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(HEA) Baseline Report

Livelihoods Zoning and Rural Wealth Ranking Assessment

Mbala and Luwingu Districts - Northern Province, Zambia

**Irish Aid Local Development Programme
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LIST OF ACRONYMS

DDCC	District Development Coordinating Committee
DMM	Disaster Mitigation and Management
CAMFED	Campaign for Female Education
EfD	Evidence for Development
FAWEZA	Forum for African Women Educationalists of Zambia
FEWS NET	Famine Early Warning Systems Network
FRA	Food Reserve Agency
HEA	Household Economy Approach
IHM	Individual Household Method
LZ	Livelihood Zone
NGO	Non-governmental organization
PPAZ	Planned Parenthood Association
SHA	Self Help Africa
SLA	Sustainable Livelihoods Approach
SWAAZ	Society for Women and AIDS in ZAMBIA
UK	United Kingdom
ZNWL	Zambia National Women's Lobby

1.0 INTRODUCTION

The baseline livelihood assessments and wealth ranking aimed at understanding of the rural livelihood system in Mbala and Luwingu districts, Northern Province of Zambia. The assessments describe how a livelihood functions during a normal year, thereby providing a base with which to compare and measure any new threats to the population's food security, as well as to inform recovery and development programming and policy. The findings of the assessment presented in this report include a thorough assessment of the two districts' livelihood systems based on a livelihood zoning exercise, it includes a description of seasonality and markets, a summary of livelihood assets and various sectors, wealth group breakdowns for each of the identified livelihood zones an analysis of household productive assets, an examination of risk and vulnerability factors and recommendations identifying opportunities for response.

The main goal of this assessment is to identify and document the two districts' livelihood systems, using a Livelihoods Analysis framework, which embraces both a Sustainable Livelihoods and Household Economy Approach to the analysis of livelihood assets and livelihood strategies. The analysis also explores gender issues and identifies potential risk factors that influence the population's vulnerability to acute and long-term food insecurity. In addition, the information provided in this assessment will help establish a better system of implementing and monitoring food security in the two districts and will improve future advocacy and programming.

2.0 METHODOLOGY

This study applies the DFID Baseline Livelihood Analysis framework for analysis. The analysis draws on the Household Economy Approach (HEA), combined with the Sustainable Livelihoods Approach (SLA) for understanding livelihoods. The Household Economy Approach (HEA), a rapid food security and livelihood analysis approach for the field-based livelihood information collection and analysis, was used for livelihood zoning, determining the wealth breakdown and profiling of livelihood strategies. A Sustainable Livelihood Approach (SLA) was used for profiling rural livelihood assets, drawing on secondary information and analysis. In addition, data from key informants and Agriculture departments was analysed to identify seasonal and long-term sector and market trends.

2.1 Baseline Livelihood Analysis

The Household Economy Approach (HEA) was used for collecting and evaluating field-based livelihood information to identify livelihood zones, and for the rural wealth group breakdown, an historical timeline, a seasonal calendar of main events and activities, and the profiling of livelihood strategies. This includes sources of food and cash income, main productive assets, main food and cash crops and household coping strategies.

Livelihood strategies are defined as the behavioural choices and strategies adopted by people to make a living. They are the combination of activities that people or households engage in to achieve their livelihood goals. Livelihood strategies primarily include how people access food and income. They also cover how people manage and preserve assets and how they respond to shocks or coping strategies employed.

A livelihood zone is an area or region in which the majority of the population shares a similar means of living. Different populations adopt different approaches for survival depending on their ecological environment, culture and available assets. Some depend on livestock or fishing to maintain a living, while others depend primarily on agricultural production. There are many factors that determine how a population constructs and maintains its livelihood. Factors such as the amount of rainfall, soil type and market access were assessed to determine whether an area is suitable for crop production, while factors such as crops grown, farming system, productive assets and main types of employment were assessed in defining a rural economy.

HEA practice shows that the way in which households obtain their food and non-food items and the they have capital to buy these things, gives a basic understanding of how people survive and how their household economy operates. This basic assessment tells us whether a given population is economically insecure and provides baseline information with which to compare and measure any new threat or shock to food and non-food item access. In a rural setting, it is more useful to focus on how different wealth groups (Poor, Middle and Better-off) obtain access to food and income. This is because within rural areas members of a particular wealth group generally share the same level of food security and a similar limited set of options for obtaining food and cash income, employing many of the same strategies throughout the year. The relative homogeneity of rural livelihoods makes enquiry into sources of food and cash income the most efficient way to generate a rapid understanding of food security in a rural context.

2.2 The study

A baseline planning and training workshop was held in Kasama (Northern Provincecentre) on September 3-4, with refresher trainings in Mbala and Luwingu districts, attended by district-Government researchers and the SHA resource team. The livelihood and wealth ranking baseline team in Zambia planned and finalized all logistics for the Mbala and Luwingu assessment from September 5 to 11 and September 12 to 18, 2013 respectively. Baseline field tools were updated and finalized in consultation with the team leader (EfD Associate) and assistant leader-SHA Programme Coordinator for Sustainable Agriculture and Rural Livelihoods from September 19-20.

2.3 Livelihood Zoning Exercise

A stakeholders' workshop was held on September 5. The purpose of the workshop was to introduce participants to the Household Economy Approach, focusing on livelihoods zoning; a livelihood zone map was built up by using the knowledge and judgment of the participants, who provided the essential information based on their understanding of the exercise. Available maps and documentation were used where necessary. In conducting the livelihood zoning, the following were discussed: the boundaries of the livelihood zone and key features, including main roads, markets, residential areas, farming land, health centres, schools, towns, mountains, forest, rivers, dams and wet lands. The next step involved establishing rainfall patterns and soil types. Thereafter the income sources, including main crops grown, period harvested and where, livestock kept and where, employment, wild foods and any government or NGOs programmes in the zone including their objectives and coverage were discussed. This includes feeding programs in the area. Finally the main hazards facing people in the zone were discussed. Following this exercise, a review of relevant available data from secondary sources was carried out by the field team and stakeholders. The review of documentation was a continuous process given that certain documents, including rainfall data, were not easily available at the district level. The field teams worked hand in hand with stakeholders searching for documentation to add to the information offered by key informants.

After the workshop the team continued to verify the data in consultation with local stakeholders and key stakeholders who were not present in the workshop but familiar with the district. The data was verified with the Agricultural Development Officers, Planning officers, Agricultural and marketing officers, Fisheries officers and Forest officers. In addition, a full day was spent visiting villages in different parts of Mbala district and all the livelihood zones in Luwingu. The purpose of the visit was to make appointments with the village leaders for a wealth group breakdown exercise and to verify the livelihoods map through physical observation and discussion with community leaders.

In Mbala one livelihood zone, given the name 'Mbala-Maize, Cassava and Bean Zone', was identified. In Luwingu three livelihood zones were identified namely: i) 'Fish pond fishing, Cassava and Agricultural trade zone', ii) 'W/E Cassava, Ground nuts and Rice zone' and iii) 'Lake fishing, Cassava and Irrigated vegetable zone'.

2.4 Wealth Ranking

Wealth group fieldwork in Mbala district was conducted from September 9 to 11. The field team first met with senior and local authorities at the community level to explain the purpose of the study and to obtain consent while confirming the basic economic overview of the livelihood zones. Next, the team met with village chairpersons to obtain information on the local economy.

In order to obtain a wealth group breakdown for the identified livelihood zone, interviews were conducted with 15 groups of key informants from three different administrative wards of the district (5 groups in each ward). Each group had 8 to 12 key informants. The five groups were “Very Poor”, “Poor”, “Middle”, “Better-off” and a separate group comprised of key informants from all categories provided livelihood assets and market data. The participants in these interviews included ordinary members of the community, as well as village elders and zone leaders. Efforts were made to include both men and women in these groups. In total three of 17 wards in Mbala district: Intala, Usuzu and Lapisya were interviewed.

In Luwingu three administrative wards were surveyed, one from each identified livelihood zone. The surveyed wards included; Mufili (in Fish pond fishing, maize and trade zone), Bwalinde (in the “Lake fishing, cassava and irrigated vegetable zone”) and Chifwele in the (“W/E Cassava, Ground nuts and Rice zone”) in which a total of 175 key informants were interviewed, giving a mean of 59 key informants from each ward. After data had been collected in the field a preliminary review and discussions were held at the end of each day. Finally, to ensure capacity building, data entry, cleaning and evaluation were conducted with the SHA and EfD assessment team.

The data in this report refers to the most recent normal year’s consumption cycle: from the beginning of the rain fed green maize harvest to the beginning of the next. The wealth breakdown between households shows how households at different wealth levels acquire food, how they earn the cash, and on what they basically spend their cash. The wealth group breakdowns shown are according to villagers’ own ideas of key elements of wealth. The breakdowns are four-way: “very poor” “poor,” “middle,” and “better off.” This serves to indicate key differences between households, and allow a view of the finer differences. In the identified zones, wealth groups are primarily defined by their main productive assets, which are usually livestock or land holdings. The populations rely upon farming and employment (mainly unskilled labour) to maintain a livelihood; therefore, rural wealth groups were categorized primarily by their asset levels.

2.5 Extended Livelihood Baseline Analysis

2.5.1 Livelihood Assets

A Sustainable Livelihood Approach (SLA) was used for profiling rural livelihood assets, drawing heavily on primary and secondary information and analysis. Livelihood assets outline the context which influences and, to a large degree, defines the options and constraints faced by households and individuals in their livelihood strategies. Assets do not only include those owned or controlled directly by households or individuals, but also publicly owned assets and intangible assets such as social support. SLA identifies five major categories of livelihood assets from the Sustainable Livelihoods Approach: Human Capital, Social Capital, Physical Capital, Financial Capital and Natural Capital. For each of these five types of capital, key indicators most relevant to the Zambia rural context were further defined to structure the analysis.

The five types of capital and associated indicators of analysis are:

Human Capital: Household Size and Composition, Health, Nutrition and Education

Social Capital: Remittances, Gifts, Rural-Rural Links and Rural-Rural Links

Physical Capital: Housing, Construction and Transportation, Road Infrastructure, Land and Livestock Holdings

Financial Capital: Capital Levels, Access to Loans and Debt Levels

Natural Capital: Water Sources, Energy Sources and Environmental Degradation.

To obtain information on a population's livelihood assets, the field team gathered and analysed both primary and secondary data, cross-checking secondary information with field survey data, as well as with SHA's field analyst's local knowledge and expertise. All secondary data sources are referenced.

2.5.2 Food Security and Nutrition Vulnerability Analysis

The assessment team conducted an analysis of the hazards and shocks to which the two districts' population are vulnerable. It identified the two districts' major hazards and shocks through community interviews and secondary data analysis. In risk-minimizing strategies, the population's main coping strategies for dealing with shocks was also identified. To regularly evaluate food security and vulnerability amongst rural populations, the Individual Household Method (IHM) developed by Evidence for Development, will be used. The IHM establishes a household's capacity to access basic food and locally defined non-food items necessary for survival and social inclusion within a given reference period. The IHM's measurement of a household's ability to meet minimum food energy requirements contributes to the assessment of malnutrition. Using the IHM, food and cash income levels of the study areas' households will continue to be assessed on a yearly basis to track any changes in access to food and cash income over the project period. A more detailed explanation of IHM methodology is found on Evidence for Development's website¹.

¹www.evidencefordevelopment.org

2.5.3 Market and Trade Analysis

In addition to profiling livelihood assets, the field team also profiled Mbala and Luwingu markets, analysing seasonal commodity availability, markets for own produced commodities and agricultural inputs procurement centre.

2.5.4 Gender Role in Livelihoods

Gender plays an important role in defining a population's livelihood strategies, particularly in relation to the allocation of household labour and the control of household resources. In order to assess gender roles in the two districts, gender specific questions were incorporated into baseline field tools. In addition to baseline field tools, data collection methods were also modified to be more gender sensitive. Women were included in all key informant focus group and wealth group interviews, comprising approximately 40 percent of the total number of people surveyed in Mbala and 37 percent in Luwingu.

Table 1: Gender Composition for Key Informant Interview

	Mbala		Luwingu	
	Male	Female	Male	Female
Key Informants	116	66	94	81
Better-off	37	12	25	9
Middle	28	19	21	16
Poor	27	22	26	27
Very Poor	23	14	22	29
Total Number Surveyed	182		175	

LIVELIHOOD ZONE (LZ) DESCRIPTION

3.1 MBALA-MAIZE, CASSAVA AND BEAN ZONE (MBALA DISTRICT)

3.1.1 Geographical Location

This LZ covers the whole of Mbala district. Mbala is one of 9 districts in the Northern Province of Zambia. The district shares the international boundary with the Republic of Tanzania, and shares districts boundaries with: Nakonde (in the East), Mungwi (in the Southeast), Kasama (in the South) and Mpulungu (in the West). Mbala district has municipal status. Geographically, Mbala is located between 30° 53' - 32° 15' East of the prime meridian and the latitude of between 8° 23' – 9° 39' South of the equator. The total land area of the district stands at 10,832 km². The main township is Mbala, which is located in the north-west of the district. The town of Mbala is situated 167 km north of Kasama provincial headquarters and approximately 40 km north of the Tanzanian border. The district has 17 administrative wards and 85 administrative zones. Mbala has an estimated population of 203,129 of which the majority are engaged in subsistence farming as their main source of livelihood and nutrition. The area falls within the category of high rainfall belts of the country. The area receives an annual rainfall of approximately 1200mm.

3.1.2 Soil Types

Lateritic soils (Alluvial) red in colour cover a wide area. The soils are highly leached and characterised by the following: low fertility, low soil pH, aluminium toxicity in some areas, and high phosphorous fixation in wood bound areas². Generally the Central and north-eastern parts are represented by the undifferentiated upper Katanga super group (plateau series). In the south-east basement are the igneous rocks covered by undifferentiated muva - lower Katanga beds and the plateaux series. The rest of the area is widely covered by alluvial deposits forming an almost continuous blanket that conceals the bed rock over large areas.

3.1.3 Farming System

The majority of farmers still practice shifting cultivation (Chitemene system) which degrades the land and promotes deforestation. The zone is a rich area for biodiversity, has fertile land potential for various types of crop and extensive idle land suitable for various developmental activities. Key informants indicated that there is good coordination between chiefs and their subjects, hence few disputes over land. Most of the land is used for hand cultivation.

² Source Mbala DSA, 2012

3.1.4 Most important food crops

Maize is the main staple food in this zone, cassava is the second. The third most important food crop is beans, followed by groundnuts and finger millet in the southern part of the zone. A number of other food crops are grown in the area, including sweet potatoes, sun flowers, vegetables, sorghum and bananas.

3.1.5 Crop Growing Period

Maize, commonly planted in November and harvested in June, has a long (145-180 days) growing period. Beans have a 90-130 day growing period. The short growing period combined with the long period of rainfall means that in Mbala beans are grown twice within the rainy season. The first period for beans is November to February and March. The second is March/February to June or early July. Millet has a 150-170 day growing period and is commonly planted in December and harvested in June. Cassava, commonly planted in June, has the longest growing period. The harvesting period for cassava depends on the decision of the household but is commonly harvested between one to three years. Depending on variety, a few households (mostly poor) plant cassava in December to reduce the food insecurity risk associated with a sole staple crop. Sunflower has a growing period of 135 -155 days depending on the variety and can be planted in December to January. Groundnuts have a 120–180 day growing period and are usually planted in November. Sorghum, planted in November/December is harvested in June. This information indicates that the growing period for the majority of crops is November to June in this livelihood zone.

3.1.6 Most important cash crops

Maize, beans and soybeans offered farmers more cash income. The area has potential for rice and sugarcane. However these are grown at limited scale. The other commonly grown cash crop capitalized on in the livelihood zone is finger millet, groundnuts and sunflowers.

3.1.7 Most important livestock

The area has small numbers of livestock per household. Donkeys, goats and pigs are common in the central and southern part of the zone while cattle dominate the northern part of the zone. Poultry were the most prevalent livestock owned by households across the zone. Utilisation of livestock for economic purposes is limited.

3.1.8 Household labour allocation

As is the case elsewhere in Africa, labour is a vital household asset among farm families in this LZ. Both men and women allocated their labour to agricultural activities. Household labour was common among farm households. Women participated in all agricultural labour from land clearing to transporting crops. Child labour was common in firewood fetching, water fetching, maize milling, planting and harvesting of crops. Young adults participated more in all farming activities and were more involved in petty trading and selling of dry fish, handicrafts, hoe making and transporting commodities piece work

3.1.9 Socio-economic characteristics of the households

The average household size in this LZ is 7. The land holding size of the surveyed area is 4 hectares with the majority of poor households owning less than 1 hectare of land. In some cases the poor households cultivate the wealthier households' land where the contract is based on the production attained (normally gets paid after production) or workers are allocated a portion of land as a payment for agricultural farming contracts. Across the zone average landholding size for the poor is 2 hectares.

3.1.10 Markets

Mbala market is one of the main markets in Northern Zambia, because of its geographical allocation and agricultural production. Mbala conducts significant trade in local and imported cereals, livestock, as well as non-food items. Market activity in Mbala tends to correlate strongly with seasonality and rainfall levels. Crop production and livestock conditions/availability are significant determinants of the district's economy. Because of the district's high level of bean production, Mbala's bean trade covers surrounding livelihood zones in Zambia's Northern Province, as well as parts of neighbouring Tanzania. The district's livestock trade is also considerable, though concentrated at one area (Chozhi) with cattle and goats exported via Tazara rail way around Chozhi area (South west of the zone) and to the neighbouring district Mpulungu and Tanzania trading centres. Traders in Mbala market also have strong trade links with Kasama's main market, as most districts' imported commodities originate from there.

A unique aspect of the district's market structure is that there are virtually no barriers to entry, so traders (both retailers and wholesalers) have an opportunity to conduct business with little constraint. In the villages, most of the better off significantly benefit from the town's economy. The zone has limited agricultural trade due to poor road networks and limited diversification of crops.

3.1.11 Cereal production and Trade

Mbala plays a significant role in Zambia's maize market, as it is one of the major maize belts. The main cereals traded in Mbala are maize and finger millet, common in the South East of Mbala. Cereals flow into Mbala market from the surrounding high potential agricultural areas, within the Northern Province. During a normal year when cereal production is high, cereal supplies are transported from Mbala to Kasama, and then from Kasama to Mesa. Cereal is also transported from Mbala to the nearest towns of Tanzania. Cereal prices in the district market are highest during the beginning of the wet seasons (November and December) and lowest during the beginning of the dry season (July to August) because crops are harvested during these periods they are sold until the end of the period.

In the zone the planting of green maize in wet lands is low, almost nil in most communities. Cereal markets were mainly within the administrative zone. Few households transport their commodities to the main town markets. The majority sold their produce to the Food Reserve Agency (FRA), traders in the village and at

community trading centres. Factors contributing to high prices during the wet season were low food availability in households leading to high demand of cereals. In addition, due to heavy rainfall road conditions are poor, making it difficult to access rural areas. This limited access to areas of cereal supply also contributes to the change in economic activities during this period. Cereal prices are generally lowest immediately following the harvests (July to August). During this period, large amounts of cereal are supplied to the market for the repayment of debts incurred during the wet season by low income-wealth groups.

3.1.12 Women and Food production and the Market

Women play an important role in the rural context. In addition to their daily household tasks, women take part in income earning activities through working for others and self-employment. During the reference year, almost 60 to 70 percent of the petty/small trade businesses in the zone were managed by women. In addition, approximately 85 percent of vegetable and fruits traders were women. Women constituted about 30 percent of the unskilled labour force across the zone. In general, they also control and manage household expenditures related to both essential and non-essential household items. Since the majority of self-employed women work within the vegetable and fruits sector, selling vegetables such as tomatoes, onions and garden green vegetables contributes to women's which is highest during the dry seasons, when tomato availability begins, and also at the onset of the rainy seasons, when supply of tomatoes in the district is lowest.

3.1.13 Livestock production and Trade

One of the major profitable businesses within the Chozi area, south east of Mbala is the livestock trade. Chozi serves as the main market for goats and other livestock because of its geographical position, being close to the rail way line and Tanzanian boarder. The second main market is Senga along Mbala-Kasama road, the main road in Mbala that connects Mbala and neighbouring districts. Cattle, sheep and goats are brought to the market on a daily basis. The volume of livestock supply varies with season and demand. Livestock are supplied from/to the surrounding districts within the Northern Province as well as to the neighbouring country, Tanzania. Supply and demand both peak during the periods of Ramadan and Christmas, especially for export quality cattle and goats. Similar to cereal supply, the volume of local quality livestock sales for domestic use is low during the rainy seasons and high during the dry seasons. The low availability of livestock for sale during the rainy seasons is due mostly to high levels of livestock selling during the dry season. Livestock are the major coping strategy for middle, better off and poor households rearing livestock, thereby increasing livestock sales during hazard years and hunger months. Sales of livestock are highest particularly at the onset of the dry seasons, when livestock conditions are best after having benefited from good pasture during the rainy seasons. Generally livestock trade is limited across the zone as most households have only a small number of livestock.

3.1.14 Labour Availability and Wage Rates

Day labour in this zone is performed by all wealth groups. Agricultural labour is mostly done by the poor, skilled labour is mostly by the better off and consists mainly of construction and brick moulding. Agricultural labour activity is highest during the wet seasons, when labour is needed in rural areas for cultivating and harvesting. The majority of the poor and poorest group perform agricultural labour within the village and in areas close to their village. During the dry seasons, agricultural labour opportunities are limited. The few opportunities for casual labour are mostly in construction and charcoal burning and selling; casual labour opportunities are also available in the transport sector (mostly in Mbala central), livestock herding and selling (mostly in Mbala South around Chozi area) and various petty trade sectors (across Mbala).

Wage rates for both men and women tend to correlate with levels of demand and therefore tend to be slightly higher during the dry seasons, when demand for skilled labour (such as construction) mainly practised by the two top wealth groups is highest. Agricultural labour wage rates have remained fairly steady since 2009 in this LZ with insignificant changes. During the reference year, labour wage indicated that the population's purchasing power was highest during the months of July-September. This was due mostly to the low prices of main food during those months. Also contributing to this was the slight rise in wage rates during August due to low supply of labour. These are months associated with high expenses. Expenditures were mainly for non-food items such as clothes, beer and school costs. In the district, primary and secondary schools usually commence in September.

3.1.15 Water Availability

Water availability is generally highest during the rainy season and at average levels immediately following the wet season. It is typically lowest during the dry seasons; however, this reference year (March '10-February '11) in Mbala, water availability was above average during the dry seasons due to good rain and wet seasonal rains. Most Mbala farmers depend on rain fed farming. Water deliverers and shallow wells for farming were not utilised. Piped water is typically only accessible in the urban area of the district. In the community the main source of drinking water is boreholes and springs.

3.1.16 Education

The district has 103 primary schools, four secondary schools and 32 community schools. The highest number of schools was noted in Intala and Chela wards (10 in each). Chozi and Malamba had the lowest number of primary schools (3 in each). Two secondary schools were allocated in Chozi, one in Motomoto (near Mbala town), and one in Chela. Luwandi ward has the largest number of community schools (6). Ipemba and Chozi are the two wards with no community schools. There are school feeding programs in Mbala.

3.1.17 Food Insecurity

Levels of food insecurity are highest for the rural community during the rainy seasons, especially during the months of March-June and October-January, when cereal and livestock production levels are at their lowest. Travel to town centres is difficult at this time, due to agricultural labour demands and poor road conditions caused by heavy rainfall. Because rural communities and urban people have a symbiotic relationship, during this period, decreased business interaction between the two seriously affects both populations. For the rural community, decreased trade with urban communities during the rainy season results in lowered cash income and reduced purchasing power. The decline in purchasing power, combined with reduced cereal and livestock availability and increased prices, significantly reduces food access among the district's rural population. This is a particular problem in Mbala-central where rural populations rely on trade with the town and a variety of employment opportunities such as selling charcoal, construction, carpentry and piece work.

On average poor households' own food lasts five months. The situation is better in the Northern part of the district where households consume both maize and cassava as the main staple food with the poor relying more on cassava which has limited markets. In the central and Southern part of the zone, households sell a large proportion of their maize and have less stock to fall back on. On average in the Southern part of the zone in a normal year, food stocks only last five months for the lower income group, although they produce enough for the whole year. The households sell their food commodities, then purchase from the market at a slightly higher buying price. Key informants (group of mixed wealth groups) explained that selling produce after the harvest is traditional in the area and not strongly linked to expenses and household non-food needs. However the poor group argued that poor households tend to sell maize to repay loans incurred during hunger periods before harvesting maize and also to satisfy their non-food needs like clothes, education, health and social costs.

Nutritional monitoring indicated that high increases in acute malnutrition have been recorded throughout Northern Zambia during the long dry and partially wet seasons of the past six years. This is mostly attributed to the increase in hunger due to heavy rainfall followed by dry spells in most communities. During the wet season water-borne diseases, such as diarrhoea are at their peak during this time. Diarrhoea levels peak during the wet seasons, particularly when there is serious run off of water thereby contaminating wells which are the main sources of drinking water. High levels of diarrhoea during the dry seasons is mostly attributed to an increase in bacterial infections caused by increased consumption of contaminated water and food.

3.1.18 Government and NGOs projects in the area

Table 2: Government and NGOs projects in the area

Institution	Objectives/activities	Beneficiaries
Department of Community Development mother and child care	Improve the well-being of communities through their participation in sustainable human development focused on sustainable development.	Communities and vulnerable households
Department of Social Welfare	Administration of juvenile delinquency, family and child welfare and running of the Public Welfare Assistance Scheme for assisting the vulnerable and destitute, as well as the Community Bursary Scheme for supporting schoolchildren from poor families, provide school feeding programs and pilot social cash transfer	The poor and vulnerable
Department of Youth Development	Empower young out-of-school people economically for employment creation through the Constituency Youth Development Fund and community-based youth projects	Out-of-school youths
Department of water Affairs	Building of infrastructure and other contractual civil engineering works, as well as regulating the use and development of water resources, flood control and drought management measures, etc.	Communities
District councils	Responsible for appropriate water and sanitation, public health, maintenance of roads and drainage	District residents
District Health	Promote health through reducing fatality rates from diseases such as malaria, reduce malnutrition and incidence of sexually transmitted illnesses (STI)/HIV/AIDS/TB, promote maternal health	Communities
District HIV/AIDS Task Force	Information generation and development; interpreting the implications of HIV/AIDS projects in development; and mainstreaming HIV/AIDS in health packages.	All residents
District Development Coordinating Committee (DDCC)	Coordination of district development through providing an institutional framework for the coordinated planning, implementation, monitoring and evaluation of district development projects and programmes	Communities
Forestry Department	Promote sustainable forest management and utilization through the active participation of all stakeholders with a view to obtaining a sustainable forest reserve, and ensure sustainable supply of wood and non-wood forest products and services, while ensuring protection and maintenance of biodiversity	Communities, those living near forest reserves
Food Reserve Agency (FRA)	crop marketing in remote areas, and maintaining strategic food reserves	Communities
Ministry of Agriculture and livestock	Promotion of agricultural development providing research and extension services in crop production, animal production and health, fisheries and cooperatives and marketing, and disseminating information through its information wing NAIS	Agricultural communities
Ministry of Education	Provision of education at all levels	Communities
Office of the District Administrator	Administer the districts and coordinate all development activities, including the District Planning Unit	Communities
District HIV/AIDS Task Force	As above, but at the district level	All residents
Households In Distress	Crop production for orphan centres by use of animal draft power.	Vulnerable communities
World Vision Zambia	Area development projects encompassing agriculture, health, education, child sponsorship, HIV/AIDS and water and sanitation	Vulnerable in society
RCZ Integrated Project	Promotion of IGAs and livelihoods for vulnerable people in Kaka and Kela area	PLWHA

3.1.20 Hazards Faced in the Maize, Cassava and Bean Zone

Mbala district has experienced periodic heavy rains in recent years. Despite heavy rainfall, the district has good drainage systems so is relatively unaffected by the minor flooding that has occurred. Natural calamities such as floods and dry spells, the lack of a decentralization policy for land and illegal immigration has significantly affected the rural residents

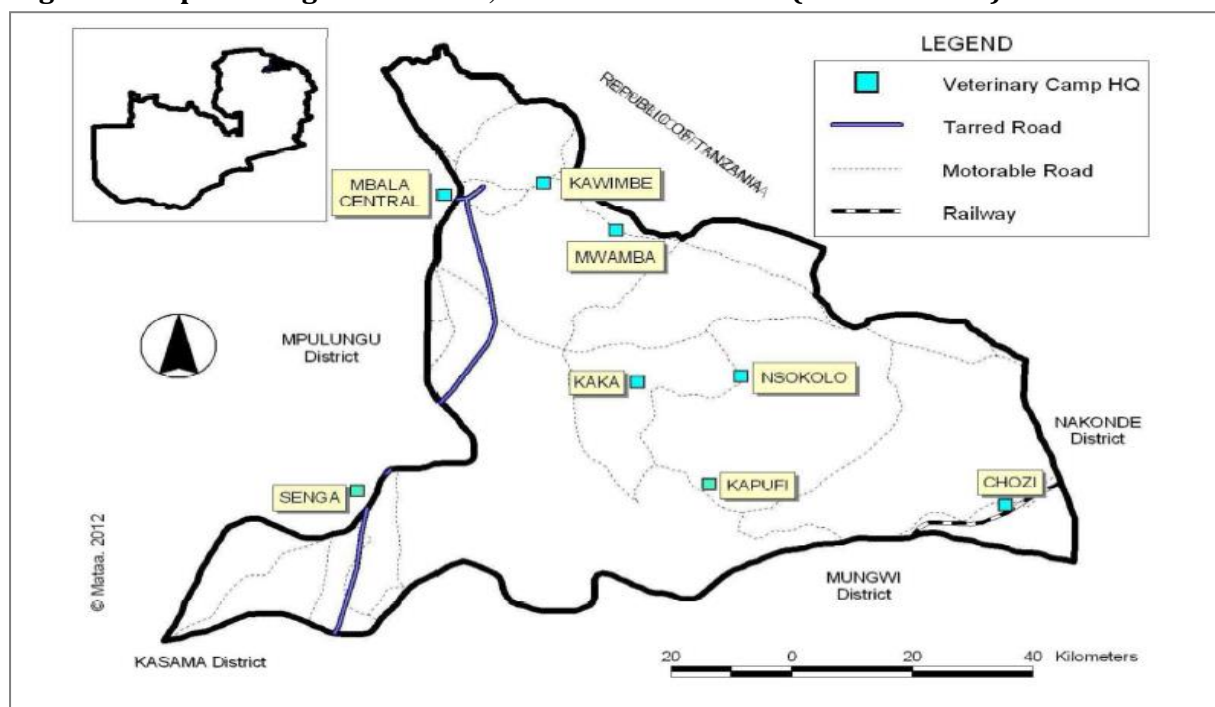
3.1.21 Response Strategies

The strategies vary by wealth group. The most common response strategies in this zone include reduction of meals, collection of wild food and non-food items of expenditure for poor households, selling of firewood and charcoal to urban residents and along the main roads for middle households and sale of livestock for better off households.

3.1.22 Mbala Roads

Mbala is a potential area for business because of the availability of Tazara railway crossing the South West of the district. The railway links towns' in Zambia and Tanzania. Chozi is one of the areas that has directly benefited from the rail way through the selling of livestock and other commodities. However, the district has only one tarred road (the Mbala-Kasama road), linking Mbala to the neighbouring districts. Other roads in Mbala are gravel roads. During the moderate rain fall season most roads are passable only by four wheel drive vehicles. The poor road conditions significantly reduce the market potential of this zone. Figure 1, presents map showing Mbala district and roads present in Mbala.

Figure 1: Map showing Mbala-maize, cassava and bean zone (Mbala district)



Source: Source Mbala DSA, 2012

3.2 LUWINGU

3.2.1 Geographical Location and Demography

Luwingu District is one of the 9 districts in the Northern Province of Zambia. It is situated on the western part and is surrounded by 9 districts. The district is bordered by Mwense and Mesa in the west, Mpika in the south east, Samfya and Chilubi in the south, Kawambwa and Mporokoso in the north, while Kasama in the east. Luwingu District was established in 1906. It lies about 165km west of Kasama with the human population estimated at 134, 426 distributed across an area of 8,892km². It is 859km from Lusaka, the Capital City of Zambia. The district is divided into 5 blocks which are further divided into 16 camps. The district has 25,563 households. Of the 134,426 population 66,676 are males and 67,750 female. 39percent are above 18 years of age.

3.2.2 Climate

Luwingu district experiences a warm tropical Climate with adequate rainfall above 1058.3mm from November to April. Generally during the month of May to July, it is fairly cold with temperatures ranging from 8° - 22 ° C. From August to October it is usually cool-warm, humid with partial rainfall at times with average temperature ranging from 21° C to 24° C. The low or modified low temperatures are mainly due to high attitude and the area being a watershed. Streams, lagoons, swamps and the lake modified temperature in the low land. The conditions are ideal for crops, livestock and fish farming.

3.2.3 Vegetation

The District's vegetation consist of ninety per cent savannah woodland on the highland and part of the flat land. This consists of scattered, thick Miombo forest with shrubs and grass undergrowth. The remaining ten per cent in the southern area consists of swamps and dambos with scattered trees. The swamps and dambos are suitable for rice cultivation. The predominant natural trees found in the district are: Jubernadia Globiflora (Mpasa), Brachystegia Spiliformis (Muputu), Brachystegia Longefolia (Muombo), Brachystegia Bhoemii (Musamba), Brachystegia Floribunda (Musompa), Marguesia Marcrourea (Musenshi), and Ucapaca species (Musuku), of which some are major sources of wild food.

3.2.4 Hydrology

The District is endowed with abundant water form streams, rivers, lagoons, swamps, dambos and lakes. Most streams are perennial with some major rivers being Lupososhi, Lukutu, Luena, Lufubu, Mwelawamangu, Mufili, Mulalashi, Katilye, and Munshinga. Besides these rivers are two Lagoons in the district, namely Mutondo area Kabishi and Katilye Lagoons. In addition to the Lagoons is a small portion of about 5000m² of Lake Bangweulu which lies further south of Luwingu District.

Table 3: Average District Rainfall Data for Mbala (2011)

MONTH	RAINDAYS	RAINFALL(mm)	Cumulative Rainfall(mm)
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January	19	162.4	162.4
February	18	334.6	497
March	10	219	716.1
October	3	9	725.1
November	16	196.5	921.6
December	14	136.7	1058.3

Source: Source Luwingu DSA, 2012

3.2.7 Geographical Location and Demography

Luwingu District is one of the 9 districts in the Northern Province of Zambia. It is situated in the western part and is surrounded by 8 districts. The district is bordered by Mwense and Mesa in the west, Mpika in the south east, Samfya and Chilubi in the south, Kawambwa and Mporokoso in the north, and Kasama in the east. Luwingu District was established in 1906. It lies about 165km west of Kasama with the human population estimated at 134,426. The surface area is 8,892km. It is situated 859km from Lusaka, the capital of Zambia. The district is divided into 5 blocks which are further divided into 16 camps. The district has 25,563 households (Luwingu DSA, 2012). Of the total population, 66,676 are males and 67,750 female. (39 percent are over 18 years).

3.2.8 Health

The District has ten health centres. Among other health centre activities they are responsible for the provision of wellbeing services, preventive and curative services, and links with the DHMT and monitoring and evaluation of community health programmes. The Health Centres are the first contact in the formal health care system.

3.2.9 Telecommunication

The main telecommunication providers are: Zambia Telecommunication Company (Zamtel), Airtel and MTN which provide mobile and internet telecommunication services in the district. Communications plays a vital role in the socio-economic development of a district. In this district, Zamtel provides both landlines and cellular networks, while Airtel Zambia and MTN provide the cellular communication system. In the district there is the Zambia Information and Broadcasting Services which is responsible for covering district news and dissemination of information. A large part of Luwingu was noted as having poor mobile networks and limited radio coverage. Most parts have reception of Zambia radio 1 only hence inhibiting access to information including production and market information.

3.3 CHARACTERISTICS OF LUWINGU LIVELIHOOD ZONES

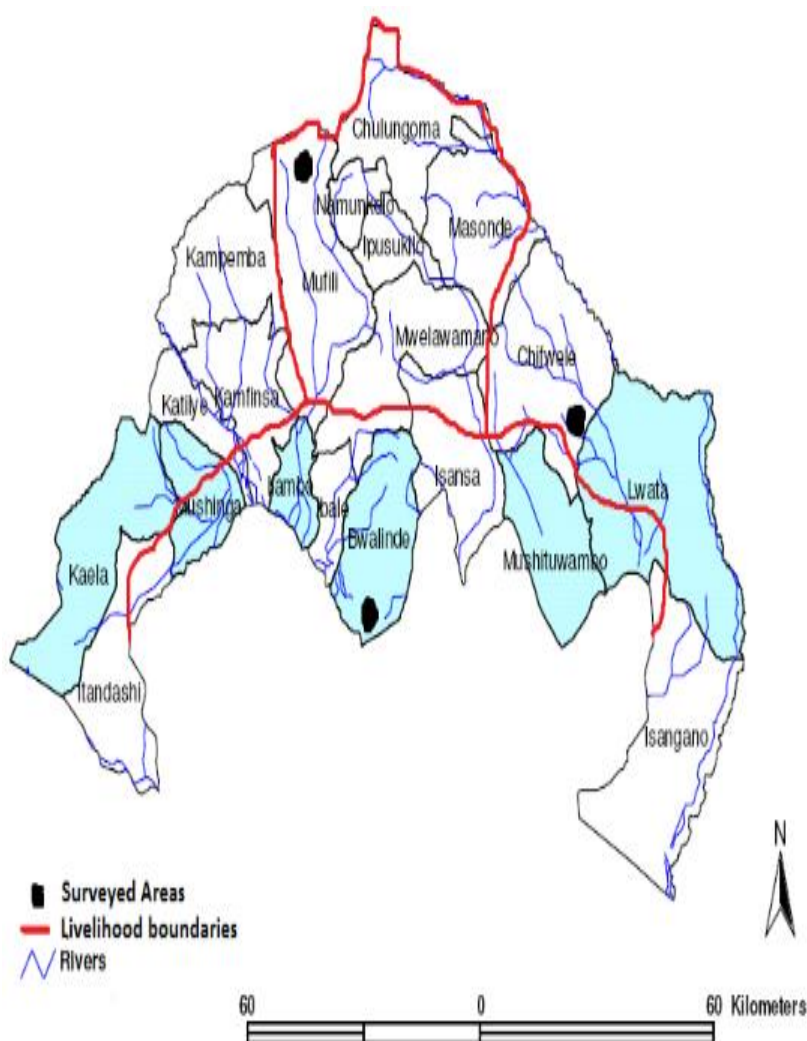
Fish pond fishing, Cassava and Agricultural trade zone

W/E Cassava, Ground nuts and Rice zone

Lake fishing, Cassava and Irrigated vegetable zone

3.3.1 Topography

The “Fish pond fishing, Cassava and Agricultural trade zone” covers the north and central part of Luwingu, and is situated on the highland at an altitude of 1200m and 1500m above sea level. The “W/E Cassava, Ground nuts and Rice zone” lies to the western and east of the district, and the “Lake fishing, Cassava and Irrigated vegetable zone” slopes towards the flat land which ranges from 1200m to 900m above sea level. In the “Lake fishing, Cassava and Irrigated vegetable zone” swamps and dambos are extensive, with scattered trees. The “Fish pond fishing, Cassava and Agricultural trade zone” covers the district’s central business area and is on the watershed from which most rivers in the district have their sources.



3.3.2 Soil Types

The zones have different types of soils; the quality varies from place to place. Generally most of the soils found in Luwingu district are acidic and require liming for optimum crop yield. The “Fish pond fishing, Cassava and Agricultural trade zone” soils range from strongly acidic red brown clay to loam soil with clay to fine loamy top soils derived from acidic parent rocks. “Lake fishing, Cassava and Irrigated vegetable zone” soils are sandy, pale yellow brown, very acidic in humus content but able to retain moisture for a long time. Around the “W/E Cassava, Ground nuts and Rice zone” are lagoons and along most rivers are the dambos with the soils ranging from alluvial to sands. Most of these areas are good for sugar cane and rice growing.

3.3.3 Socio-economic characteristics of the households

Household size ranged from 6 in *“Fish pond fishing, Cassava and Agricultural trade zone”* to 8 in *“Lake fishing, Cassava and Irrigated vegetable zone”* and *“W/E Cassava, Ground nuts and Rice zone”* with a mean of 7 persons per household across the district. The land holding size of the surveyed wealth groups ranged from 1 hectare to 3 hectares in the *“Fish pond fishing, Cassava and Agricultural trade zone”* to 0.2 to 7 hectares in *“W/E Cassava, Ground nuts and Rice zone”* and 0.4 to more than 7 hectares in *“Lake fishing, Cassava and Irrigated vegetable zone”* with a mean of 3 hectares across the district. The number of years that the rural-heads of households spent in school ranged from primary to tertiary with the majority spending 9 years in school in *“Fish pond fishing, Cassava and Agricultural trade zone”* to 7 years *“Lake fishing, Cassava and Irrigated vegetable zone”* and *“W/E Cassava, Ground nuts and Rice zone”* with mean of 8 years across the zones, implying limited formal educational attainment.

3.3.4 Primary activities of households

Picture showing irrigated vegetable farming and Banana plantation in Lake fishing, Cassava and irrigated vegetable zone

Agriculture (crop and livestock farming) accounts for 85 percent of the activities of the households in *“Fish pond fishing, Cassava and Agricultural trade zone”*, 90 per cent in *“W/E Cassava, Ground nuts and Rice zone”* and 62 per cent in *“Lake fishing, Cassava and Irrigated vegetable zone”* providing employment to both men and women. Trading (especially fish trading) and business were the most important off/non-farm activities in the *“Lake fishing, Cassava and Irrigated vegetable zone”* and *“Fish pond fishing, Cassava and Agricultural trade zone”*. Apart from farming, small businesses such as fish trading followed by informal employment 24 per cent), artisan (17 per cent), and sale of skilled labour (3 per cent) are the other important sources of income in the district. Fish trading in *“Lake fishing, Cassava and Irrigated vegetable zone”* seems to be failing in comparison with the past five years due to decreased fish stock in the lake,



resulting in members of the rural communities around this area shifting to crop production. This includes bambara nut cultivation, banana cultivation and irrigated green vegetable. The picture above shows green vegetable farming and a banana plantation in the “Lake fishing, Cassava and Irrigated vegetable zone”.

3.3.5 Crops grown in the Luwingu Livelihood Zones

The most important crop grown in all LZs is cassava. Other crops include common beans, groundnuts, maize grown in numerous crop combinations, rice, sorghum, finger, legumes and Bambara groundnut in order of importance. Other crops found in the zones in small quantities were cowpeas, sunflowers, different types of fruits like avocado pears, passion fruits and mangoes. Vegetables include tomato, onions and cabbage.

3.3.6 Most important food crops

Cassava, contributing almost 70 percent of food energy in the communities surveyed, and groundnuts were by far the most important food crops in the area. The traded food crops were maize, vegetables (9 percent to household income) mostly in “*Lake fishing, Cassava and Irrigated vegetable zone*”, Finger millet and sorghum were common in “*W/E Cassava, Ground nuts and Rice zone*” and sweet potatoes were observed in all zones.

3.3.7 Most important cash crops

Food crops such as maize, beans and finger millet offer farmers more cash income. Other cash crops include fruit trees (commonly mango and avocado). Sugar cane has great potential in all the LZs, however, many farmers are discouraged because the crop (sugarcane) no longer brings cash due to the depression in the market price of sugarcane, accentuated by limited companies/projects promoting sugarcane production. In a decreasing order of importance, other constraints to sugarcane production include: delay in the harvest of sugarcane and labour involved in producing quality sugarcane (e.g. applying inorganic fertilizers and transporting from farm). The second potential crop in the area was banana. According to the key informants, pests and diseases are the major constraints to banana production. Other banana production constraints include lack of market, lack of inputs (improved seedlings, land, capital, etc.) and dry spells. With respect to fruit trees, pests and diseases are again the most important constraints. The next most important constraints to the production of fruit trees are lack of market and lack of improved seeds and inputs.

Rice cultivation was promoted in Chungu area (“W/E Cassava, Ground nuts and Rice zone”). The main constraint for rice production is the lack of processing equipment and limited markets and lower prices offered by traders. Due to lack of capital, farmers recycle the seeds thereby reducing the quality and lowering production. Luwingu has a large area with potential for rice cultivation across the district. Although cotton and tobacco are important export crops in Zambia, these were not popular in any of the LZs.

3.3.8 Rainy seasons, cropping and livestock systems

The LZ has a wet and a dry season and one main cropping season. The dry season lasts from June/July to October. The rainy season lasts from October/November to April/May. The November/December rain is much more reliable for planting of crops. Results indicate that farmers mostly practiced mixed cropping. Although sole cropping could be found in cassava and groundnut fields, it was generally unpopular during the rainy season. For example, maize is intercropped with beans, pumpkin and millet planted on the boundaries of the field. (Around 15 per cent of households practice sole cropping during the rainy season. Most of these are from the better off wealth group. The reason for intercropping is probably the higher risk of crop failure due to the more likely occurrence of dry spells in these zones. Intercropping is therefore seen as a risk reduction strategy. The crops grown in the zones are the ones that farmers consider more tolerant to drought (e.g. cassava, sweet potatoes, millet and Bambara nuts).

3.3.9 Most important livestock

There was a wide disparity among the livelihood zone in terms of livestock numbers. Cattle, goats, pigs and chickens were the main livestock owned. Sheep and donkeys were among the other scarcely owned livestock. The extent of ownership of cattle among households by zone varied. It ranged from nil cattle (in *"Fish pond fishing, Cassava and Agricultural trade zone"*) to less than 5 (in *"W/E Cassava, Ground nuts and Rice zone"*) and more than 8 (in *"Lake fishing, Cassava and Irrigated vegetable zone"*). In the areas surveyed no households had improved livestock breeds.

3.3.10 Household labour allocation

In all LZs, both men and women allocated over 50 per cent of their labour to crop production. The other 50 per cent was shared among labour to livestock production and non-farm activities. Adult children (aged 16 and above) allocated almost 40 per cent of their labour to crop production; a large proportion of their labour was allocated to off/non-farm activities. Livestock production also had a great proportion of adult child allocation of labour, especially animal herding and feeding which is mostly given to adult children. Subsistence agriculture was the main farming practiced, with the use of hand cultivation.

3.3.11 Ownership of farm machinery and equipment

In the surveyed area there were no tractors or farm workshops owned by individuals. Between 10 – 15 per cent of the households in the surveyed zone owned a plough and an average of 35 per cent owned sprayers. Farm machinery commonly owned by households included wheelbarrows (less than 40 per cent), livestock sheds (more than 50 per cent) a garner and bicycle. All households owned at least a hoe and panga.

3.3.12 Purchase of farm inputs and equipment

Three purchasing points (village, nearest trading center, and Luwingu town) were considered. Results show that about 65 per cent of households in the district purchased their farm inputs from the nearest town (Luwingu) with other sources accounting as follows: 15 per cent (wealthier) purchase in Kasama (distant Town), 10percent from the nearest trading centre and 5 per cent in the village (from village shops, households and through barter trading). Luwingu town is located in the North of the district, far away from most of the villages. This shows that farm inputs are generally not within easy reach of households. If inputs could be sourced from the village this would greatly reduce transaction costs due to associated savings in transport costs. Lack of opportunity to source inputs from within the village also has negative implications on productivity, livelihoods and rural poverty. The majority of households use local and recycled inputs for production.

3.3.13 Marketing of farm produce

Marketing is an important aspect of livelihoods. Due to transport and storage problems some households sold produce 'at the farm' (where crops were marketed on farm), in the village (crops were transported to owner's house and sold within village), at the nearest trading centre (within the zone, usually there is market day once or twice a week), in the nearest town (outside the farmers' village or zone), to companies (especially maize) and 'far away' (>80 km from farm gate, with gravel road). In order of popularity, households sold their produce in the nearest trading centre (30 per cent of households), to companies (25 per cent) in the village to other households and traders (25 per cent), at the farm to vendors and households (18 per cent) and further away (2 per cent).

This implies that over half of produce is sold within the area of production (farm/village/local trading centers) and shows that households have limited access to higher selling prices and remunerative markets, often located away from rural areas. Only a few households go far to sell produce, probably because of high marketing costs or lack of desire to search for new market opportunities. Unfortunately, local markets are often associated with low profits due to low produce prices in the face of high input costs, given that most of the inputs are sourced from urban markets. This reduces the possibility of farm households escaping from poverty.

On the other hand, the town center (Luwingu town) has limited economic activities correlating to low income levels in the surrounding communities. The traditional method of barter trade was common among the rural and urban communities. The main traded commodities were beans, groundnuts, maize, fish, cassava and millet, which were exchanged for sugar, soap, salt, solar panels, iron sheets, wrap (kitenge) and clothes. Commodity exchange was common among middle and better off households

exchanging with town residents and the poor and poorest households exchanging with middle and better off households in rural areas.

3.3.14 Women and Food production and the Market

In Luwingu women earn a substantial income from selling vegetables and wild foods. The commonly sold wild foods were *Chikanda*, *masuku* and fish. In the “*Lake fishing, Cassava and Irrigated vegetable zone*”, women participate in fishing. Women’s fishing was at a peak from August to October. These are dry season months associated with low agricultural labour. Fish prices were generally lower during the dry seasons due to high availability during the harvesting period and highest during the wet seasons, when livestock recovery begins. Although prices are higher during the wet seasons, more rural household income is generated from the sale of fish during the dry seasons, when greater availability and lower prices attract a greater number of buyers.

3.3.15 Transport

Fish pond fishing, Cassava and Agricultural trade zone is linked to the major business provinces through the Luwingu Kasama Road to Lusaka and the Luwingu Mesa Road to the Copper belt. The *Lake fishing, Cassava and Irrigated vegetable zone* is connected to Chilubi Island via Lake Bangweulu. Boats are used for transportation. Luwingu district is serviced by reliable luxury buses most of which are on the direct route from Lusaka to the district and from the copper belt via Mesa to Luwingu.

3.3.16 Transporting farm produce to market

Bicycle was by far the most important means of transporting farm produce to market (used by over 60 per cent of households). The other important means of transport were public transport e.g. bus and truck (15 per cent) and head load (10 per cent), with 15 per cent shared among other infrequently used transport such as own vehicle and hired vehicles. Dominant use of bicycle followed by head further explains why only 2 per cent of households sell their farm produce in faraway markets and explains how limited access to efficient means of transport negatively affects increased income opportunities for the farm households as they continue to obtain low prices selling in rural circles, with limited demand and overwhelming supply of similar commodities.

3.3.17 Decision on farm produce selling point

Surveyed wealth groups were asked whether they used price differences to decide where to sell farm produce. Across the district, about 70 per cent of the households tried to sell where the price was highest, about 20 per cent do not normally observe prices. For about 10 per cent of the households, although they have information of price differences between selling points they still do not try to benefit from such knowledge because of high cost of transport, low levels of production, lack of time, and price fluctuations. This confirms that farm households are generally rational and take advantage of opportunities where prevailing circumstances permit.

3.3.18 Welfare of household members

Household welfare-related commodities in order of importance were; (i) paraffin, food, firewood, (ii) social and health-related (medical and health, social contributions, school fees, entertainment-mostly beer), and (iii) agricultural development-related (land preparation, farm labour, inorganic fertilizers, organic fertilizers) indicating that agriculture-related expenditure items or activities come in only from the third rank. More households give priority to household welfare-related issues (e.g., paraffin and food) with an average rank of 'most important', and social and health-related issues (e.g., medical/health and social contribution) with an average rank of 'very important' compared with agricultural development-related issues (e.g., organic fertilizers, inorganic fertilizers, and farm labour, in that order) with an average rank of 'important'.

The apparent lack of priority to agricultural investment explains why food purchases is second from paraffin in the community where agriculture (crop and livestock farming) accounts for more than 80 per cent of the activities of the households, providing employment to the majority of the males and females. Agriculture was also noted to be the major source of cash income among farm households. The result signifies that farmers tend not to give priority to agricultural development when investing funds mostly derived from the sales of agricultural produce. It also undermines the desire to reduce rural poverty, by creating an atmosphere for the youth to consistently step out of agriculture. It was noted that in Agro-lakeshore fishing zone youth do not fully participate in farming. The majority of male youth are fishermen and involved in fish trading. In the district, even within agricultural development-related expenditures, farm households have not prioritized critical farm inputs such as inorganic and organic fertilizers – a situation that has immensely contributed to widespread soil fertility depletion and poverty in the area as in most parts, farmers cannot cultivate without fertiliser.

3.3.19 Government and NGO programmes

There were only two major NGOs in Luwingu, World Vision-Zambia and SHA_Zambia. World Vision Zamb's core objective was to provide sponsorship to Orphans and Vulnerable Children's (OVC's) Education. The organisation has reach into zones across the district. It is currently working in 14 in Luwingu namely; Chabula , Mwando, Nsombo, Nsolo, Lungu, Chanika , Chibofwe, Fikonkonta, Tungati , Mfungwe, Chanika , Bulambo Zone, Kachibwe ,and Kansanta Zone. The program coverage includes the following areas: i) Education, ii) Health, iii) Agriculture and iv) OVC programs which are yet to start. Other minor organisations were Red Cross Society which started operating in Luwingu from 1999. The Red Cross has 22 groups which are trained in Disaster Mitigation and Management (DMM). The organisation's duties include cleaning the Luwingu District Hospital. The Civil Society's mandate is to monitor development in the district and ensure coordination amongst NGOs, currently operating in all wards. CAMFED (Campaign for Female Education) is a non-profit organisation chaired by the District Education Board Secretary; CAMFED is a newly introduced NGO in the District.

Its objectives are to campaign for female education, including sponsorship for girls from Grade 1 to college level. Through this program girls that do not succeed on the academic track are empowered with other skills like tailoring and cookery.

FAWEZA (Forum for African Women Educationalists of Zambia) is among the organisations present in Luwingu. Its role and capacity are advocacy and facilitation of a girls' education. In the district all teachers are members of Faweza. The overseer for the project is DEBS (Discourages early marriages and school dropout by girls). The activities for FAWEZA include: sensitize girls on the benefits of education (through the Ministry of Education sensitize the parents about the effects of early marriages and provide school sponsorship for girls.

Zambia National Women's Lobby (ZNWL) is an association which aims at advocacy for the rights and concerns of women and girls with a core focus on sensitizing women on human rights and gender equity, discouraging girls from entering early marriages and educating voters. The main constraint faced by the association was that funding is mostly available during election periods. Among their activities are prevention of early marriages, child labour and child defilement and protection for women from domestic violence. The Planned Parenthood Association (PPAZ) focuses on reproductive health and related issues through peer education, sensitization about HIV/AIDS, educates about Family Planning, HIV/AIDS education and counselling services. Lastly, the Society for Women and AIDS in ZAMBIA (SWAAZ) started operating in Luwingu in 2007. Their objectives include care for orphans and vulnerable children and the elderly. The program has 10 branches in Lubanseshi constituency. The program has not received funding since inception, hence is inactive in the District. The major limitations faced by the organisations in the district are limited reach due to lack of transport, low funding and lack of offices for some organisations making it difficult to be accessed.

3.3.20 Hazards faced by the communities

Unpredictable rainfall followed by dry spells was the main environmental shock faced by communities across Luwingu district. Livestock in the area experience high incidence of diseases due to lack of veterinary services and drugs. Limited access to inputs is the major constraint to poverty eradication in the area. The community tend to rely on Government supported inputs which in some cases do not arrive on time and hence delayed planting as the community (particularly the poor) mostly depend on these. Many households are heavily hit by the impact of poor rainfall as they plant seeds which are not suited to the prevailing situation. They use mostly recycled seeds which have very low yields and are susceptible to pests and diseases. Poor households were faced with hunger and starvation as a result of low crop production due to inadequate farm capital. Reduced stocks of fish has greatly affected households in *Lake fishing, Cassava and irrigated vegetable zone*.

3.3.21 Response Strategies

Households intercrop to reduce the risk associated with bad years. However due to limited access to improved varieties, households get poor yields adding to the risk of farming. Reducing expenditure on clothes and non-essential food was reported to be the common mechanism in bad years. Poor households generally survive by the collection of wild foods and generate income through limited unskilled piece work usually obtaining low wages in bad years. Livestock sales also increase in bad years, due to limited livestock herds. This coping mechanism is not sustainable. In the *Lake fishing, Cassava and Irrigated vegetable zone* shifting from fishing to irrigated vegetable is a coping strategy that has been adopted.

3.4 Historical Timeline

In order to obtain a broader understanding of the social and economic situation in the two districts and to identify an appropriate reference year, a historical timeline covering the major events of the last six years (2006-2012) was created (see Appendix I). Major events outlined by the historical timeline are periods of food insecurity, hyper-commodity inflation, low wage rates, unemployment and periods of increased hunger due to rainfall patterns and environmental changes.

After some research and discussion, the technical team determined that March 2010 to February 2011 would serve as the reference year for the assessment in Mbala-maize, cassava and bean zone (Mbala district). In Luwingu, different areas had different reference years. February 2011 to January 2012 were assessed as the reference year Fish pond fishing, Cassava and Agricultural trade zone, February 2009 to January 2010 in W/E Cassava, Ground nuts and Rice zone and February 2010 to January 2011 in Lake fishing, Cassava and Irrigated vegetable zone

The general principle for determining the reference or baseline year is to use the most recent full consumption year as this makes recall easier for those surveyed. In this case, however, the most recent year (2012-2013) was characterized by severe food insecurity and uneven rainfall³ in all areas, making it unsuitable for baseline analysis. Therefore, the years of **March 2010 to February 2011 in Mbala and February 2011 to January 2012, February 2009 to January 2010, February 2010 to January 2011** in Luwingu were deemed the reference years, being average to good year in terms of food security, inflation levels, timely application of fertiliser, good cereal prices, coping activities and good rainfall levels.

³ Appendix I outlines the historical time line, events, effects and response for period of past six years in all LZs and seasonal calendar, for normal and hazard year in all LZs

3.5 Seasonal Calendar

The Seasonal Calendar details levels of seasonal activities throughout the reference year. Economic activity is highest during the wet to dry seasons in all LZs. Periods of high economic activity correlate strongly with periods of crop production and availability. Cereal crops are grown during the rainy seasons and then harvested and traded during the dry seasons. Because cereal availability is highest during the dry seasons, cereal prices tend to be lower with higher availability resulting in reduced hunger levels. Income-generating activities, such as casual labour from construction activities, petty trade, firewood sales, and house mudding are also highest during the dry periods of *July to October*, while agricultural labour levels are highest during the wet seasons, when labour is needed for planting, weeding to harvesting.

Agricultural casual labour starts with land preparation in October and done through November to June when harvesting is done. Normally livestock sales occur in any month when the household is desperate for cash to various cost like costs of school fees, medical bills, celebrations. Mostly, livestock sales coincide with the peak of the hunger indicating a coping strategy. Wild food collection starts around the first rains of October through to the off set of rains in January. Harvesting of green maize starts in February in Luwingu to March in Mbala. Expenditures in a normal year are at their peak in September through December when cost of school fees, medical bills and social expenses peak.

Table 4: Seasonal Calendar for normal years in Mbala and Luwingu

	January	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	December
Land preparation												
Planting												
Weeding												
Green harvest												
Maize harvest												
Groundnut harvest												
Sunflower harvest												
Cassave planting												
Agric / casual labour												
Wild food peak												
Livestock sales												
Charcoal peak												
Hunger season peak												
Expense peak												
Diarrhea												

Note: Details of Seasonal calendar per livelihood zone are attached in Appendix II

3.6 RURAL WEALTH BREAKDOWNS

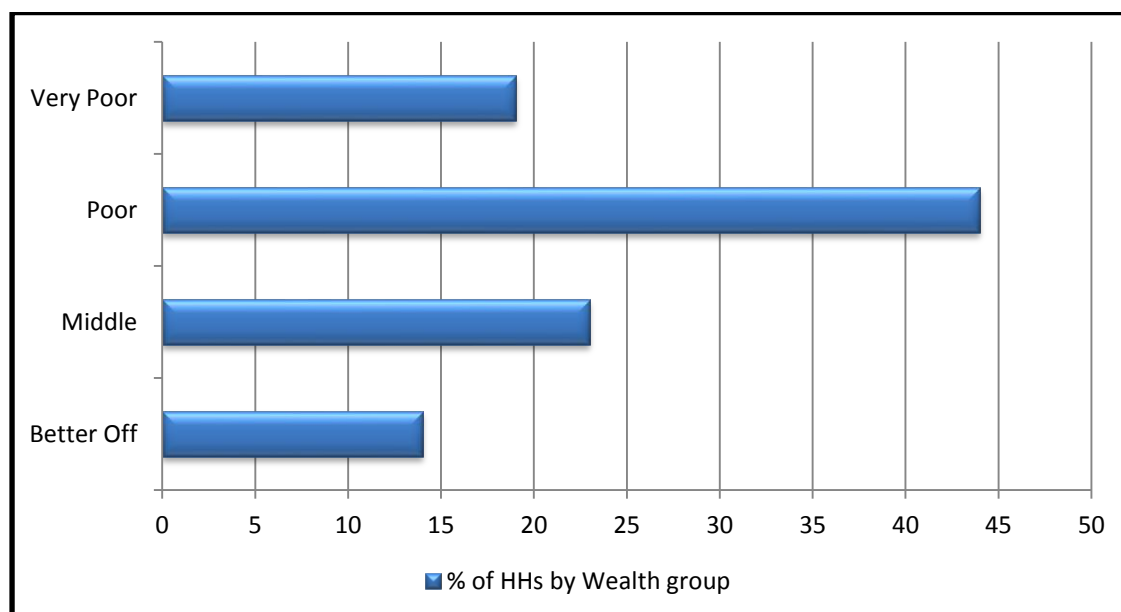
This section outlines the main sectors in which people obtain food and cash income in Mbala and Luwingu district focusing on specific livelihood zone. In Mbala-Maize, Cassava and bean zone, the information provided covers the reference year (March '2010–February 2011). In Luwingu- Fish pond fishing, maize and trade zones, the information provided covers the reference year (February '2010–January 2011). In Lake fishing, cassava and irrigated vegetable zone the information provided covers the reference year (February 2009–January 2010). In W/E Cassava, Ground nuts and Rice zone the information provided covers the reference year (February 2011–January 2012).

All of the figures and information in this section should be regarded as approximate (the mid-point for a typical household per wealth group). The section aims to classify economic activities of wealth groups in the defined livelihood zone. Within a wealth group, it is common for individual households to have different ways of generating food and cash income, so wealth group information will not necessarily represent all individual household income sources.

3.6.1 MBALA-MAIZE, CASSAVA AND BEAN ZONE

This is a relatively productive maize, cassava, bean and finger millet area covering the whole of Mbala district. Millet production often runs a close second to maize in cereal production. Cassava is often an important food crop among the poor and middle households. Beans and ground nuts are the most important legumes. The zone has a low population density with acidic fertile soil good for cassava and millet. Rainfall is above 1200mm per year, causing floods which did not significantly affect livelihoods. Subsistence farming and agricultural trading is the major livelihood activity. The main hazard faced in the area is heavy rainfall which affects the road network, and destroys crops. Livestock is limited in the area due to high levels of livestock disease, which is the second most important shock affecting livelihoods. In this zone, a total of four different wealth groups were identified in each surveyed area: “Very poor”, “Poor”, “Middle” and “Better-off” (Figure 5). The “poor” wealth group is the largest. The very poor and the better off are the smallest number indicating quite a wide range of wealth within the zone. The poor and the poorest are the majority, more than 50 per cent, indicating that more than half the population struggles daily to maintain a living.

Figure 4: Estimated proportion of household by Wealth Group in Mbala-Maize, Cassava and Bean Zone



Differences in productive assets between the very Poor and Poor are large in North and minimal in Central and South of the zone. For the very poor group, their landholdings are from 0 to 1 hectare in North and 1 lima to 1 hectare in South and central part. Households that have less than 0.4 to 2 hectares of land are categorized as Poor in Central part of the zone. The poor have 1 to 4 hectares of land but are able to cultivate less than 2 hectares of land. The middle have 4 to 10 hectares of land which some are leased out to households with small portions of land. Usually the payment is in kind and in most cases a portion of land is exchanged with agricultural labour. On average the better off have 8 hectares of land in which cultivation depends on man power with few using practicing animal power. The wetland is communally owned under open access treated as grazing land and is a common source of the natural resources (wild vegetables and fruits).

Table 5: Wealth Group Information in in Mbala-Maize, Cassava and Bean Zone

	Land Owned (hectare)	Livestock	Food Stock	Main Food Crop	Productive Assets
Very poor	0-1	0-1 goat 0-6 Chicken	0	Cassava	Hoe
Poor	>1 to 4	0-4 goats	0	Cassava, Maize	Hoe

		0-2 pigs			
		1-15 chickens			
Middle	4-10	0- 8 cattle	250	Cassava, Maize	Bicycle
		1-15 goats			Cell phone
		2-15 pigs			
		0-6 donkeys			
		1-25 chickens			
Better off	>8	2-25 cattle	350	Maize	2 Bicycle
		10-30 goats			2 Cell phone
		15- 25 pigs			Plough
		0-7 donkeys			Motorbike
		>15 Chicken			Solar panel
					TV (few)

3.6.1.1 Crop Production

Crops grown for food in order of importance in Northern part of the zone are maize and cassava for the better off, maize, cassava and sweet potatoes for the middle income group. Sweet potato is mainly grown along the margins of the wetlands and uplands during the rainy season. The main crops grown for food in poor and very poor households in order of importance are maize, cassava, beans and millet. The poor managed to grow these crops mainly from borrowed seeds. However they do not cultivate enough for food due to lack of land and inputs. The better off have own produced food throughout the year with stocks of 150kg and above in the North, and on average of 350kg in the South and Central, while the middle group have average stock of 250kg across the zone. Maize stocks among middle income group are high compared to better off in the north part of the zone. This is because the better off category are selling a large stock of their produce soon after produce while the middle income group are relying on own food stock for food security. The poor are able to feed themselves from their own crop production until around November, while the very poor are only able to feed themselves from their own crops until August-September. Crops grown for sale in order of importance for better off are: finger millet, beans and maize. These crops are sold to traders who come from outside the area (including the FRA for maize). The middle and upper poor sell maize, beans, groundnuts, finger millet, sunflower and

spring onion to traders that come to the area; maize is mainly sold to the FRA. Generally, the majority of poor and very poor households only make unplanned, periodic sales to get cash for non-food items.

The poor groups are the least socially active households. After their own produced food has finished they survived by eating one major meal per day either through purchasing food after doing piece work or acquiring as gifts. In this zone, poor groups have significantly less productive assets than those in the middle and better-off wealth groups. The difference between poor and middle household production levels is roughly high. Between middle and better-off households the approximated difference in food income levels is insignificant.

3.6.1.2 Livestock Sector

During the reference year, donkeys, cattle, pigs and goats were the main livestock sold in the zone. The northern part of the zone is noted to own large herds of cattle compared to other parts. Donkeys are common in the central part of the zone. Pigs and goats are found almost equally across the zone. Generally the poor have no or little livestock. In some cases the poor acquired cattle through lobola, the traditional marriage system, or received chickens or goats labour such as animal herding. Livestock diseases are the main constraint for livestock keeping.

3.6.1.3 Sources of cash income

The main source of cash income among households in the zone is the sale of agricultural produce. However, the sale of agricultural produce is an unpredictable source of cash due to delay in payments, especially when companies delay in buying and paying for the produce. During the reference year, charcoal and firewood selling was the second most important source of income in the central part of the zone after the farming and sale of crops sector. Trading and selling of livestock to neighbouring districts and to Tanzania is the fourth ranked livelihood activity in the area. The major source of income among the poor is hiring their labour to the better off and middle group within and outside the zone. Key informants highlighted that about 2 - 4 per cent of the rural population were working in salaried employment in Mbala during the reference year. These are mostly unskilled workers, of which 95 per cent are male and 5 per cent are female.

Construction activities peaked in the central part of the zone during the dry season (June to October). The growth of this sector is due to the expansion of economic activities in Mbala leading to an increasing demand for rented buildings. However, the development and growth of the sector has resulted in deforestation. The use of fired bricks is higher than the use of cement bricks. The majority of individuals who work in the construction sector are middle and better off. Poor people worked in brick moulding and building of mud houses. Women's participation in construction is high at the initial stage of brick moulding; women are involved in fetching water for brick moulds. The work consists mostly of manual labour activities. The new buildings are mostly owned by individuals from the better-off group and urban residents.

3.6.1.4 Wild Food Sector

All households consumed wild vegetables and fruit in various quantities and qualities. Poorer households consumed high quantity, low quality wild vegetables and fruit. Other wide fruits and vegetables are harvested for sale to urban areas. Every administrative ward has at least one fruit and vegetable market at trading centres where many women are involved in selling various fruits and vegetables. Hunting animals is not a common source of wild food despite the presence of forest in the area. The common wild foods with higher nutritional values are mice, caterpillars, honey, and birds.

3.6.1.5 Remittances Sector

Some better off households in the zone receive cash income from relatives abroad and towns within Zambia. The amount of money received (mostly through telecommunications and banks) peaks during the rainy seasons because of the increased need for capital for agricultural purposes. Mostly the households receive the money not only for agricultural purposes but also for basic food purchases and house repair, additional assets and petty business ventures like groceries and selling local cakes. There are no formal banking systems in the communities. Money transfers are through mobiles or formal banks in Mbala Township. The telecommunication companies have played an essential role in monetary transactions at the urban and rural level in the zone. Poor household rarely receive cash transfers from relatives, although a few households are helped paying school fees by relatives and well-wishers.

3.6.1.6 Household size

In the discussion with key informants, 5 is determined to be the average household size for the very poor and 7 for poor wealth groups; 8 for the middle; and 5-9 for the better-off. The most destitute households are the smallest with household sizes ranging from 4 to 6 members. Because it is very difficult for large families to live on very low cash and food incomes, families at the lower end of the income scale often send some of their children to live with relatives who can afford to care for additional extended family members. Because middle and better off households generate larger incomes, they are able to support larger household sizes, which includes the ability to maintain hired-in agricultural labourers. Polygamy is common among the better off and middle income group across the LZ. Usually polygamous families had two to five wives living in separate households.

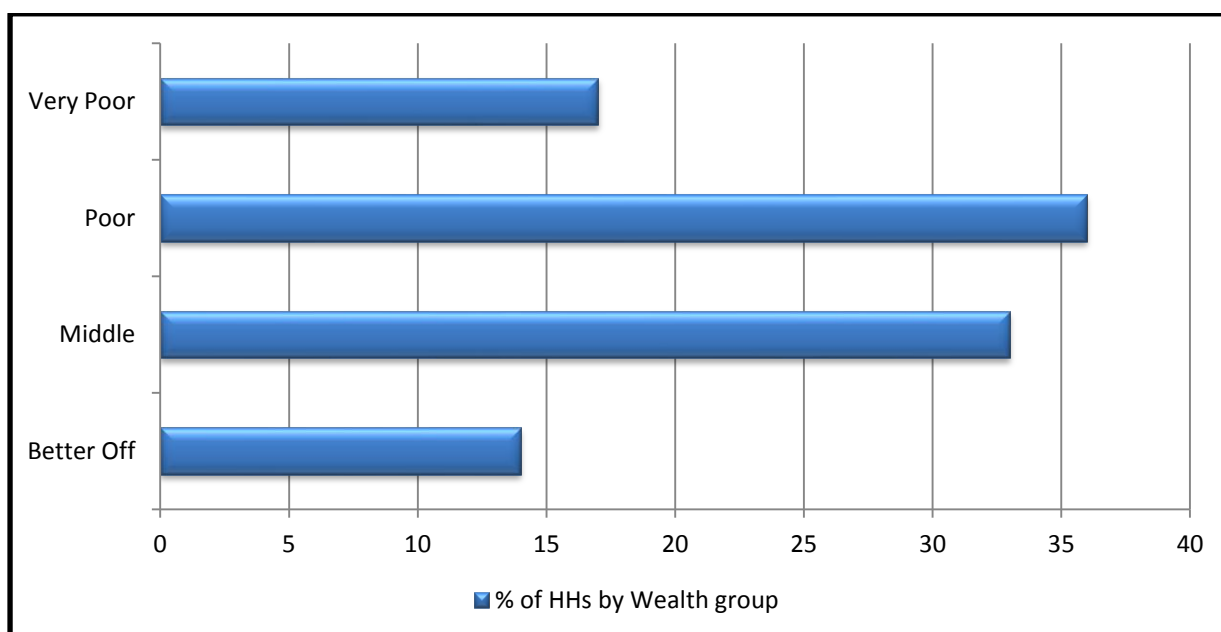
LUWINGU

3.6.2 FISH POND FISHING, CASSAVA AND AGRICULTURAL TRADE ZONE

This is a small livelihood zone that borders with Mporokoso district, the zone is situated far north of Luwingu highland area dominated by cassava production and agricultural trade through subsistence farming. The area has fish ponds funded by IRISH-AID, the project, which started in 2012.

Land is not the productive assets used to define a household's wealth group. Land is acquired through inheritance; elders allocate land equally to community members. In this zone differences in productive assets among the wealth groups are observed from livestock ownership and tradable goods which include solar panels, farm equipment, bicycles, cell phones and inclusion in social networks. The poor groups include the least socially active households, which have limited capital to join cooperatives and buy agricultural inputs. Their own produced food lasts less than seven months and thereafter they survive by eating food acquired through piece work and purchase. They have adequate land but not sufficient capital to grow enough food for the year, and grow no cash crops.

Figure 5: Estimated proportion of households by Wealth Group in Fish Pond Fishing, Cassava and Agricultural Trade Zone



Household size for the very poor is 6-8, poor 5-7, middle and better off is 8. Land holding size does not vary by wealth group. The very poor, poor and middle own 1-2 hectares of upland, the better off have more than 2 hectares. Land ownership is not on title but under traditional land tenure. The zone has open access to wet lands. The very poor and poor have 1 to 0.5 lima which is rarely cultivated. The middle mostly cultivates

less than 1 lima of their wet land. The crops mostly grown are onions, tomatoes and other vegetables. The very poor and poor households rent out the land to middle and better off households. The middle and better off rarely rent out the land. Payment for the land rented out is mainly in kind in the form of food and agricultural inputs.

Table 6: Wealth Group Information in Fish Pond Fishing, Cassava and Agricultural Trade Zone

	Land Owned (hectare)	Livestock	Months Food Lasts	Main Food Crops	Productive Assets
Very poor (<i>Abapina sana</i>)	1-2	0	6-8	Cassava, Beans	Hoe,
Poor (<i>Aba pina panono</i>)	1-2	1-3 chickens 1-2 goats	8-10	Cassava, Maize	Hoe, Fishing lines
Middle (<i>Abaliko Efilyako</i>)	1-2	1-4 goats 1-6 chickens	10	Cassava, Beans	Bicycle, Fishing lines, nets (few) Cell phone, Spray
Better off (<i>Abakankala</i>)	>2	>5 goats >10 Chicken	Through out	Cassava, Maize, Bean	Bicycle, Cell phone, Fish ponds, Fishing equipment (nets), Spray Plough, Solar panel, wheel barrows

3.6.2.1 Crop Production

The majority of the very poor cultivate cassava and beans only. Crops grown by the poor for food are cassava, maize, sweet potatoes, groundnuts and beans, which are produced in small quantities. Crops grown by the middle and better off for food include cassava, beans, maize, millet and groundnuts in order of importance. Months that food lasts are 6-8 for the very poor, 8-10 for the poor, average of 10 months for the middle while the majority of the better off have their own food throughout the year. The main staple food in the zone is cassava, commonly stored underground. The poor and very poor have no surplus for sale as they experience low yields. The middle mainly sells

beans and maize. The crops grown for sale for the better off are maize, beans and groundnuts.

3.6.2.2 Livestock

A majority of the poor do not own any livestock, and if they acquire it through gift or payment they are not able to hold the livestock for long periods. The poor have 1-3 chickens and 1-2 goats, the middle have 1-6 chickens, and 1-4 goat, the better off have more than 10 chickens, more than 5 goats and 25 per cent of the better off own 1-3 fish ponds near their houses. Households in all wealth categories have no cattle.

3.6.2.3 Main sources of cash income

The main source of cash income for the very poor and poor is agricultural piece work paid in food and cash. Households in this category are mainly working for the better off households. Another source of income among this category is exchange of own food produce for other items such as groceries, salt and clothes. The main sources of income for the better off are: the sale of agricultural produce (maize, beans and vegetables from their gardens).

In addition to sale of crops, the better off are also involved in, brewing, salaried work and trade, and are more likely to receive remittances. Fish ponds do not contribute much (estimated only 5 per cent to the better off income may be from fish ponds). This is due to lack of markets. Most of the time the buyers offer prices that are below the actual commodity price and fish produced from individual household fish ponds are not attractive to the buyers, hence they mainly produce stock for own consumption.

3.6.2.4 Wild Food Sector

The common wild foods obtained in this zone are *masuku*, caterpillars and ants. Consumption of wild food is high among the poor and very poor households (caterpillars are consumed by all wealth groups). Some wild foods contribute significantly to household income through sales. Masuku are commonly sold at trading centres and to Luwingu's urban residents. Fishing in rivers is common among adult children from all wealth groups. Households use lines, baskets and nets to fish from rivers.

3.6.2.5 Remittances Sector

Among the causes of differences in production and income are transfers e.g. inputs, cash, food and non-food items. The majority of middle households are able to afford production inputs and hire in labour due to cash received from relatives mostly outside the zone. Most better off and middle households are members of cooperatives, access inputs from FISP and are hence able to plant large pieces of land and afford training on improved technologies.

The poor and very poor are not able to join cooperatives and hence could not access inputs from FISP but could access inputs through the Food Security Pack under the Ministry of Community Development. Some poor households are candidates for social

cash transfers. A small number of households in the poor category receive external aid from organisations, relatives and government.

3.6.2.6 Productive household assets

Poor households have only hoes and land as their main productive assets. The middle group have land, bicycles, livestock and cell phones as their major assets. Some have sprayers, fish ponds and fishing equipment. The most commonly used equipment for fishing is lines and nets. The better off have bicycles, cell phones, small fish ponds, fishing equipment, sprayers, land, livestock, ploughs, solar panels, wheel barrows and few have TVs, battery chargers and motor bikes. All groups have trees, fishing lines, axes and hoes.

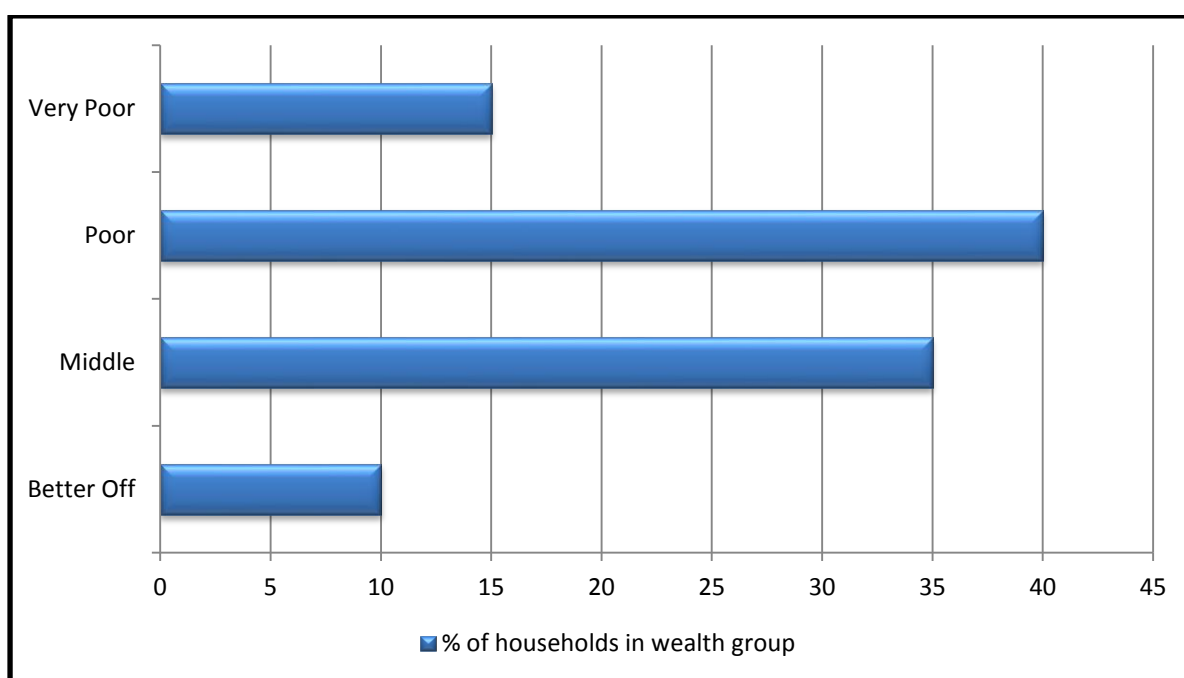
3.6.2.7 Fish pond Farming

The zone was formerly made up of farming communities growing crops at a small-scale. Fish farming was common among the wealthier households but had only small ponds that did not economically benefit families. The IRSH-AID project started in early 2012, through a Government programme educating people about fish farming. The project was open to all community households that were interested in scaling up their ponds. Since the project started communities have formed groups which are benefiting from the IRISH-AID funded program by providing training and various programs related to fish pond farming. The project aims at improving livelihoods across the community and ensuring food and nutrition security to the most vulnerable households, linking smallholder farmers to markets. Fish pond farming has a great potential in the area because it is of extensive water and wet lands. Fish from ponds is normally harvested six months after stocking. Appendix V shows pictures of fish pond farming.

3.6.3 W/E CASSAVA, GROUND NUTS AND RICE ZONE

This zone covers the major area of Luwingu, extending from the South West and South East of the district. The zone is dominated by cassava and ground nuts subsistence farming. The south west has substantial amounts of rice grown in the rainy season in wet lands, while cassava is grown partly with residual moisture in soils in the dry season (June/July). The zone has extensive wet lands and fertile soils with high potential for rice cultivation. This zone is notably lacking in livestock, so that wealth differences are essentially defined by the amount of land that households are able to cultivate, and the quality of that production. 15 per cent of households in the zone are very poor, the largest proportion (40 per cent) are poor 35 per cent of households in this zone are the middle and 10 per cent are better off.

Figure 6: Estimated proportion of households by Wealth Group in W/E Cassava, Ground nuts and Rice zone



The very poor have an average of 8 household members. The dependency ratio is high among the better off group with 7 to 9 household members. The middle and poor have an average of 7 household members. Land owned varies by wealth group, the very poor have less than one hectare, the poor have 0.5 -2, the middle have 1-4 hectares while better off have more than 5 hectares. Households have open access to wetlands, but these are not developed for gardening. Only a few middle and better off household use their wet lands for gardening. The main crops grown in wet lands are onions, tomatoes and other vegetables. Households in the poorer group rent land to upper income households.

Table 7: Wealth Group Information in W/E Cassava, Ground nuts and Rice zone

	Land Owned (hectare)	Livestock	Month Food Last	Main Food Crop	Productive Assets
Very poor	0.2 - 1	0	3-6	Cassava	Hoe, Axe
Poor	0.5 - 2	1-3 chickens	< 7	Cassava	Hoe, Axe, trees
Middle	1 - 4	5-10 goats 1-6 chickens	Though out the year	Cassava, Ground nuts	Axe, Trees, Bicycle Livestock
Better off	>5	10-15 goats 4 Pigs >20 Chicken 0-4 Cattle	Though out the year	Maize, cassava, Bean, ground nuts	1-2 Bicycle Livestock Solar panel DSTV (few)

3.6.3.1 Crop Production

In this zone very poor and some poor households do not diversify crops. The main crops grown for food are cassava and pumpkins. To obtain maize and food, the very poor grow crops on other peoples' (better off and middle) farm land under food for work contracts. The farming system involves working for the landlord for the entire farming season and getting paid after harvesting commonly in the form of an agreed per cent of food produced. A majority of poor households grow cassava, sweet potatoes, groundnuts and beans for food but this is of low quality and quantity due to a lack of farm inputs. The middle and better off grow cassava, maize, millet and groundnuts food crops, listed in order of importance. In addition they grow home yard vegetables and have a variety of fruit trees. In this zone the staple food is cassava stored underground.

Poor households' own food lasts less than seven months and thereafter they survive by reducing the number of meals, gifts mainly from relatives within the village, and cash obtained from unskilled labour, usually for low wages. Middle and better off households

have food throughout the year with surplus maize to sell during the scarce food seasons. The difference between middle and better off households depends on available labour and ability to access inputs. The poor cannot afford to buy inputs - most depend on inputs from the Food Security Pack under the Ministry of Community Development. Most poor households use family labour. Women from all wealth groups are able to get inputs from women clubs, however the challenge is distance to get to the meeting place in Luwingu Town depriving them access to these inputs. The wealthier people are mostly members of cooperatives, hence access inputs from FISP. The better off are able to purchase their own inputs from own cash and are able to hire in labour.

Mostly, poor households search for piece works among the better off farmers hence have little time to spend on their fields and as a result experience low yields. The middle and better off usually sell maize to FRA and recycle the cash obtained to reinvest in farming for the next season. The crops grown for sale by middle and better off households, in order of importance, are maize, beans, groundnuts and millet. Poor households have little to sell but in some cases sell the little maize produced for essential non-food items, and start buying from the market.

3.6.3.2 Livestock

Most of the poor do not own any livestock. However after doing piece work from the better off they are paid 1-3 chickens, sometimes acquired through gifts or purchase at a cheap price. Livestock holdings for the middle are 1-6 chickens, 5-10 goats. The better off have either no cattle or less than five and have 10-15 goats, more than 20 chickens and an average of 4 pigs. Use of animal power is not practiced in this zone. Households sell chickens at ZK20-30/chicken, ZK150/ goats during the lean period and ZK 200 in normal times, pigs at K 250/pig during lean period, ZK300-400/pig in normal times

3.6.3.3 Cash income

The main source of cash income for poor and middle households is agricultural labour. Petty trade is limited in the zone because of its geographical position. The zone is located far from the Luwingu town with poor roads that are impassable during the rainy season. Currently there are roads under construction by Chinese contractors. The project, expected to end this year, may change the livelihood of the community through a good road network and access to better markets. Only 3 per cent on the population in this zone is estimated to be under salaried work, with the majority being teachers and maids (working at teachers' houses). Crop selling and trade is the main source of cash for better off households. A majority of households practice barter trade to obtain household items. Households exchange their produce for other items to get groceries such as salt. The remarkably heavy dependence of the poor on casual labour income in this zone forces them into an on-going poverty cycle as they do not have sufficient time to cultivate or engage in other income generating activities.

3.6.3.4 Wild Food Sector

All wealth groups have equal access to wild food. Fishing from wet lands and rivers is the major source of wild food. However river and wet land fishing is not among the major livelihood activities in the area. Households do not sell wild vegetables and fruits in the survey area. Consumption of wild food is highest in the most deprived households.

3.6.3.5 Remittances Sector

Some of the poorest households have been targeted under the Social Cash Transfers program by GRZ. Some poor households get transfers from relatives or churches and benefit from the government subsidy input program. A majority of wealthier households are members of the cooperatives enabling them to access inputs from FISP.

3.6.3.6 Productive household assets

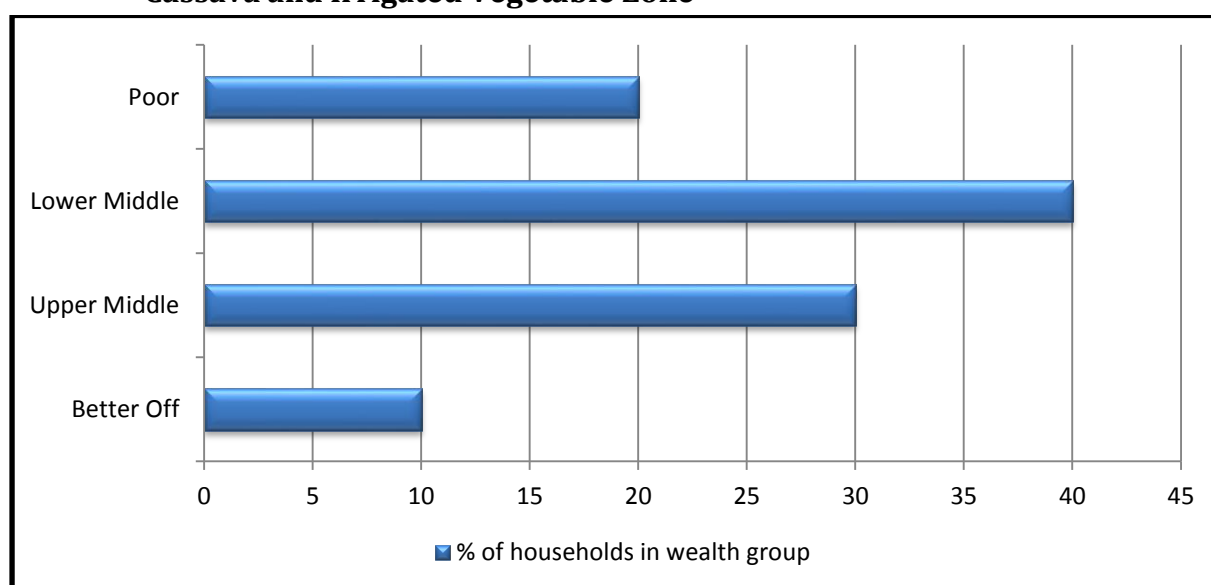
Most poor households own only axes and hoes, and live in mud and grass thatched huts. On the homestead they may have up to 3 mango and banana trees on their wet lands. The middle owns 1-2 bicycles, watering cans, hoes and axes. Most of their houses are brick walled and grass thatched. The better off have 1-2 bicycles, watering cans, solar panels, and some have DSTV (satellite TV). They own iron sheet roofed and brick walled houses. They own citrus trees, mangoes and bananas.

3.6.4 LAKE FISHING, CASSAVA AND IRRIGATED VEGETABLE ZONE

This zone includes nine wards dominated by fishing and cassava cultivation. The livelihood zone covers a large part of Luwingu South and borders Lake Bangweulu. Fishing on the lake is the main economic activity and very small-scale crop production and livestock keeping is also practiced. Commercial fishing is a major source of income for some households. Fish stock in Lake Bangweulu has decreased for the past three years changing peoples' livelihoods to activities linked to the irrigation scheme involving the damming of the river and wet lands. The zone features substantial cultivation of rice and sugarcane as well as cassava, maize, and millet for home consumption. Wealth differences are essentially defined by the amount of land that households are able to cultivate by hand, and the quality of that production. Maize and ground nuts are an important cash crop. Vegetable cultivation is increasing in the area but currently faces market constraints because the zone is far from the town centre where vegetable consumption is at demand.

The zone is a relatively wealthy area compared with the other zones in Luwingu. The key informants indicated four wealth groups in this zone namely poor, middle lower, middle upper and the better off. The local name used for the poor is *abalandasana*, middle lower-*abakonka pabapina*, the middle upper- *abapinka*, the better off-*abakankala*. The zone has a higher percentage of better off and middle households than the other two LZs in the district.

Figure 7: Estimated proportion of households by Wealth Group in Lake Fishing, Cassava and Irrigated Vegetable Zone



Household size for the poor is 8; the poor in this zone have more children than the rest of the wealth groups where the average size is 6. Polygamy is not common in this livelihood zone. However in each wealth group there are few households which practice polygamy (men have two wives living in separate households).

Table 8: Wealth Group Information in Lake Fishing, Cassava and Irrigated Vegetable Zone

	Land Owned (hectare)	Livestock	Month Food Last	Main Food Crop	Main Assets	Productive
poor	< 1	1-3 chickens	3-6	Cassava	Hoe, Axe, Fish baskets, Fish arrows	
Lower Middle	0.5-1	1-2 cattle 1-2 goats 3-10 chickens	< 7	Cassava	Hoe, Fish baskets Axe, Trees, Fish arrows	
Upper Middle	1-4	2-3cattle 3-6 goats 10-15chickens	Though out the year	Cassava	Axe, Trees, Bicycle, Fish nets, Canoes, , Solar panels	
Better off	5-6	> 8 cattle 7-10 goats 20-30 chickens	Though out the year	cassava	1-2 Bicycles, Canoes, Fishing nets, Solar panels, Mobile phones, Citrus trees, Engine powered boat DSTV (few)	

The poor owned less than half a hectare of land acquired through inheritance. The middle lower have half to 1 hectare acquired through inheritance but usually cultivated half a hectare. The middle upper have 1- 4 hectare of land acquired through inheritance and purchased from village elders and from the poor. They usually cultivate an average of 1 hectare. The better off have 5-6 hectares of land acquired through the traditional system of tenure and purchase from other wealth groups but cultivate less, averaging 3 hectares. All households have equal access to wet lands, with an average of 1 lima. All income groups use the wet lands for green vegetables and irrigation: irrigated vegetable farming is high among the better off and upper households. Renting in or out of land is not common among households of any income group. Generally farming is not the major activity in the area.

3.6.4.1 Crop Production

The main crops grown for food are cassava, sweet potatoes, ground nuts, beans and maize in order of importance. Food crops grown do not vary among the upper wealth

groups. The poor mainly grow cassava and during the rainy season they mainly grow groundnuts and a little maize. The poor do not grow cash crops. Maize, millet and groundnuts are the main cash crops among the upper wealth group. Usually households produced little grain lasting an average of two months for the upper households. Households rarely consumed grain: high grain production, households usually sell this after harvesting and later have to purchase to consume grain. Some households acquired maize and rice through exchange of maize for fish.

3.6.4.2 Livestock Sector

Livestock are mainly used to define the status of the household in this zone. All income groups except the poor have cattle, goats and chickens. Better-off households often have more than 8 cattle, but these are rarely converted to economically productive uses e.g. for farming, consumption or sale. For instance consumption of milk, even by better off people is limited. In addition the sale of livestock and livestock products is limited in a normal year. Key informants highlighted that in the past six years the area has not had any hazards that have forced them to sell their livestock as a coping mechanism.

As with any concentrated area of irrigation, few livestock are kept in the village. Households with a large stock of cattle keep these far away, leaving the animals to graze themselves throughout the year. Goat movements are controlled by the traditional tethering/grazing system to prevent them from damaging crops.

3.6.4.5 Cash income

The main sources of cash in all wealth groups are fishing from Lake Bangweulu. However, the main income source varies at individual household level. The cause of differences in cash income is the skill needed to fish from the Lake and access to equipment used for fishing. The better off have an average of 3 boats used for fishing. The poor and lower middle income group heavily depend on the better off for fishing casual labour paid per trip or monthly. The area has limited agricultural trade and labour. The middle lower travelled away seasonally to work in the high potential fishing zone at an island in Lake Bangweulu. The irrigated farming has potential to provide good household income with the presence of markets. Salaried work, crop sales, selling vegetables, dry fish trading, beer brewing, selling livestock and various trades are among the sources of income in this zone.

3.6.4.5 Wild Food Sector

The common wild food is fish and wild fruits are *masuku*. Through fishing, households generate a large proportion of their income. Households have equal access to lake water, the limitation in utilising the lake are resources and fishing skills. Key informants indicated that wild vegetables are not commonly consumed because of its scarcity in the area.

3.6.4.6 Remittances Sector

The poor benefit from the government Social Cash Transfer program. In general, the poor are not members of associations in the zone due to lack of resources and money to pay membership fees. The majority of the poor households access food and cash from relatives within the livelihood zone. About 50 per cent are able to access inputs from the Government Fertilizer Support Programme while other poor households acquire inputs from the Food Security Pack Project from the Ministry of Community Development through women's clubs. Almost all wealthier households access inputs from the Government Fertilizer Input Support Programme through joining Cooperatives.

4. CONCLUSIONS AND IMPLICATIONS FOR ACTION

4.1 Conclusion

Mbala and Luwingu's population, particularly its poor, suffer from a significant shortage of human, financial, physical, natural and social capital. In terms of human capital, years of schooling for both women and men in rural communities is very low, water and sanitation facilities are unsatisfactory and the majority of rural households use wells and springs to source drinking water with few using boreholes. The nutritional situation is poor with frequent years of high levels of malnutrition and food insecurity. Physical capital, transport, energy and telecommunications infrastructure is limited, hampering real economic growth. Poor road infrastructure remains a hindrance to trade. The use of firewood and charcoal to fulfil all energy requirements and the traditional farming system of shifting cultivation has led to significant deforestation, as forests have been depleted due to excessive tree-cutting. As a result, environmental degradation is ongoing, and continues to threaten livelihoods. There is high depletion of fish stocks due to poor fishing methods particularly in the Lakeshore area. Formal social capital is limited in many communities and mostly absent for poor households. In terms of financial support, Better-off and Middle households commonly provide minor gifts to Poor families. In addition, there is a pilot social cash transfer scheme in both Mbala and Luwingu targeting a few households. The majority of the poor group are living without adequate assistance. Recommendations for actions are listed below.

4.2 RECOMMENDATIONS FOR ACTIONS

Cassava is more productive than maize in the two districts. Particularly in Luwingu, intervention programmes focusing on an expansion of existing cassava production would be likely to be popular with, and supported by, communities. Intervention programmes on food security that focus on the introduction of other crops should introduce crops suited to acidic to lateritic soils (Alluvial-red in colour cover soils) in Mbala, and acidic clay and sandy soils in Luwingu. The zones have great potential for livestock rearing, but before restocking can be done there is a need to support livestock disease and pest control programmes. There is need to reduce poor households' reliance on reducing the number of meals they consume and cutting purchase of essential non-food items, by increasing their income through: improvements in local agricultural production and food crop diversification; provision of small irrigation pumps; and providing improved, disease resilient seeds related to dry spells, long periods of rainfall and the like. To provide employment, an increase in the number of labour-intensive projects, particularly those building livelihood assets are needed (such as roads and market service infrastructure, secondary and tertiary schools, adult learning) There is need for road rehabilitation to facilitate transport of produce to markets and timely delivery of inputs. Food for assets or cash-for-work programmes could be used to rehabilitate some poor roads. There is also a need for increases in small business credit and loans for poorer households by providing restocking schemes and other agricultural loans that are carefully tailored to an area with frequent outbreaks of livestock diseases and frequent bad years. There is lack of healthcare services for the poor, and a greater focus on disease prevention by promoting basic hygiene is needed, along with improved access to clean water for human use. The high dependency on free or agricultural subsidised inputs could be reduced through community-based targeting of free food distributions only in very bad years and the use of asset based projects to promote access to food and inputs like food for work, inputs for work, cash for work and provision of agricultural loans. Finally, there is need for improved marketing arrangements and access to livelihood assets information (including education, health care, access to loans, irrigation programs, fishing management, sanitation, proper use of forest).

4.3 Factors Likely to Impact on Programming

- Lack of draught power for households in all wealth groups
- Livestock diseases, (especially CBPP for cattle) and crop pests
- Poor infrastructure (roads) and difficulties with marketing agricultural (and other) production
- Heavy dependence on free inputs
- Lack of capacity by poor households to expand production due to lack of draught power and inability to afford modern inputs and drugs, soils types of main areas only support a limited number of crops.
- Poor road infrastructure has made some areas difficult to access, making it difficult for households to purchase and sell goods.
- Minor floods and heavy rainfall
- Lack of market information and inability to change from traditional ways of farming and livestock rearing and practice.

5.0 APPENDIX

Appendix I: Historical Timeline and Seasonal Calendar

Mbala Historical Timeline 2006-2013

Year	Food Security	Events, Effects, and Responses
(March-February)	Ranking	
2012	1	Bad Year: High commodity inflation (high cereal prices); low wage rate, unemployment; heavy rains; food insecurity; limited food aid distribution.
2011	3	Average Year: Rising inflation; average level of job opportunities; average to good rainfall; minimum coping activities; average food security level; normal trade movement; animal disease outbreak; high livestock death; high construction activities; low cereal prices.
2010	4-3	Average-Good Year: Average to good rainfall; low inflation rate; average food security level; normal food prices; increased employment; good terms of trade; less emigration looking for green pasture; low animal disease and death.
2009	2	Bad Year: Food availability and price levels normal; limited trade; less inflation; average rainfall; low employment; increased shifting to new settlements; high deforestation; low cereal prices
2008	2	Bad Year: Food insecurity; no employment; less inflation; high deforestation; high input cost
2007	2	Bad Year: food insecurity; ; no food stocks, no casual employment;
2006	1	Poor Year: bad harvest; moderate floods followed by drought; normal trade levels

Luwingu Historical Timeline (3 LZs)

Mufili⁴

Year	Food, security ranking	Events, Effects and Responses
2012	2	Bad Year: Low yield due to poor rainfall the distribution. The inputs distribution was erratic and not many farmers were able to receive from the Farmers Inputs Support Programme. Market problems.
2011	04-Mar	Above Average Good Year: The harvest was good as the rainy season was good and farmers had cash as they sold more maize than any other year.
2010	3	Average Good Year: The harvest was good due to good rains but the market was a problem. The input accessibility increased due to inputs from the Food Security Pack for the Vulnerable but Viable Farmers.
2009	2	Bad Year: The poor harvest continued as farmers could not recover easily from the previous poor harvest, average rainfall, poor markets of produces and low food security at household level.
2008	02-Jan	Very Bad Year: Low rainfall, this was a worst year that was compounded by the problems of the past seasons. Poor market for produce.
2007	2	Bad Year: Low rainfall, experienced drought, not good rainy season leading to poor harvest coupled with poor marketing of produce.
2006	2	Bad Year: Farmers not able to acquire right amounts of fertilizer both basal and top dressing, the harvest was poor due to poor rainfall and limited access to inputs and marketing.

Rank descriptions: 5 = excellent year for household food security (low prices, good wage rates, etc); 4 = a good or above average year for household food security; 3 = an average year in terms of food security; 2 = a below average year for household food security; 1 = a poor year for household food security (high prices, low wage rates, etc.)

⁴ Historical time line for the other two ward is available, if needed contact SHA-Zambia

Seasonal Calendar for normal year in Mbala, March 2010 to February 2011

Activities	March	A	M	J	J	A	S	O	N	D	J	Feb
Water availability	H							L	L	L	H	H
Rainfall distribution	PEAK									PEAK	PEAK	
Land preparation for field crops							X					
Planting of first crop of beans								X				
Planting of maize									X			
Planting of groundnuts									X			
Labour demand								H	H	H	H	
Weeding of crops									X	X	X	
Household Cash income	H							H				H
Household Expenses						H	H	H	H	H	H	
Application of fertilizer basal dressing									X			
Application of fertilizer top dressing										X	X	
Harvesting of the first crops of beans												X
Marketing of the first crop of beans	X											
Planting of the second crop of beans												X
Harvesting of the green maize	X											
Cultivation of cassava		X										
Harvesting of crops- maize, groundnuts, second crop of beans				X	X							
Processing/ marketing						X						
Gardening				X	X	X	X					
Food Availability	H	H	H	H	H	H	H	H				

Seasonal Calendar for hazard year in Mbala

Activities	M	A	M	J	J	A	S	O	N	D	J	F
Hired labour from the poor and poorest households						H	H	H	H	H	H	
Food deficits								PEAK	PEAK	PEAK	PEAK	PEAK
Livestock sales	X	X	X	X	X	X	X	H	H	H	H	H
Food loans							X	PEAK	PEAK	PEAK	PEAK	X
Harvesting wild fruits						X	X	X	X	X	X	
Gardening				PEAK	PEAK	PEAK	PEAK					
Diseases outbreaks- Malnutrition, diarrhoea	H	X	X	X	X	X	X	H	H	H	H	H

Seasonal Calendar for normal year in Luwingu

Activities	J	F	M	A	M	J	J	A	S	O	N	D
Water availability	X	X	X	X	X	X	X	POOR	POOR	POOR	POOR	POOR
Land preparation for field crops			X	X					X	X		
Planting of maize											X	X
Planting of millet												X
Planting of groundnuts												X
Planting of Bambara nuts												X
Planting of cassava											X	
Planting of rice											X	
Weeding of crops		X	X								X	X
Household Cash income availability					H					H		
Household Expenses demand										H	H	H
Harvesting of the of green maize		X										
Harvesting of beans					X							
Harvesting of groundnuts					X							
Harvesting of maize and millet					X							
Gardening –growing of vegetables					X	X	X	X	X			
Marketing of crops						X	X	X	X			
Harvesting of the green maize		X										
Fundikila burying of grass dry matter			X	X								
Chitemene system in virgin land								X	X			

Seasonal Calendar for hazard year in Luwingu

Activities	J	F	M	A	M	J	J	A	S	O	N	D
Demand and hire labour from the poor and poorest households	H								H	H	H	PEAK
Food deficits	PEAK	L								H	H	PEAK
Livestock sales	H	H										H
Food loans	PEAK	PEAK							X	X	X	PEAK
Harvesting wild fruits	X								X	X	X	X
Eating of mangoes											X	X
Beer brewing						X	X	X	X	X	X	X
Gardening				L	L	PEAK	PEAK	PEAK	PEAK			
Diseases outbreaks- water borne diseases							H	H	H	H	H	H
Fishing on the lake Bangweulu			X	X	X	X	X	X	PEAK	PEAK	PEAK	
Fish ban on the lake	X	X										X

Appendix II: Mbala and Luwingu Districts Coordinates for sampled villages

DISTRICTS	WARD NAME	VILLAGE/COMMUNITY	COORDINATES	
Mbala	Intala	Sizya	S08°41.743'	E031°17.958'
	Nsunzu	Masamba	S09°08.720'	E031°22.297'
	Lapisha	Mutonga	S09°06.166'	E031°44.762'
Luwingu	Bwalinde	Nsombo	S10°48.822'	E029°52.371'
		Nsombo school (Boundary of the LZs)	S10°48.816'	E029°52.371'
	Chifwile	Malekani	S10°35.718'	E030°26.039'
	Mufili	Mufili	S10°15.010'	E029°54.914'

Appendix III: List of Participants for Mbala and Luwingu Baseline Livelihood Assessment

Name	Gender	Organisation	District
Albert Mate	M	Self Help Africa	Lusaka
Simon Longa	M	Self Help Africa	Kasama
Kebby Handongwe	M	Self Help Africa	Mbala
Mtonga Zackrias	M	Self Help Africa	Mbala
Edward Meleki	M	Self Help Africa	Luwingu
Bridget Kaumba	F	Self Help Africa	Luwingu
Mary Nyirenda	F	Ministry of Agriculture	Mbala
Machua Kaira	M	Ministry of Agriculture	Mbala
Kelvin Munyama	M	Department of Community Development	Mbala
Charity Gondwe	F	Reformed Church in Zambia	Mbala
Rabecca Kapembwa	F	Ministry of Agriculture	Mbala
Chisanga Kennedy	M	Ministry of Health	Mbala
Mulenga Noble	M	National Assembly of Zambia	Luwingu
Francis Kazembe	M	Department of Water Affairs	Luwingu
Phiri Chituluma	M	Department of Community Development	Luwingu
Joseph Kabwe	M	Luwingu District Council	Luwingu
Stella Ngoleka	F	Evidence for Development	Zomba-Malawi

Appendix IV

Figure below showing fish pond farming in Fish pond fishing, Cassava and Agricultural trade zone

Fish pond owned by a farmer



Men harvesting Fish from IRISH-AID funded Fish Pond



Size of Harvested Fish from Fish pond



Equipment used to Harvest fish from Fish Ponds

