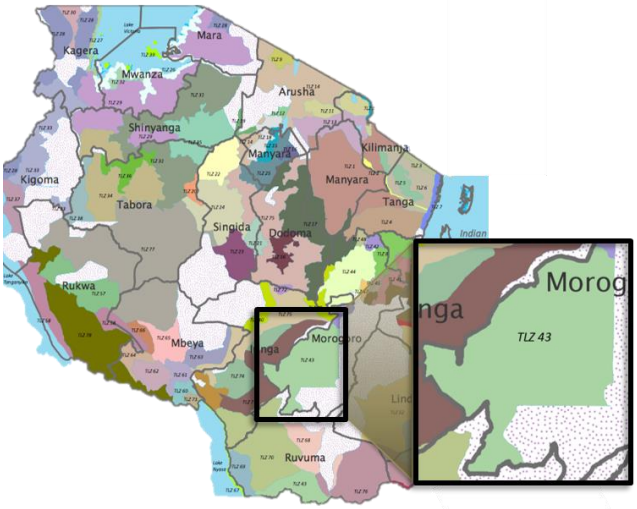
# Tanzania Livelihood Baseline Profile

## Kilombero-Ulanga-Lusewa Paddy, Maize, and Cassava Livelihood Zone (TLZ 43)

March, 2015[1]

### Zone Description

*The Kilombero-Ulanga-Lusewa Paddy, Maize and Cassava Livelihood Zone* is situated in the lowland valley areas of Kilombero, Ulanga and Lusewa districts. The northern part of the zone (Kilombero and Ulanga) is part of Morogoro Region and borders the Selous Game Reserve. The southern part of the livelihood zone hugs the border with Mozambique, stretching across the southern reaches of Ruvuma Region. There are pastoralists from Sukuma lands present in this livelihood zone, but they are not represented by this analysis and should be considered a separate livelihood group living within the livelihood zone. Conflict between pastoralists and farmers over land use is a chronic and widespread problem, which has resulted in injury and litigation disputes. Population density ranges from 10-20 people per square kilometer.




Kilombero-Ulanga-Lusewa Paddy, Maize, and Cassava Livelihood Zone

The zone's fertile loamy-clay soils render it a highly productive agricultural area. The Kilombero and Ruipa rivers and their tributaries transect the zone providing ample moisture to the forest, grasses and farms. There is some irrigated production, but is rainfed. The zone receives from 1000 to 1200 mm of rainfall per year from both the *vuli* and *masika* rainy seasons. The *vuli*, formerly significant, is now less reliable. Most households in the zone rely on the *masika* rains for most of the agricultural production. The zone is characterized as a surplus food zone, growing large quantities of rice, maize and more recently sesame.

Nearly all households rely heavily on crop production to meet most of their annual food and cash needs. Livestock are not very important in this livelihood zone. Most households rear chicken but only a few keep small-stock and cattle. The majority of households cultivate their land with hand hoes; only a small number use ox-ploughs or tractors.

The zone's population has regular access to most services. This includes water, sanitation services, health care, basic lighting, education, and credit. The zone's plentiful supply of water provides the majority of households with good access to water, from nearby rivers, wells, boreholes and taps. Women and children collect water on a daily basis using jerry cans at little to no cost. Sanitation services include latrines, which the majority of households have access to. Government and privately operated dispensaries are scattered throughout the zone and are located in close proximity to most villages. Government-operated dispensaries

[1] Fieldwork for the current profile was undertaken in March 2015. The information presented in this profile refers to the reference year, which started June 2013 and ended May 2014. Provided there are no fundamental and rapid shifts in the economy, the information in this profile is expected to remain valid for approximately five years (i.e. until 2019). All prices referred to in the document are for the reference year.

often have an inadequate supply of medicine to meet the public's demand. Households that can afford the extra cost will visit the private dispensaries operated by missions. Throughout most of the livelihood zone there is no electricity. Most households use Chinese torches, which they buy for 1,000 Tanzanian Shillings (Tsh) and are powered by dry cell batteries. Others use kerosene lamps, solar power, and 100 volt batteries. Most villages have primary schools within their bounds, but very few have secondary schools. Those that have enough money will send their children to private or government secondary schools located at a distance, but still within the zone. Mobile phones are widely used by all households from all wealth groups, and network coverage is generally reliable. There are credit facilities offered in the zone through VICOBA (village community banks) and SACCOS (savings and credit cooperative organisations). Better off households also obtain credit from formal banks. There are several non-governmental agencies working in the zone in the agricultural, environmental and health sectors.

## Markets

Market access in this zone is relatively good. Buyers and sellers are able to access markets without too much trouble throughout the year. Most of the road network is dirt and, while some are in need of repair, most are well maintained. During the rainy season, *vuli* (November through December) and *masika* (March through May) access to the larger zone markets in Ifakara and Mahenge becomes more of a challenge. The lowland topography of the zone makes it susceptible to flooding, and during these times the dirt roads are difficult to pass on a day-to-day basis. Transportation systems, which consist of private mini-vans, buses and *boda-bodas*, are available but are often crowded and are not reliable. The cost of transportation one-way ranges from 5,000-10,000 Tsh – equivalent approximately to the income gained from selling a chicken.

In most of the villages there are kiosks where households purchase items like sugar, salt, soap, batteries and other important household items. Food purchases, like maize grain, rice and meat can also be made within the villages from a variety of small vendors.

Rice and sesame (*simsim*) are the main crops sold in the livelihood zone. Most households, particularly very poor and poor, sell to middlemen that travel to the villages to collect the crops after harvest. The convenience of selling to middlemen in the village rather than traveling to the larger markets is off-set by a lower profit margin for the very poor and poor. These households also sell after the harvest, when prices are lowest, because they need to pay back debts, or purchase essential food and non-food items; they also lack adequate storage. Some middle and better off households set their harvests aside, taking much of it to the larger markets in Ifakara and Mahenge later in the year, when prices are higher. From these markets, commodities are taken to Morogoro and eventually to the main national market in Dar es Salaam.

Chickens are sold throughout the year to generate cash when a household needs it. Chickens are typically sold for 8,000-10,000 Tsh. In addition to chickens, better off households sell larger animals like goats and sheep, and occasionally a calf.

The labour market is almost entirely local. Given the productivity of the land, most households do not have to travel far to find agricultural labour opportunities. A minority, roughly 10% of the zone's residents can find work in the smaller road-side settlements or on the larger town of Ifakara. Non-agricultural labour opportunities are found in tire repair shops, construction, portering, and as domestic workers (mostly women and girls).

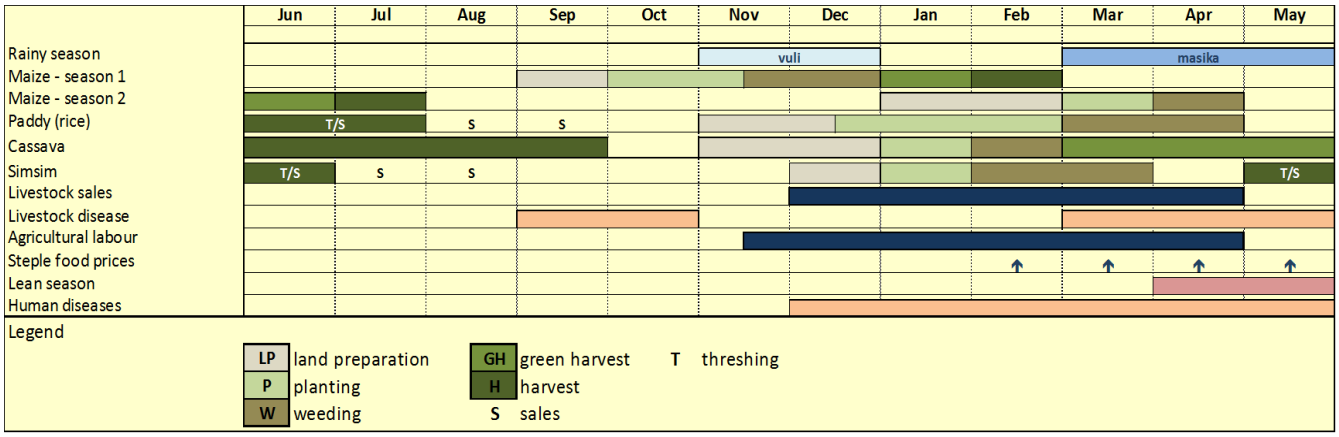
## Timeline and Reference Year

The baseline assessment refers to a very specific time period called the reference year. In the *Kilombero-Ulanga-Lusewa Paddy, Maize and Cassava Livelihood Zone* the reference year covered the consumption period June 2013 to May 2014. During community leader interviews, key informants were asked to rank the last four years in terms of seasonal performance with '1' indicating a poor season and '5' an excellent season. The table below, which summarizes the responses of the community leaders, shows that the reference year was ranked as above average, with good rainfall and above average crop production. The baseline information presented in this profile, therefore, provides a view into how households in this livelihood zone make ends meet in a good year, drawing on a normal range of options.

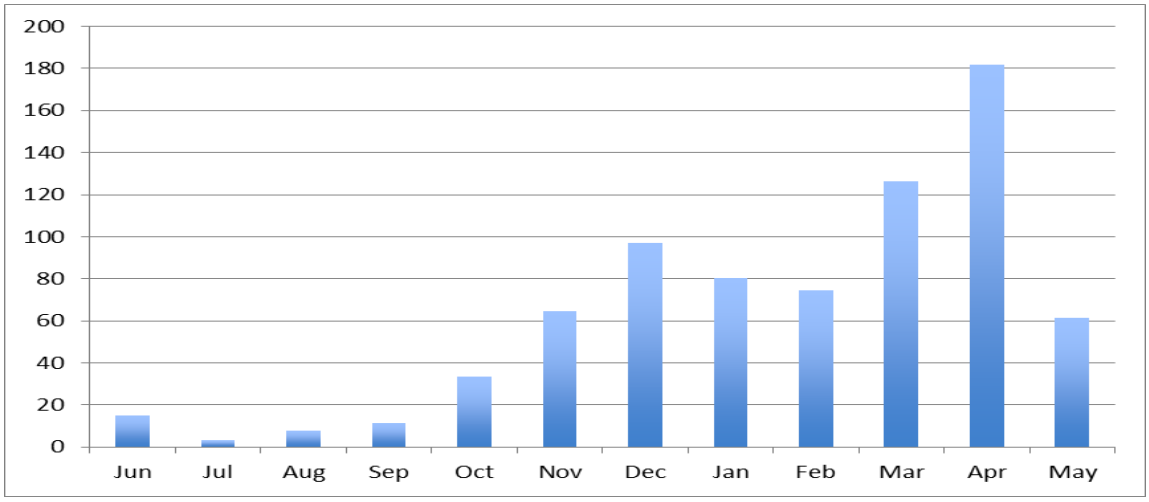
| Year | Rank | Critical Events |
|---|---|---|
| 2014 | **4** | Above average rainfall, above average agricultural production and normal prices for staple foods |
| 2013 | **3** | Evenly distributed rainfall, average crop production |
| 2012 | **4** | Above average rainfall, above average agricultural production and normal prices for staple foods |
| 2011 | **3** | Evenly distributed rainfall, average crop production |
| 2010 | **2** | Below average rainfall, reduced agricultural production |

5 = an excellent season for household food security (e.g. due to good rains, good prices, good crop yields, etc)
4 = a good season or above average season for household food security
3 = an average season in terms of household food security
2 = a below average season for household food security
1 = a poor season (e.g. due to drought, flooding, livestock disease, pest infestation) for household food security

## Seasonal Calendar for Reference Year




*The graph to the right shows average monthly rainfall (mm) in Morogoro based on a recent 10-year period (2004 – 2013) Source: TZ Meteorology Department*




The seasonal calendar shown above shows the typical events and activities performed by households throughout the year in the livelihood zone. The calendar is based on the consumption year, which starts with the green harvest of maize in June and the main harvest of paddy rice. This is the period when most households have the fullest access to food.

There are two rainy seasons in this livelihood zone: the v*uli*, which starts in November and slowly ends towards the final weeks of December; and the *masika,* which is the dominant season, picking up in March and slowing down at the end of May. Small quantities of green maize and maize grain are dependent the v*uli* rains but most of the crops grown in the zone rely on the *masika,* including maize, *simsim*, paddy rice, cassava and small quantities of sweet potatoes and pulses.

Rice, green maize, cassava and *simsim* are typically harvested in June. The cultivation of paddy, *simsim* and cassava starts in November and December with land preparation. Subsequent activities including planting and weeding occur after land preparation and conclude with the harvest in June. *Simsim* is the primary cash crop in the zone followed by rice. Most households, especially the very poor and poor, sell a portion of their crops immediately after the harvest. Better off households wait to sell until prices are more favourable later in the year. Maize is the primary food crop grown in the zone and the second growing season is when households get higher yields. The cultivation for second season maize starts in January and February with land preparation and is followed by planting in March. Weeding is undertaken in April. The green consumption of maize marks the end of the lean season and the beginning of the consumption year.

Coconuts are mostly grown by middle and better off households and are sold throughout the year mostly sold to traders from nearby road settlements and in the larger trading centres of Ifakara and Mahenge. Bananas are

grown in small quantities by very poor and poor households. Most of what they produce is reserved for household consumption however some poor households may sell a bunch of bananas when they need additional cash.

Very poor and poor households obtain a large portion of their cash income from agricultural labour. Middle and better off households hire these households to help with cultivation and harvest activities throughout the year. Most of the demand for hired labour comes during the cultivation period (November through April). This is also the period when very poor and poor households need cash, especially during the lean season.

The lean season, or period when household food stocks typically run out for poorer households, is in April and May. This is also the period when staple food prices, specifically maize and rice, are the highest because of limited supplies in the market. Prices tend to increase up until the harvest in June, when the new supplies push prices down again.

Human diseases, such as malaria and typhoid, peak during the rainy period of December through May.

## Wealth Breakdown

| | | Wealth Groups Characteristics | | | |
|---|---|---|---|---|---|
| | | HH size | Land area cultivated (acres) | Perennial crops | Livestock holdings |
| **Very poor** |  | 6-7 | 0.5 - 2 | 3-5 banana trees | 8-10 chickens |
| **Poor** |  | 6-8 | 2 - 4 | 6-10 banana trees | 12-18 chickens |
| **Middle** |  | 6-8 | 3 - 7 | 10-12 coconut trees | 18-22 chickens |
| **Better off** |  | 6-8 | 8 -12 | 12-16 coconut trees | 3-5 cattle; 8-12 goats; 8-10 sheep |
| | 0% 10% 20% 30% 40%<br>% of households | | | | |

*Note : The percentage of household figures represent the mid-point of a range.*

Wealth in this zone is determined by the amount of land cultivated, which in turn is contingent on intra-household labour availability and the ability to hire labour, rather than access to land per se. Poorer households tend to have fewer able-bodied labourers, limiting the area of land they are capable of cultivating, and they do not have the capital reserves that allow them to hire other people. In fact, being poorer means you are the one hired to carry out the labour activities rather than the one hiring. A knock-on effect of having to work on the farms of middle and better off households is that poorer households do not cultivate their own plots in a timely manner, which reduces yields and further creates food gaps that need to be filled with cash. Because better off households are able to hire additional labour, they cultivate larger plots and tend to do so in a timely way, allowing them to increase yields and make the most of their productive potential.

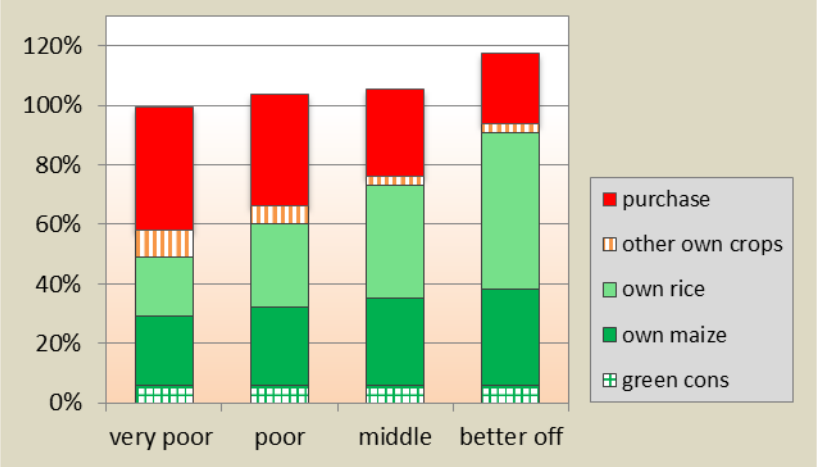
Very poor households represent largest portion of the households in the livelihood zone, approximately 30% to 35% of the households. They cultivate between 0.5 and 2 acres of land mostly growing seasonal crops: maize, rice, cassava, and *simsim*. They may have a few banana trees that they use to supplement their diets. Poor households make up 25 - 30% of households in the livelihood zone. They have slightly larger households, which allows them to cultivate more land than the very poor, between 2 and 4 acres. Like very poor households, the poor cultivate maize, rice, cassava, *simsim* and sweet potatoes. They too have a few banana trees, which they use for both household consumption and for sale. Middle households, who make up 20 - 25% of the zone's households, cultivate 3 - 7 acres of land. They also have coconut trees, approximately 10 to 12, which provide

additional income. To cultivate larger tracts of land they must hire labourers. Better off households represent 15 - 20% of the households in the zone. They provide the bulk of the labour demand, hiring many of the zone's poor and very poor household members to work on their 8 - 12 acres. They grow the same crops as the other wealth groups.

Livestock ownership is not a major component of local livelihoods. There are a number of livestock present in the zone, but many of these are owned by pastoralists who pass through the zone on seasonal migratory routes. Most households in this livelihood zone own chickens with numbers increasing with wealth. Better off households also own sheep and goats, and a few cattle, which are used for small amounts of milk and meat, and sold to generate additional cash.

## Sources of Food

The bar charts in the graph to the right present sources of food for households in different wealth groups in the livelihood zone for the period June 2013 until May 2014. June represents the start of the consumption year because it marks the end of the hunger period, as people begin consuming green crops in significant quantities. Food is presented as a percentage of 2100 kcal per person per day for the 12-month period.




*In the graph, food access is expressed as a percentage of minimum food requirements, taken as an average food energy intake of 2100 kcals per person per day.*

Very poor households fall just short of meeting the minimum annual calorie requirement getting only 99% of their annual needs.
Just under 60% of their annual food comes from their own crop production. Of this, almost 30% of minimum calories are supplied by maize, including from that consumed green. Around two-thirds of this maize is harvested from the *masika* season rains; the other third comes the *vuli* season. Rice makes up the main component of remaining own crops, with small contributions from bananas and cassava as well. Purchased food covers the remainder of very poor household food for the year. In addition to maize and rice, households buy beans, oil, sugar, beef, dried fish and vegetables throughout the year.

Poor households' sources of food and relative patterns of reliance are similar to very poor households. They are able to cover more of their calorie requirements from own crop production, deriving around 65% of their annual needs from their fields. Maize and rice are their main food crops, and they also produce and eat small quantities of cassava, bananas and sweet potatoes.

Middle households produce significantly more than poor and very poor households, cultivating much larger areas. Middle households produce far more than they need, selling a large portion of their rice for cash. In fact, if they kept all of their maize and rice instead of selling it, they would be able to cover around 190% of their calorie needs. Instead, they sell quite a bit of this and purchase food to diversify their diets. Middle households also produce and consume small quantities of coconut flesh (the white part) and the oil as a vegetable oil substitute.

Better off households are similar to middle households in that they produce much more than they need. Most of their production is in the form of rice. They typically produce around 1,600 kg of maize from both seasons in a year like the reference year, and 4,400 kg of rice. Although the graphic above shows that just

over 90% of their annual calorie requirements are covered by their own crop production, they could actually cover almost 400% of their needs if they did not sell any of their produce. Like middle households, they purchase food to diversify their diets, not to fill a food gap. They also produce coconuts for consumption and sale.

## Sources of Cash Income

The graphic to the right shows sources of cash income during the reference year in Tanzanian Shillings by wealth group.

There are four main categories of cash income: crop sales; livestock sales; agricultural labour; and self-employment.

This livelihood zone is characterized by its surplus crop sales and this is made clear by the middle and better off income graphs. Rice sales are especially important, but sesame sales also make up a significant proportion of annual cash income. As a proportion of total cash income, rice sales make up around 20% of very poor household cash income, 30% of poor and middle household cash income, and around 45% of better off annual cash. Sesame sales comprise around 20% of poor and middle household cash income and around 10% for better off households and very poor households. Maize and other crop sales, while less important, are nevertheless meaningful.


*The graph provides a breakdown of total annual cash income in Tanzanian Shillings according to income source.*

| INCOME SUMMARY TABLE (in Tanzanian Shillings) | | | | |
|---|---|---|---|---|
| **Wealth group** | **Very poor** | **Poor** | **Middle** | **Better off** |
| **Annual income per household** [2] | 800,000 - 1,100,000 | 1,200,000 - 2,200,000 | 3,000,000 - 4,000,000 | 5,000,000 - 6,000,000 |

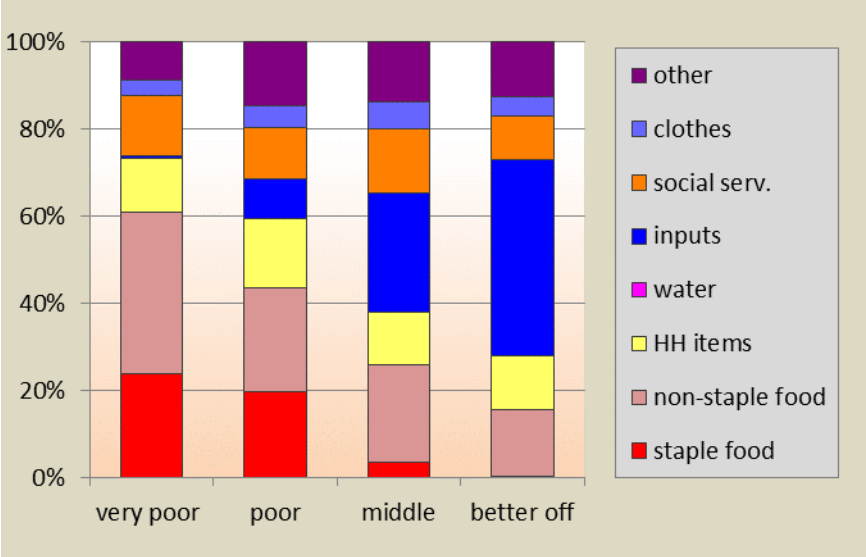
Cash from agricultural labour is critical for very poor and poor households, making up around 60% and 35% of annual cash income respectively. The pre-harvest or cultivation period is when much of the labour demand is highest. Pre-harvest labour accounts for 41% of their annual cash for very poor households, and harvesting work makes up about 18%. Chicken sales contribute an additional 3% of annual cash. Poor households also work on the farms of others', but less than very poor households. Cultivation labour provides 21% of their cash income, while harvesting labour makes up 13%. Like the very poor, chicken sales cover a very small percentage of overall cash income.

In addition to crop sales, middle households also rely on self-employment, which is a mix of small business, petty trade and *boda-boda* (transporting goods for others by motorcycle in return for payment). This source accounts for about 30% of the middle households' annual cash income. Better off household also supplement their crop sales with self-employment activities, including small business, petty trade, *boda-boda* and milling. Livestock sales, which includes chickens but also other livestock such as sheep, goats and cattle provides about 10% of their annual earnings.

[2] The average exchange rate from June 2013-May 2014 was 1 USD = 1,585 TZS

## Expenditure Patterns

The graph presents expenditure patterns for the reference year June 2013-May 2014. While total expenditure increases with wealth, the expenditure breakdown by percent in this graph shows the relative amount of income spent on different categories.




*The graph provides a breakdown of total annual cash expenditure according to category of expenditure*

Very poor and poor households spend more on food than their wealthier neighbours. Staple and non-staple food combined accounts for 60% and 44% of very poor and poor household annual expenditure respectively. Middle and better off households spend significantly less on staple food: better off households, for instance buy only around 36 kg of maize grain a year compared to 189 kg bought by very poor households. As a proportion of annual spending, staple food almost does not register for better off households. They purchase non-staple foods, like sugar, oil, meat and dried fish. Because their total cash income is around six times higher than very poor household cash income, in proportional terms better off households' expenditure on non-staple foods is lower than other wealth groups, but in absolute terms it is actually higher.

Households spend nearly the same proportion of their earnings on household items, between 12% and 16%. This category includes items such as tea, salt, soap, grinding expenses, cooking fuel, basic lighting and cooking utensils.

Costs associated with agricultural production, such as fertilizers, seeds, pesticides and labour, make up the 'inputs' category. Very poor and poor households spend only on seeds and tools, and with smaller field sizes, their expenditures on even these items is less than middle and better off households. On the other side of the wealth spectrum, inputs accounts for 28 - 45% of their annual expenditure for middle and better off households, respectively. These households buy seeds for much larger areas and pay for tools; but they also need to pay for ploughing, fertilizers, pesticides, and labour. Labour costs represent a quarter of the input costs for middle households and close to half of the input costs for the better off.

The 'social services' category includes school fees and associated education costs, as well as medical/health costs. Across all wealth groups the proportion of annual expenditure on this category is similar, taking up 10 - 14% of cash income. In absolute terms, middle and better off households spend significnalty more on schooling, sending their children not just to primary, but also to secondary and tertiary schools.

The 'other' expenditure category includes gifts, community obligations, festival costs, beer/alcohol and cigarettes and cosmetic and beauty care costs. In essence this category includes a range of discretionary expenditure that does not directly contribute to or cover the costs of local livelihoods.

## Hazards

In the *Kilombero-Ulanga-Lusewa Paddy, Maize, and Cassava Livelihood Zone* households reported the following hazards affect them on an annual basis:

Crop diseases and pests: *Kimyanga,* or yellow moto virus, affects rice annually. Infection of the plant leads to reduced production and/or its death which directly affects households' ability to produce rice for food and cash. Given the clear importance of rice in this zone for all wealth groups, this is a serious threat. Maize is affected by army worms which can decimate crops if the outbreak is severe. This is particularly problematic for very poor and poor households since maize covers around a quarter of their annual food requirement. Cassava mosaic and cassava brown, affect production of this food crop. Once infected the plant eventually dies.

Human disease: Malaria, typhoid and diarrhoea are a common threat every year. Malaria, which occurs during the rainy season, undermines the household labour pool during peak agricultural demand periods important for income generation and optimal agricultural production. Typhoid and diarrhoea can also lead to lost income and reduced productivity, especially if the primary labourer becomes sick.

Conflict between pastoralist and resident farmers: Sukuma pastoralists from Shinyanga, Tabora and Simiyu, and Maasai pastoralists from the north have moved into the zone over recent decades; their livestock periodically cause significant crop damage. Intermittent skirmishes between the two groups lead to injury.

Cash crop marketing: While not strictly a hazard, and more a marketing constraint, high transportation costs and long distances to central markets makes it difficult for local farmers to get the maximum payment for their crops.

Flooding and drought occur approximately once every five years in this zone.

## Response Strategies

Households engage in a number of strategies in an attempt to cope with hazards. These include:

**Increased agricultural labour:** Very poor and poor households will increase the number of days they work or send more household members to work on the farms of other households. The increased earnings are then used to purchase essential food and non-food items. In some cases they will work in exchange for payment in kind (as maize or rice) rather than cash. When food prices are high, this is a preferred means of payment.

**Increased livestock sales:** The sale of additional chickens is an option for most households. In normal years chickens are sold during the peak festival periods, but in a bad year they will also be sold at other times of year as well. Better off households own goats, sheep and cattle and can sell additional animals to meet their financial needs.

**Reserve all maize harvest for food rather than sale:** Poorer households store and consume their maize rather than selling it.

**Selling more rice rather than eating**: Most households would opt to sell more rice than they would in the reference year and use the cash to by maize grain, a cheaper staple.

**Reduce expenditure:** Most households will reduce their expenditure on non-essential items (anything in the 'other' category) as well as reduce expenditure on non-staple food such as rice, sugar, oil and meat in order to buy more maize grain.

## Key Parameters for Monitoring

The key parameters listed in the table below are food and income sources that make a substantial contribution to the household economy in the *Kilombero-Ulanga-Lusewa Paddy, Maize and Cassava Livelihood Zone*. These should be monitored to indicate potential losses or gains to local household economies, either through on-going monitoring systems or through periodic assessments.

It is also important to monitor the prices of key items on the **expenditure** side, including staple and non-staple food items.

| Item | Key Parameter – Quantity | Key Parameter – Price |
|---|---|---|
| **Crops** | • Maize season 1 and 2 – kg produced<br>• Rice 2 season – kg produced<br>• *Simsim* - kg produced<br>• Cassava - kg produced<br>• Coconuts - kg produced<br>• | • Maize season 1 and 2 –producer price<br>• Rice 2 season – producer price<br>• *Simsim* - producer price<br>• Coconuts - producer price |
| **Livestock production** | • Goat herd size<br>• Chickens - numbers | • Goat prices<br>• Chicken prices |
| **Other food and cash income** | • Land preparation demand<br>• Weeding demand<br>• Harvesting demand<br>• Demand for boda boda<br>• Demand for petty trade activities | • Agricultural labour rates<br>• Boda boda fees<br>• Petty trade profits |
| **Expenditure** | | • Maize meal – consumer price<br>• Rice – consumer price<br>• Oil price |

## Programme Implications

The longer-term programme implications suggested below include those that were highlighted by the wealth group interviewees themselves and those made by the assessment team following detailed discussions and observations in the field. These represent potential areas of further investigation and would require detailed feasibility studies and cost-benefit analyses. They are organized into four categories: social service provision, agriculture/livestock service provision; Income generation/livelihood strategy support; and market support.

**Financial support for agricultural inputs**: Provide agricultural inputs and extension services at affordable rates.

**Improved health care access**: Some villages do not have access to nearby health care. Requests were made to improve this situation.

**Improved water services**: Water is mostly sourced from rivers, wells and boreholes. There are few tap services. Request were made to improve access to closer-by, clean water sources.

**Improved agricultural marketing**: One of the main problems faced by farmers is unstable prices for the crops that they produce. Improved marketing of goods with an eye to increasing local farmer profits could help improve local livelihoods.

**Electricity services**: Expand electrical network to more villages.