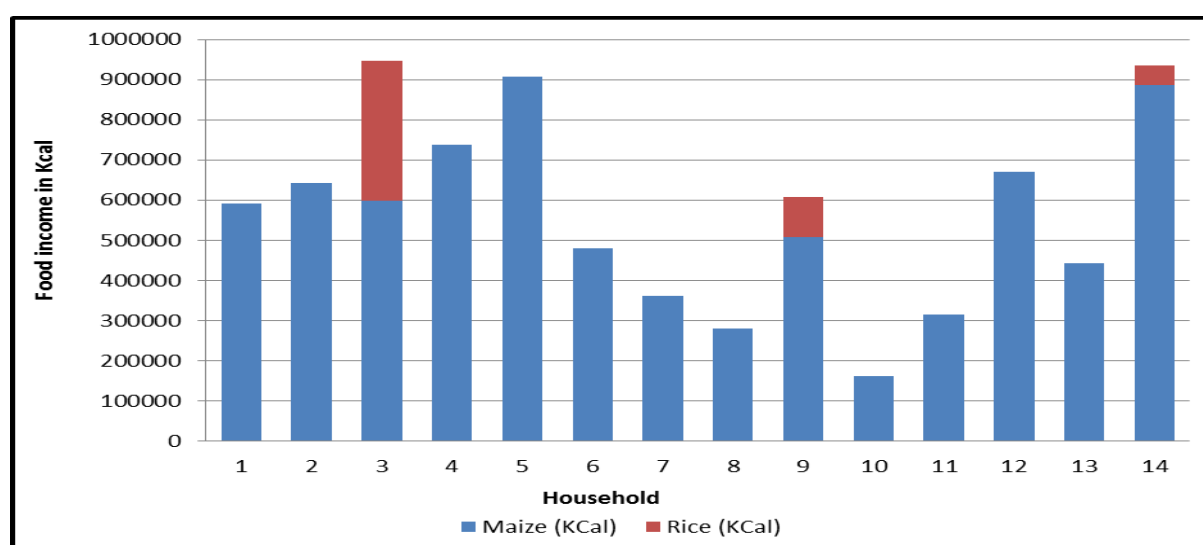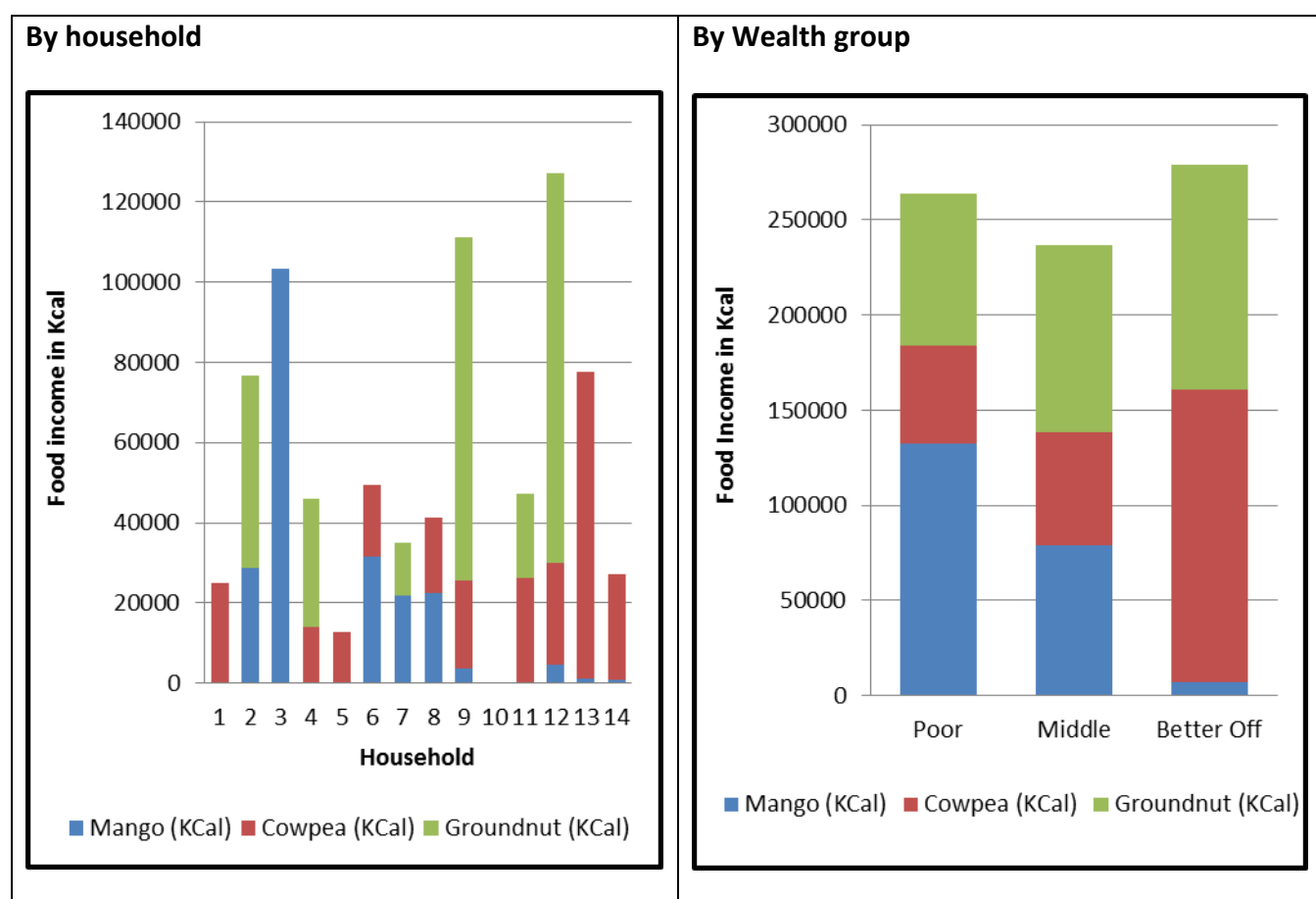
Figure 2.5 shows the two main sources of food income per adult equivalent in Kilocalories. Maize is the main staple food followed by rice. The food energy (Kcal) contribution from maize is far higher than rice. Within the Lakeshore agro fishing livelihood zone some villages were producing more rice than in this village. The reasons for this difference could be explored further.

 The chart below presents food income in Kilocalories from mango and other minor sources of food income (cowpea and groundnuts).

Figure 2.6: Other selected sources of Food Income per Adult Equivalent in Kilocalories

The contribution of mangoes to food income in kilocalories was higher among the poorer households compared with better off households within the village. Consumption of groundnuts (an important source of protein) is similar across poorer, middle and better off households.

2.1.2. Sources of Cash Income (MK)

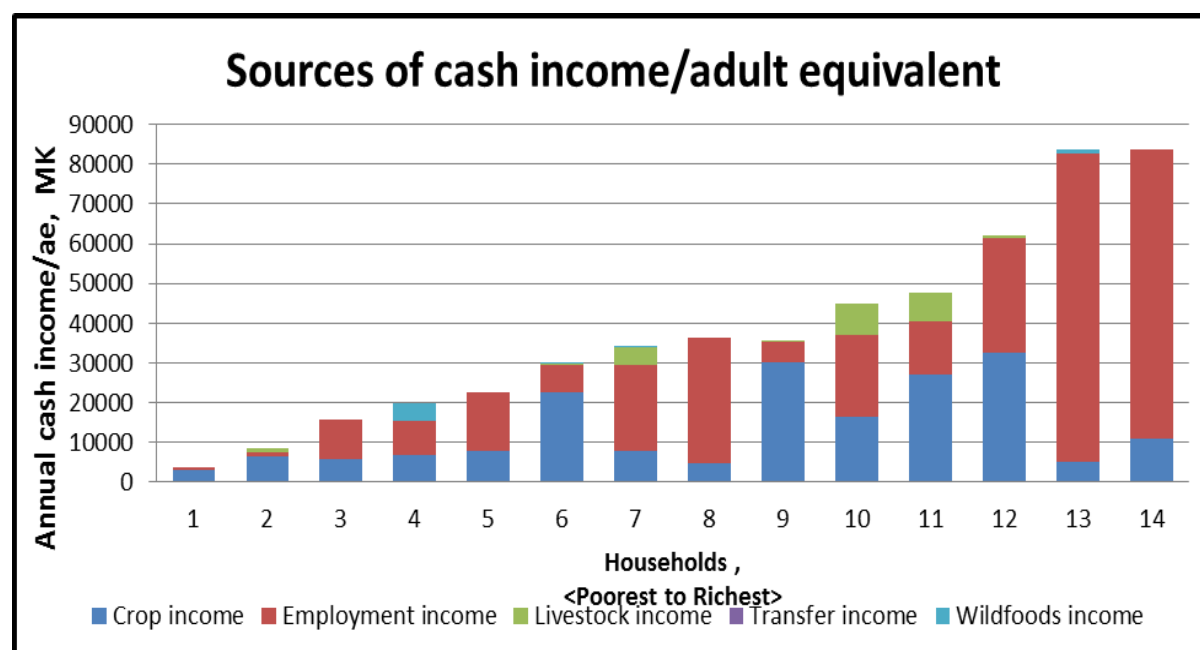**Figure 2.7: Cash Income per Adult Equivalent in MK by Household**

Figure 2.7 shows household cash income, classified by income source (crops, livestock, employment paid as cash, wild food and cash transfers). The households are shown in order of household disposable income. (Note that wild foods include fish from rivers and lakes)

Agricultural employment was ranked as the main livelihood activity in the village. The highest proportion of cash income comes from employment (53 percent) followed by crop sales (40 percent). Transfers (remittances etc) were not an important source of cash income.

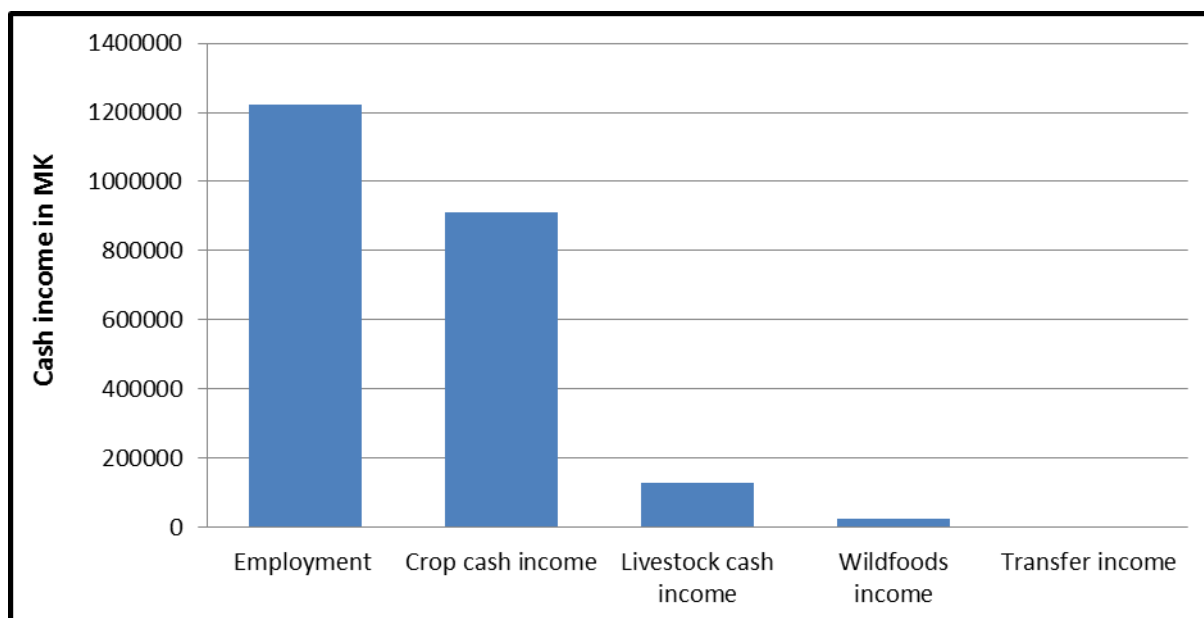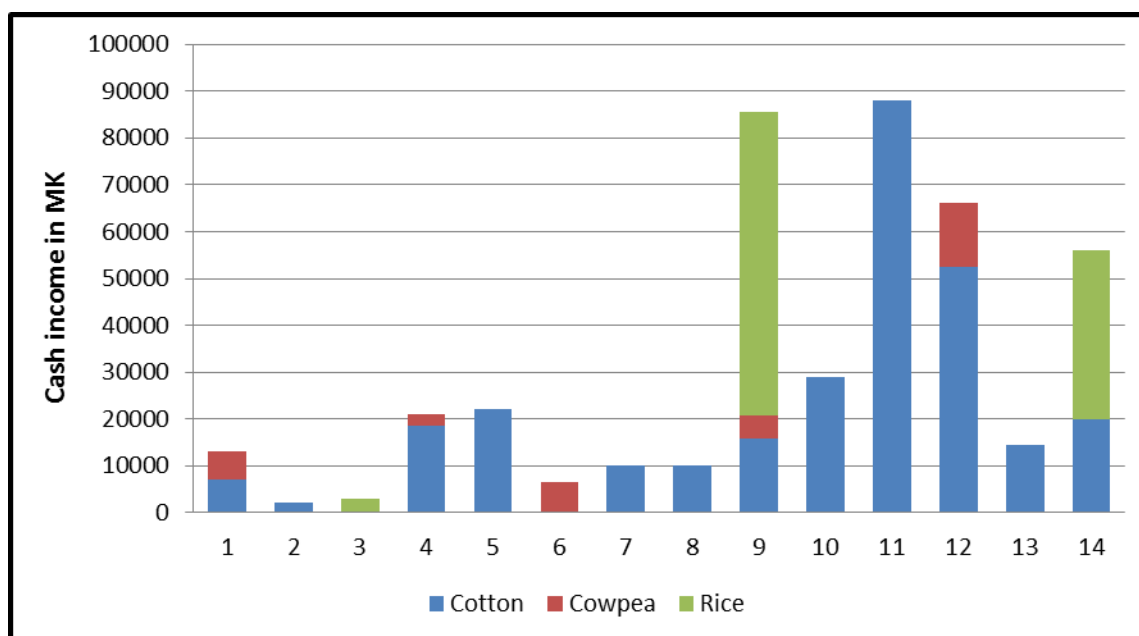**Figure 2.8: Total Cash Income per Adult Equivalent in Malawi Kwacha**

Figure 2.8 shows total cash income per adult equivalent in Malawi Kwacha. Employment income ranks as the major source of cash income followed by crop income. Employment income includes income generated from both agricultural and non- agricultural activities. Examples of non-agricultural activities include mat weaving, selling local beer, petty trade etc. The main crops being sold were cotton, rice and maize. Fishing contributed 63 percent of wild food cash income.

Fishing was among the main livelihood activities in the area in the past five years. However during key informant interviews it was revealed that households are now changing their livelihood activities (from fishing to crop production) due to lower returns, possibly linked to over fishing and drying up of the lake and major rivers on the boundary of the zone (the Lingazi and Liwazi rivers). The distance from the village to the lake (30km) is another factor, although a small number of housheolds have temporary houses closer to the lakeshore.

Figure 2.9: Three Main Sources of Cash Crop Income per Adult Equivalent in MK by household
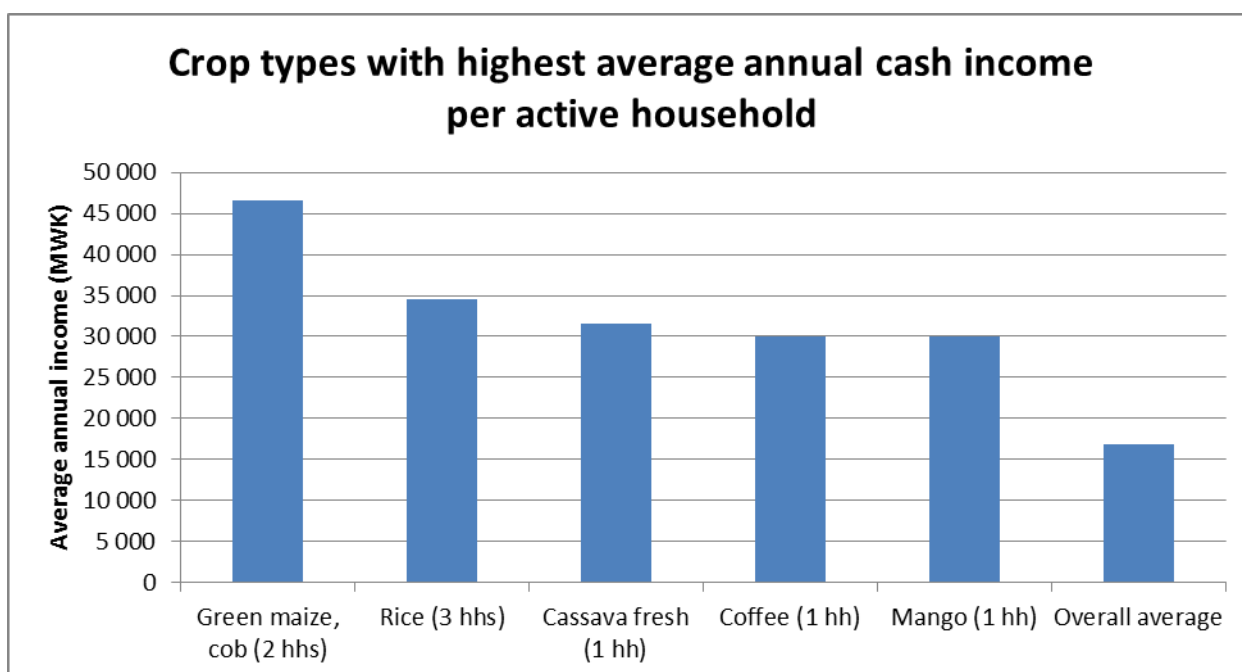

From Figure 2.9 it can be seen that cotton is grown by all households in the village with the exception of two households. Rice is grown by a smaller number of households, although the value of the crop sold by two of these households is high. There are some shifts in livelihood activities due to climate changes. The area has potential for tobacco, however farmers in this livelihood zone have not fully adopted tobacco farming compared to other livelihood zones within Salima. Currently the main cash crop is cotton. The relative value of crops grown in the poorest, middle and most well off terciles is shown graphically in chart 2.9.1

2.9.1 Three largest sources of cash income from crops, by tercile

3 largest crop sources of cash income, totals by tercile

This information is analysed further in Fig 2.9.2 which shows crops with the highest average annual cash return per household that grows that crop.

Fig 2.9.2 Crops types with highest average annual cash income per active household.

Crop types with highest average annual cash income per active household

There are some shifts in livelihood activities due to climate changes. The area has potential for tobacco, however farmers in this livelihood zone have not adopted tobacco farming to the same extent as in other livelihood zones within Salima district.

Figure 2.10: Cash Income per Adult Equivalent in MK from Agricultural and Non Agricultural activities
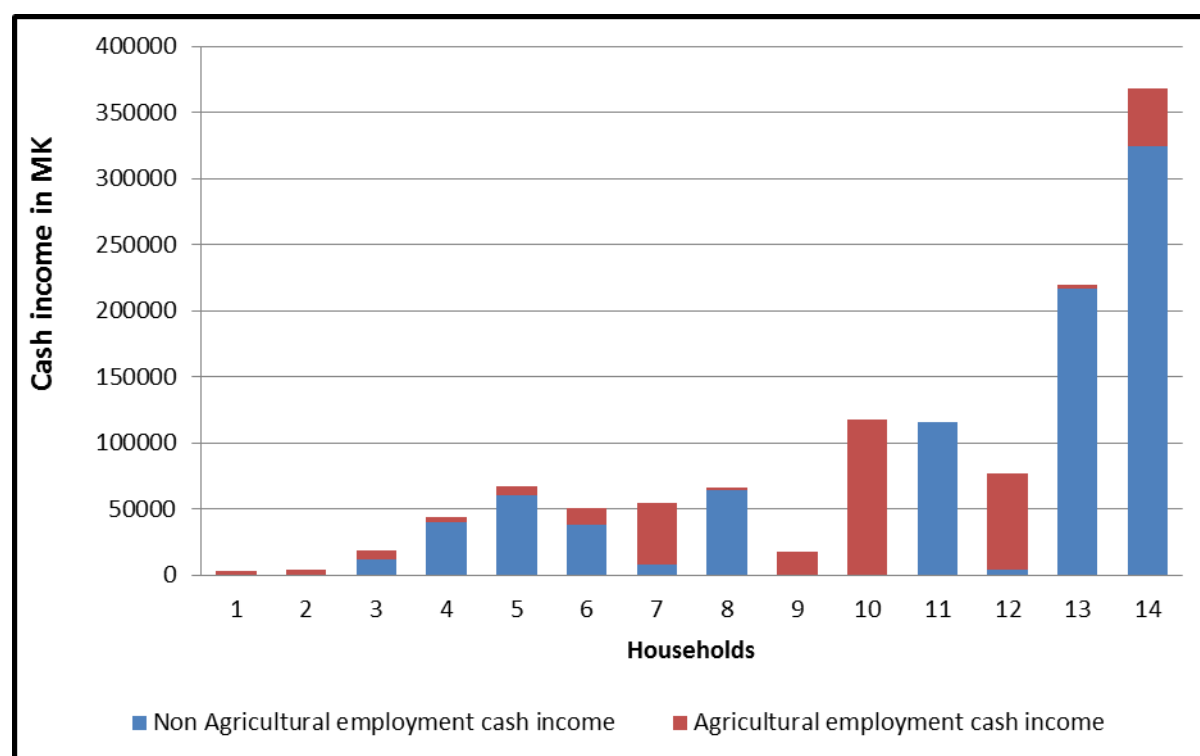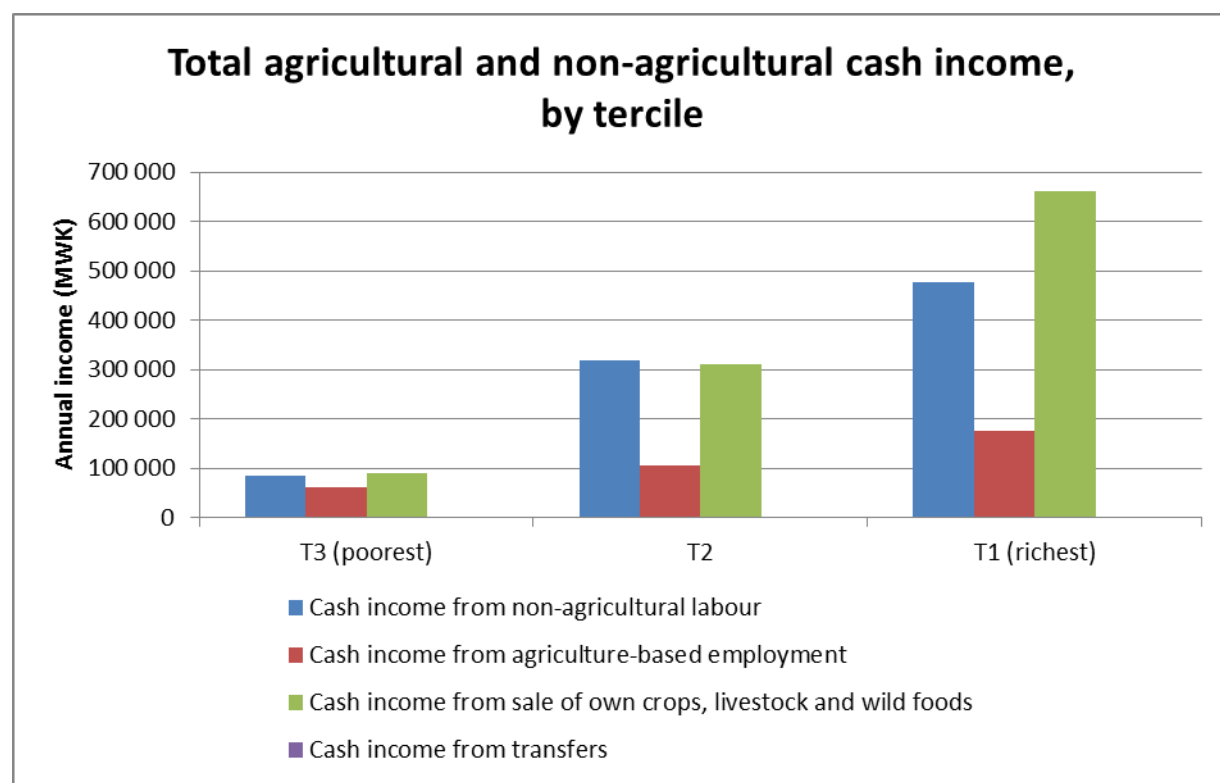

Figure 2.10 indicates that non-agricultural activities provide a higher proportion of cash income than agricultural employment: 72% of all employment income is derived from non-agricultural work. Non-agricultural activities provided income for all but three households. Sources of non-agricultural employment among the better off households include petty trade, mat weaving, public works, sieve making and tin-smithing. As noted in the figure the two poorest households generated 100 percent of their employment cash income from casual farm labour. These include weeding, land clearing, ridging and harvesting. Cotton spraying in private farms owned by companies and better off households within and outside the livelihood zone also provides agricultural piece work for poor and middle income households in this livelihood zone.

This data is further disaggregated in Fig 2.10.1 which shows total cash income from agricultural activities and non agriculture based activities. Cash income from the sale of crops (green bars) is included in this chart.

Fig 2.10.1 Total agricultural and non agricultural cash income, by tercile.

Total agricultural and non-agricultural cash income, by tercile

Legend:
- Cash income from non-agricultural labour
- Cash income from agriculture-based employment
- Cash income from sale of own crops, livestock and wild foods
- Cash income from transfers

CHAPTER THREE: Survey findings, Northern Cotton and Maize production zone
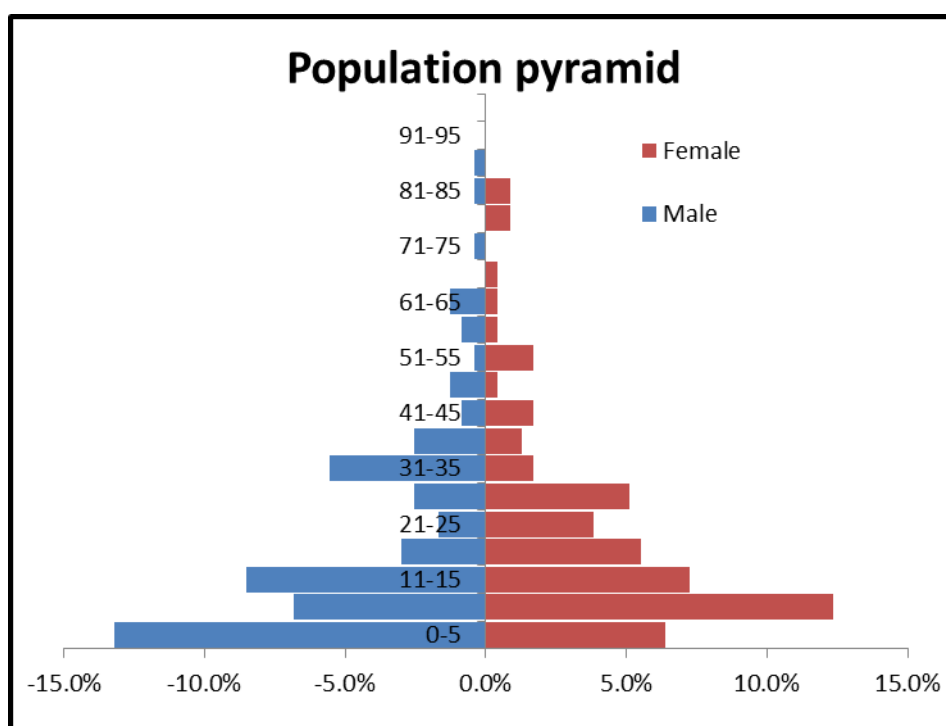
3.0. Introduction

The section covers findings from the Northern Cotton and Maize production zone. The baseline study was conducted after the beneficiary households were selected. This chapter sets out baseline findings for both non targeted and targeted (beneficiary) households.

3.1. Findings and Discussion

In this zone three village,s Mnkhono, Kuseni and Kuchiswe, were sampled. As the villages are in the same livelihood zone, the analysis presented in this section is for the combined data sets. Of the 46 households included in the analysis, a total of 34 households were beneficiaries: 9 were from Mnkhono village, 9 from Kuseni village, 16 from Kuchiswe village.

Figure 3.1: Population pyramid

3.1.1. Household income disposable income

Figure 3.2 shows disposable income per adult equivalent i.e. the money remaining to the household after it has met its basic food energy needs.

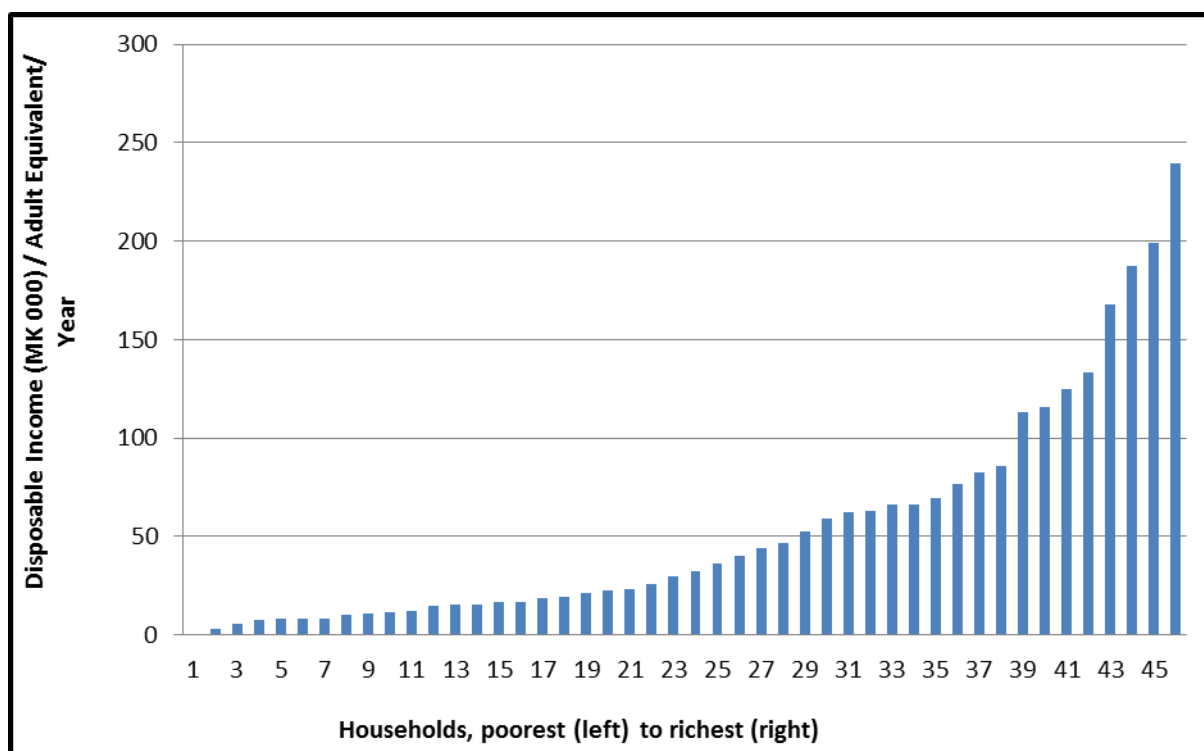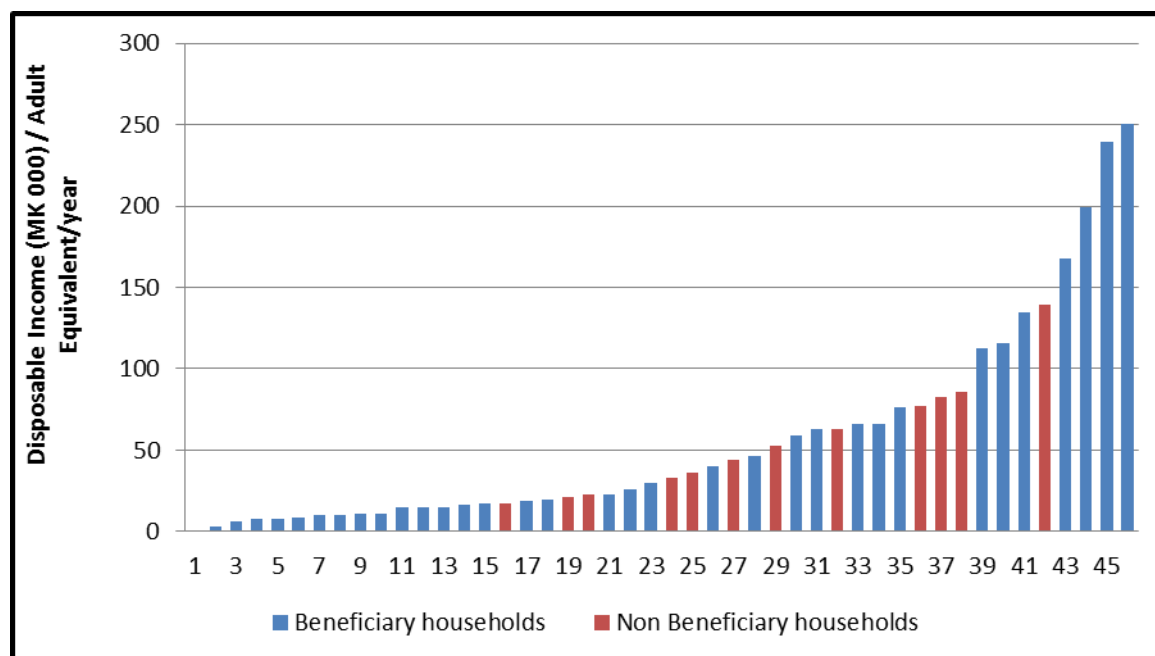**Figure 3.2: Household Disposable Income per adult equivalent**

Figure 3.2 shows household disposable income per adult equivalent. The households are represented by vertical bars[10] Households are displayed in order of their annual household disposable income per adult equivalent. The poorest households are on the left while the richest households are on the. All households (100 percent) as indicated in the figure are able to meet their basic food energy needs. Figure 3.3 below shows disposable income per adult equivalent for beneficiaries and non-beneficiaries. In the figure red bars indicate beneficiary households.

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[10] Note that numbers on the x axis do not correspond with household ID numbers

Figure 3.3: Household Disposable Income per adult equivalent for Beneficiary and Non Beneficiary households

The figure indicates that the households were selected with no specific consideration of their current economic status: beneficiary households are spread across all income groups.

Table 3.1: Disposable Income median value by income quintile

Quintiles (Poorest to Richest)	Number of HH	DI quintiles-median value (MK)	Number of beneficiaries
Quintile 1	10	8,295.9	10
Quintile 2	9	16,862.5	7
Quintile 3	9	36,450.7	5
Quintile 4	9	66,317.6	5
Quintile 5	9	167,777.9	7

Table 3.1 indicates there are 34 beneficiary households interviewed in the study area. Note that the poorest quintile has the highest number of beneficiary households (10).

3.1.2. Disposable income with Standard of Living Threshold

The social and economic status of the household will determine whether the household falls below or above the standard of living threshold. Households below the standard of living threshold are those that are not able to meet the set of basic non-food requirements identified by the local population as essential for social inclusion. Figure 3.4 below shows households above and below the standard of living threshold.
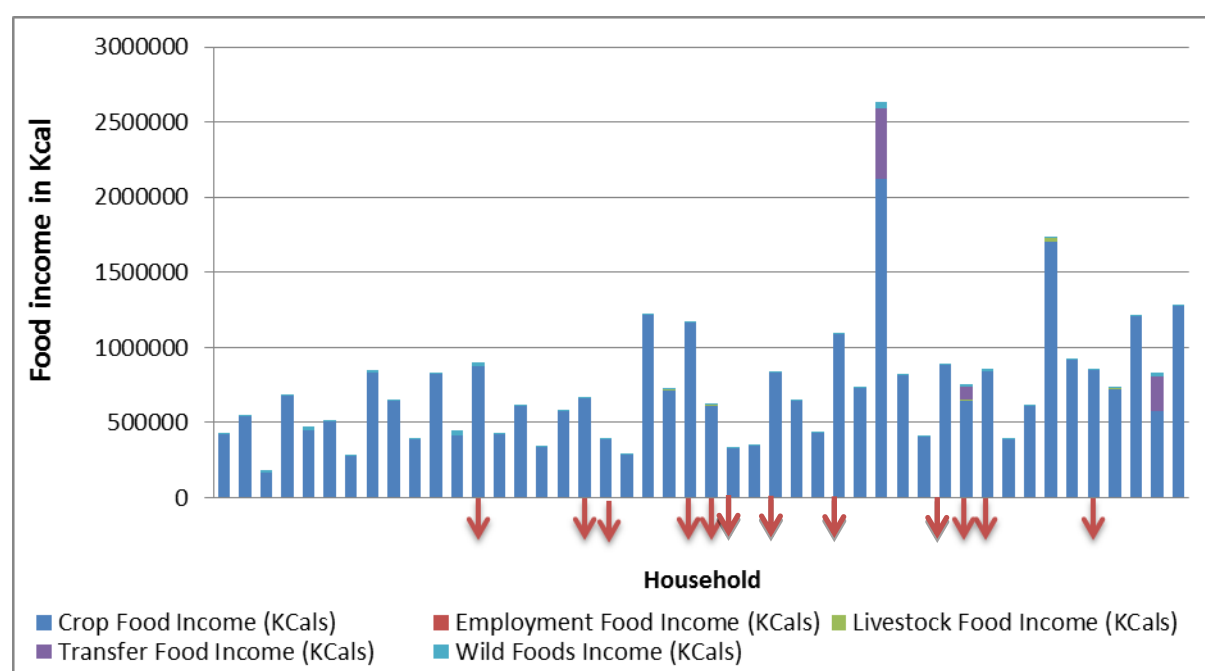
Figure 3.4: Standard of Living Threshold (SOLT)

Households with income too low to purchase all the non-food items included in the minimum standard of living are shown in blue. Only 3 households as shown in the figure fall below the standard of living threshold, all these 3 are beneficiary households (the disposable income of the poorest household is too low to be shown on the chart).

3.1.3. Sources of Food Income (Kilocalories)

Figure 3.4 below shows household income produced or received as food (Kilocalories) and retained for consumption by the household, classified by income source (crops, livestock and employment paid as food, wild food and food transfers). Households are shown in order of household disposable income poorest to the left and richest to the right of the figure.

Figure 3.5: Food Income per Adult Equivalent in Kcal

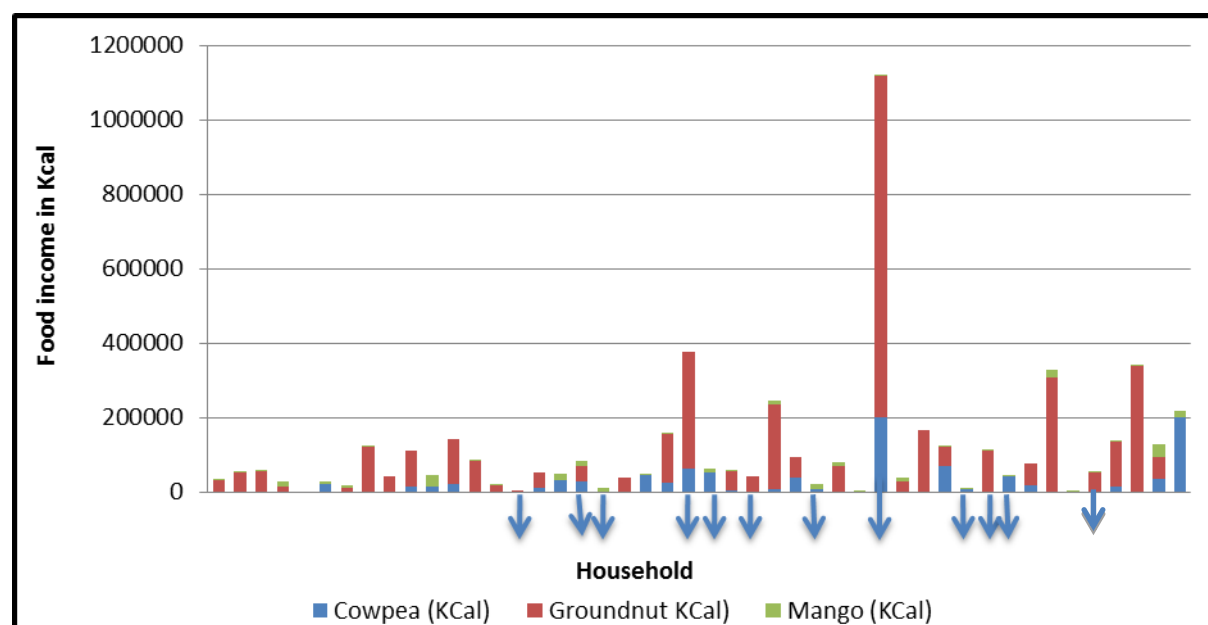**(arrows mark *non-beneficiary* households)**

All households as indicated in the figure derive food income from their own crop production, livestock products, transfers; wild foods and employment also provide some food income for a few households. Figure 3.5 also shows that household food income does not depend on the wealth of the household. Some poorer households are retaining more of their own food for consumption than better off households. Some of the wealthier households receive food transfers (these are likely to be gifts from relatives).

The main food crop reported in this livelihood zone was maize contributing about 80 percent of food income in kilocalories. From this, it can be noted that maize is a predominant food income crop in the area. The other two main food crops reported were cowpeas and groundnuts in that order. Figure 3.6 below represents these

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crops. The chart includes mango for easy comparisons of contribution of mango to household food income.

Figure 3.6: Minor Food Income per Adult Equivalent in Kcal

(arrows mark *non-beneficiary* households)

Just as in Mfitiziyenderana, in the three villages presented in Figure 3.7 it can be seen that mango contributes a small proportion of the kilocalorie food income of the surveyed households.. This is shown in the following charts.

Fig 3.6.1 compares the total annual kcal income of the entire survey population with the total annual kcal value of mangoes

Fig 3.6.1 Whole village food income from mangoes compared with other sources
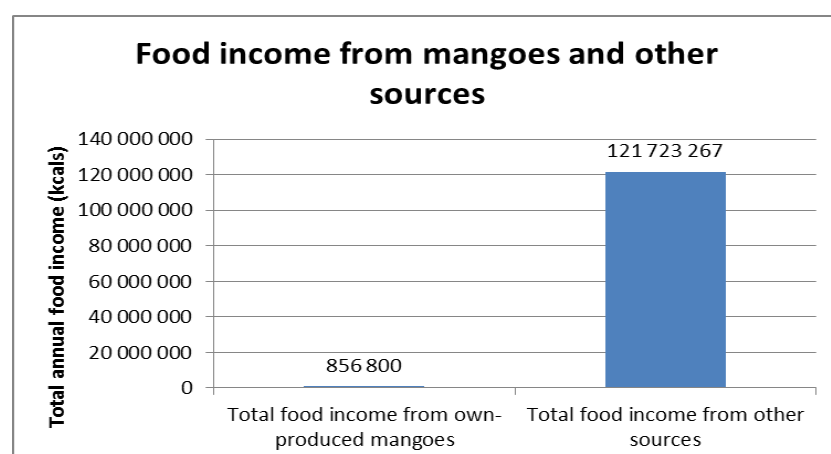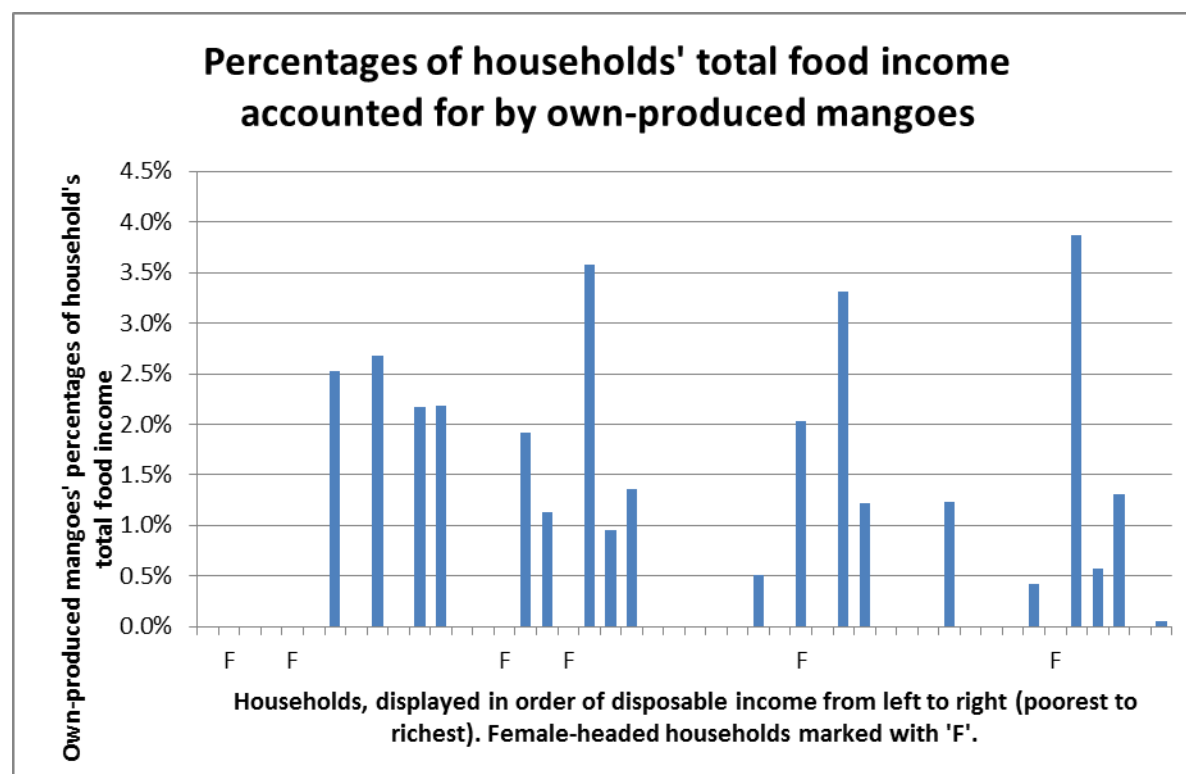
Fig 3.6.2 shows the percentage of households' total food income accounted for by own-produced mangoes. Note that, according to the survey data, only one female headed household is currently producing and consuming its own mangoes.

Fig 3.6.2 Percentage of total food income (Kcals) from own-produced mangoes

Percentages of households' total food income accounted for by own-produced mangoes

Although the food energy value of mangoes is minimal (their main value is as a cash crop: see Table 3.3 and Fig 3.10.1 below)they are an important source of vitamin A, vitamin C and other micronutrients for households in these communities.

3.1.4. Sources of Cash Income (MK)

Figure 3.7 shows household income produced or received as cash (MK) by the household, classified by income source (crops, livestock, employment paid as cash, wild food or cash transfers). Households are shown in order of household disposable income.

Figure 3.7: Cash Income per Adult Equivalent in MK by Household (arrows mark non-beneficiary households)
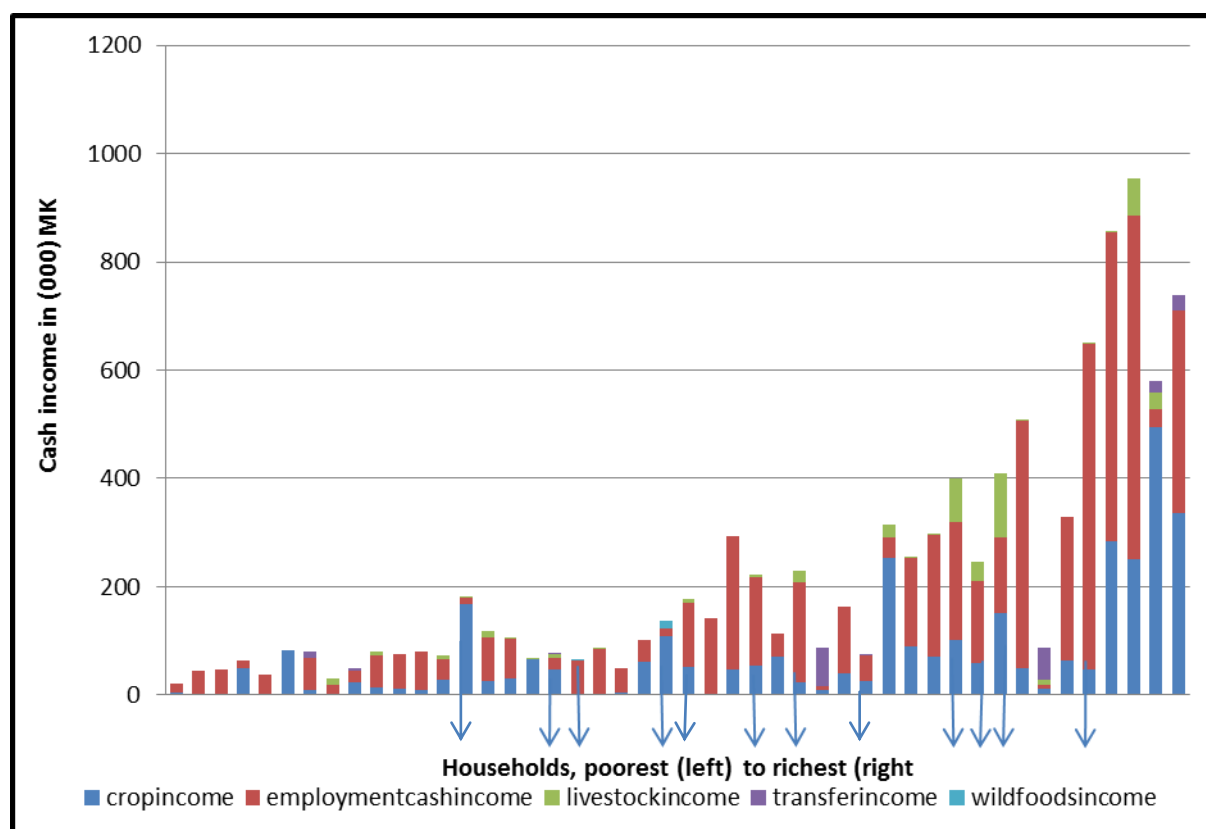

Figure 3.7 indicates employment provides a higher proportion of cash income than any other type of income source in the village. Employment income includes both agricultural and non-agricultural activities. Figure 3.8 below presents the summary of these findings.

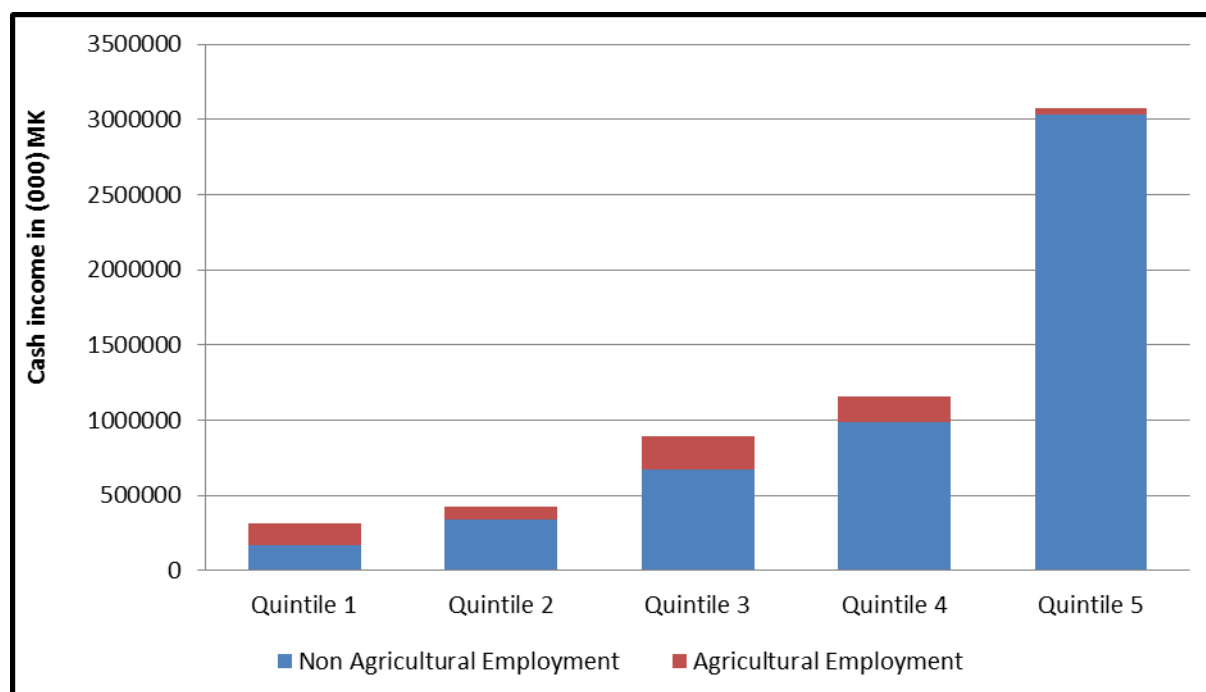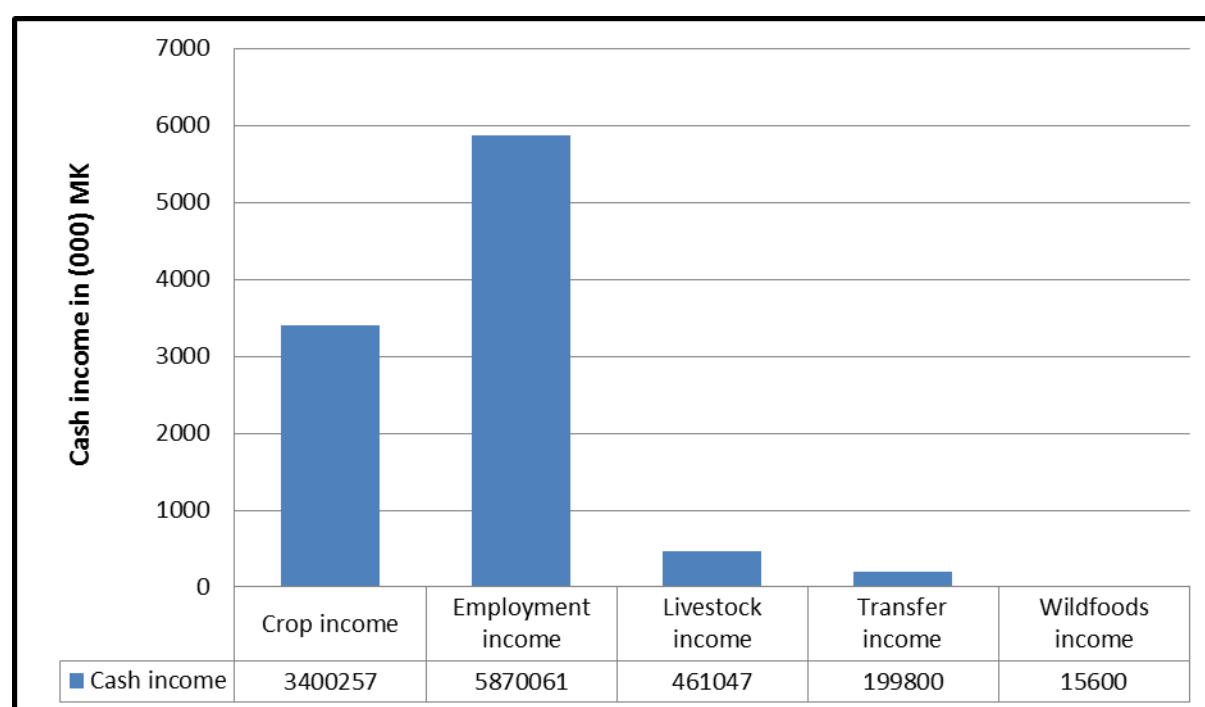**Figure 3.8: Cash Income per Adult Equivalent in MK from agricultural and non-agricultural Employment**

Figure 3.8 indicates that employment from off farm activitiesl contributed a large proportion in all income quintiles. Over all, cash from off farm employment was 89 percent. In quintile one agricultural employment contributed a large proportion, 86 percent. In quintile two, three four and five the contribution of agricultural employment to was 25, 34, 17 and 2 percent respectively. The findings are summarized in Table 3.2 below.

Table 3.2: Proportion of Income from Agricultural to Non Agricultural Employment

Quintile (Poorest to Richest)	Total Non-Agricultural Employment (MK)	Total Agricultural Employment (MK)	Agricultural to Non Agricultural Income in Percentage
Quintile 1	170,000	145,700	86
Quintile 2	338,830	84,633	25
Quintile 3	666,948	228,050	34
Quintile 4	987,200	170,000	17
Quintile 5	3,032,700	46,000	1.5

Non-agricultural employment for poorer households includes bicycle taxi, brick making, brick selling, selling local cakes, mat weaving etc. Non-agricultural employment for the better off includes selling groceries, construction work, salaried work like driver and bicycle hire. Major agricultural employment includes land clearing, weeding, ridging and cotton spraying

Figure 3.9: Total Cash Income per Adult Equivalent in Malawi Kwacha

	Crop income	Employment income	Livestock income	Transfer income	Wildfoods income
■ Cash income	3400257	5870061	461047	199800	15600

The households' total cash income was mostly sourced through employment in both agricultural and non-agricultural activities in the study area[11]. Crop income ranks second with crops such as cotton, maize and groundnuts being most important. Livestock income also contributes to the overall cash income followed by transfers which were not common in the area. Wild foods contribute the smallest proportion of cash income.

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[11] Types of off farm work available in the study area are included in Appendix, table V II

Figure 3.10: Main Cash Crop Income per Adult Equivalent in MK by household

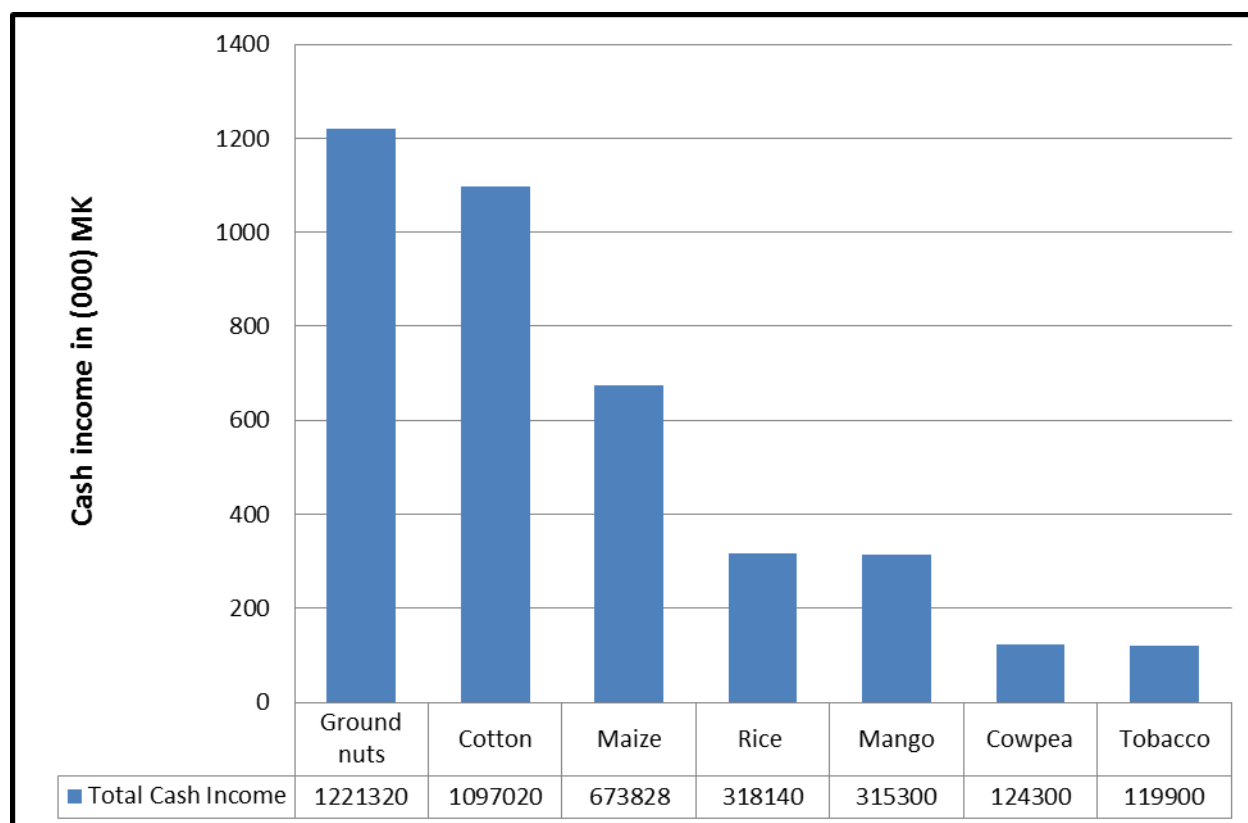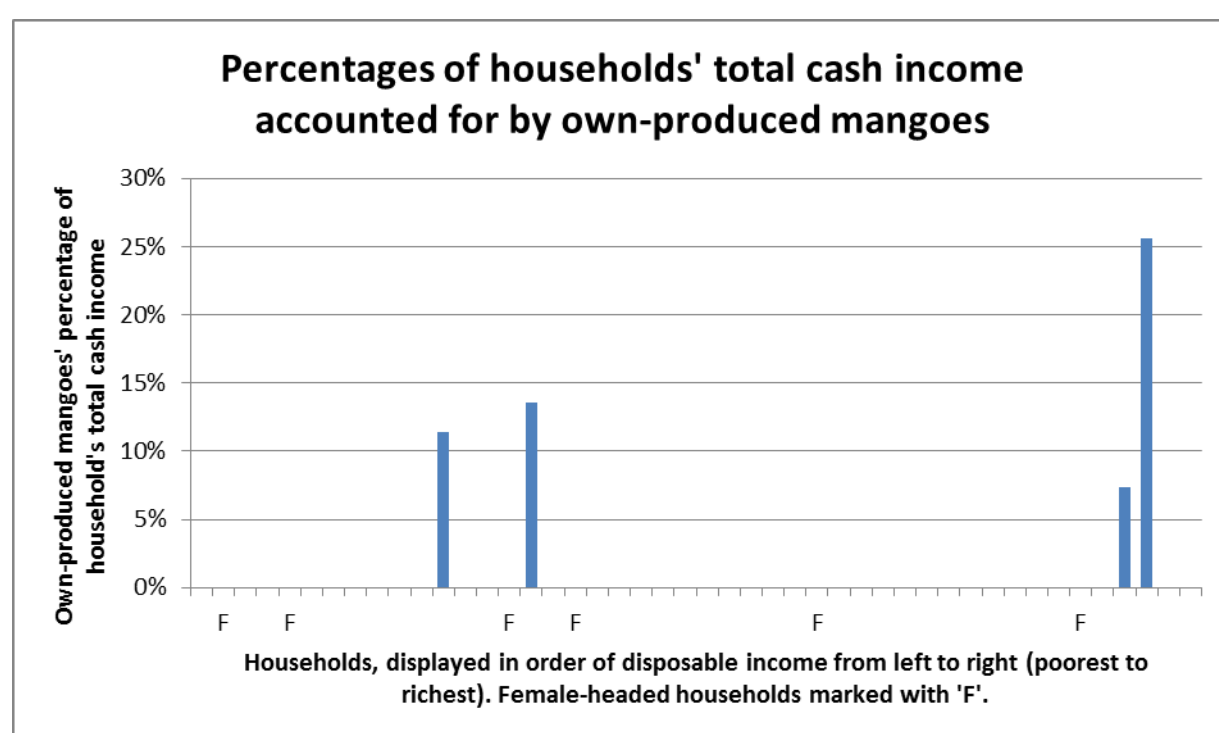|	Ground nuts	Cotton	Maize	Rice	Mango	Cowpea	Tobacco
■ Total Cash Income	1221320	1097020	673828	318140	315300	124300	119900

Figure 3.10 presents main cash crops by order of importance. From the figure it can be seen that income from groundnuts was significantly higher than income from other sources, with cotton coming second then maize. Total income from mangoes is higher than income from tobacco. The table below presents these findings by income quintile.

Table 3.3: Main Cash Crops Income per Adult Equivalent in MK by quintile

Poorest to Richest	Groundnut	Maize	Cotton	Rice	Mango	Cowpea	Tobacco
Quintile 1	11,870	55,470	88,620	0	9,000	18,200	0
Quintile 2	29,400	17,600	150,950	82,390	49,500	15,500	0
Quintile 3	118,960	100,290	59,750	66,350	0	6,500	0
Quintile 4	150,288	236,748	164,500	90,650	6,300	22,500	0
Quintile 5	91,275	263,720	633,200	78,750	250,500	61,600	119,900

Table 3.3 shows that cash income from ground nuts was highest in quintile four and lowest in quintile one. This indicates that ground nuts cash income is not the most important cash crop among the wealthiest households in the village. Maize, cotton, mango, cowpea and tobacco cash income was highest in quintile five. Tobacco was cultivated by quintile five only.

Fig 3.10.1 Proportion of total cash income from sale of own-produced mangoes

Percentages of households' total cash income accounted for by own-produced mangoes

CONCLUSION

The purpose of the baseline survey was to collect and analyse information that will assist in implementing, monitoring and evaluating the Mango project. The sites randomly selected for the study were within ''Northern Cotton and Maize production zone'' and ''Lakeside Agro-Fishing zone,'' Salima district. Data was collected from all households in Mfitiziyenderana village under the Lakeside agro-fishing livelihood zone, where all households were beneficiaries. In the Northern cotton and maize production zone three whole village studies were carried out (Mnkhono, Kuseni and Kuchiswe), where the population included both beneficiaries and non-beneficiaries.

The zone has a number of projects focusing on agriculture and livelihood support systems, with most current projects sponsored by NGOs. Maize, cotton, rice and local ground nuts were grown in Mfitiziyenderana village. Tobacco was not grown in the village. Maize, cotton, tobacco and local ground nuts among other crops were grown in Mnkhomo, Kuseni and Kuchiswe villages. In all villages maize is the main staple food. However, conditions in the northern cotton and maize production zone were less favourable to mango production than in Mfitiziyenderana village

The majority of households interviewed in the study area could purchase essential non-food needs from the income remaining after food energy requirements were met. Only 1 household in Mfitiziyenderana and 3 households from the other three villages fell below the standard of living threshold. Employment contributes a large proportion of cash income in the study area. The total income obtained from crop sales came second, with a far smaller proportion of cash income derived from livestock trading, followed by wild foods (mainly fishing).

In both zones households described climate change as the main challenge they face. During key infomant interviews in the Lakeside agrofishing zone interviewees commented on significant changes in livelihood actvities in this area. Fishing used to contribute a large proportion of household income but currently the lake is drying and the stock of fish has decreased in the lake. In the northern cottom and maize production area low rainfall and extensive soil erosion caused by deforestation was reported as a major challenge for crop production.