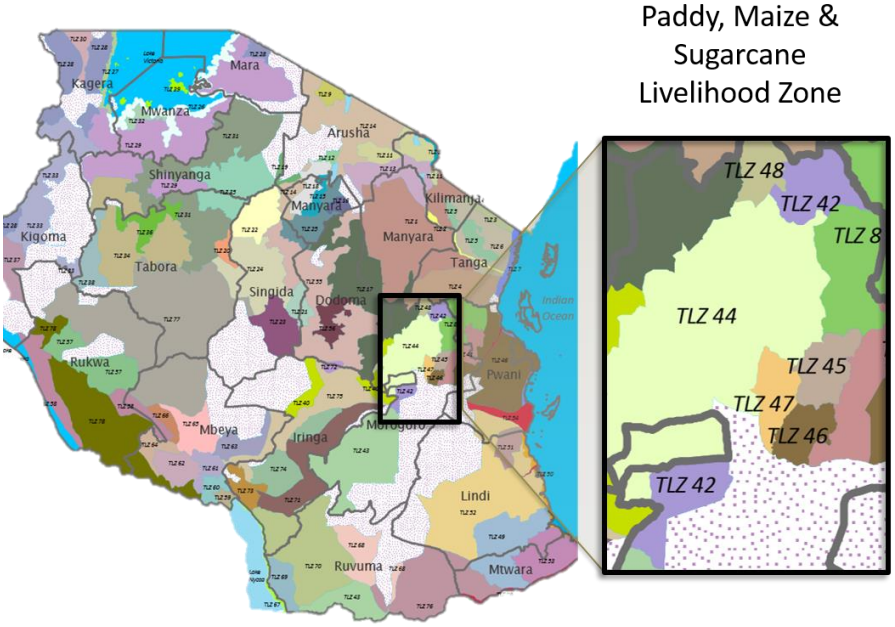
Tanzania Livelihood Baseline Profile

Kilombero-Mvomero Paddy, Maize & Sugarcane Livelihood Zone (TLZ 42)

February, 2016[1]

Zone Description



Kilombero-Mvomero Paddy, Maize & Sugarcane Livelihood Zone

The *Kilombero-Mvomero Paddy, Maize & Sugarcane Livelihood Zone* is a unique zone found in Morogoro Region, and geographically separated into two parts – one at the north eastern boundary of the *Kilosa-Mvomero Maize and Paddy Lowlands Livelihood Zone* (TLZ 44) and one on the southern boundary of the same zone. Most of the zone is found in three districts: Kilombero (Sanje and Mkula wards); Kilosa (Kidodi and Ruhembe wards); and Mvomero (Sungaji, Kanga, Mtibwa and Djongoya wards). The main ethnic groups living here are the Pogoro, Wavidunda, Nguu and Zigua. The Nguu, Udzungwa, and Kanga mountains are found here, and major rivers, like the Ruaha and Mjonga flow through the zone, providing a source of water for local residents. This warm zone is situated at around 270-500 meters above sea level, and has a mix of flat plains, river valleys and mountainous areas, covered with forests and agricultural land. The Ruaha River provides some with access to fishing, but this is not a typical source of food or cash for most households. The Mikumi and Udzungwa national parks are found nearby.

This zone is unique due to the existence of sugarcane estates and factories, which are surrounded by outgrower farmers who supply sugarcane via producer associations to the factories. The profile describes the livelihoods of these outgrowers, who work, essentially, as contract farmers for the sugarcane factories. Many households own or rent farm plots far from their homes, where they grow paddy and maize. Plots near the homestead have been converted into sugarcane fields, which makes land for farming crops scarce. With the expansion of sugarcane, food crops have been exposed to fires and pests that are associated with sugarcane fields, which makes it difficult to grow food crops near the sugarcane fields. This means many households are juggling various demands from different agricultural plots as well as the care of home and children.[2] Poorer households concentrate more on food crop production, unable to manage the heavy demands of both sugar cane and food crops. Better off households use the proceeds from sugarcane to help support their food crop production, essentially reducing the risks of failure from either their food or cash

[1] Fieldwork for the current profile was undertaken in November and December of 2015. The information presented in this profile refers to the reference year, which was the consumption year that started in May 2014 and ended in April 2015. Provided there are no fundamental and rapid shifts in the economy, the information in this profile is expected to remain valid for approximately five to ten years (i.e. until 2020-2025). All prices referred to in the document are for the reference year.

[2] http://www.plaas.org.za/blog/tanzanias-commuter-farmers-facing-livelihoods-challenges#sthash.X4ckdtvf.dpuf

sources. Cash incomes are, relatively speaking, higher than in neighbouring zones, and there is a noticeably higher investment in schooling as a result.

There are two rainy seasons – the *masika* rains, from March to June, and the short *vuli* rains, from November to December. Maize is grown in two seasons, but the other crops are long cycle varieties, depending on the rains from both seasons to reach maturity. Total precipitation ranges from 600 to 1,200 mm, and the temperatures can be as low as 18 °C in the winter and as high as 30 °C in the summer. The soils are fertile clay loams with a high potential for good crop production.

Maize and paddy are the main food crops, but portions of both are also sold for cash by all households. Maize is rain fed; paddy is both rain fed and irrigated. Pigeon peas and sesame are also grown, primarily as cash crops, but partially consumed as well. Hand hoes are the dominant form of cultivation for poorer households, whereas better off households use tractors. Sugar cane and paddy are both very labour-intensive crops, especially at planting, weeding and harvesting times. During these periods, middle and better off households hire members from poor and very poor households to help them.

Other than chickens, which are widely kept, livestock are not a source of either food or cash income in this livelihood zone, unlike many zones in rural Tanzania. There is not enough land to raise livestock, and it is not a part of the traditional livelihood patterns of the local inhabitants.

To earn additional cash, poorer households depend heavily on seasonal agricultural labour on both the farms of local outgrowers as well as at the larger sugarcane estates. They also engage in a range of other income generating activities, such as brick making, brewing and petty trade. Middle and better off households earn extra cash from petty trade and from *boda boda* (motorcycle taxi hire).

There are serious constraints to production in this zone, including severe limitations on the amount of land available for food crop production. As more and more land is taken over for sugarcane production, people are forced to rent plots farther and farther away from their villages in order to grow food. Crop diseases and pests, such rice blast fungus, army worms and rodents, are a constant challenge. Local outgrowers claim that their income is limited by unfair practices on the part of the sugarcane companies, which has led to a climate of distrust and frustration. In addition, there is ongoing conflict between local cropping residents and pastoralists who migrate into the zone to access pasture and water resources.

Services in this zone are good compared to much of rural Tanzania, especially for better off households. Drinking water is obtained from rivers and wells that are all fairly close to villages. Tap water, which is found in the village centres, requires a monthly contribution to maintain the pumps. Better off households generally have tap water in their houses. Poorer households use pit latrines and maintain separate pits for garbage disposal; better off households have improved flush toilets in their houses. Most villages have a health dispensary, although these may not be well-stocked. Better off households typically travel to health facilities in the ward centre, or hospitals in regional centres when necessary. Primary schools also available in villages, with secondary schools found at the ward level. Almost all households send their children through secondary school, even poorer households. Middle and better off households send their children through to the university level. There is no electricity in this zone so households depend on battery-operated torches, kerosene lanterns and solar lamps for light. In general, all households have at least one mobile phone and better off households have multiple phones. VICOBA provides access to loans and to savings schemes. The Tanzania Social Action Fund (TASAF), which provides grants to poor households to start income generating projects or to access social services, operates here.

Markets

The transportation infrastructure in this zone is relatively good. The zone is split into two parts, as discussed above, with one section found in Mvomero, in the north of Morogoro, and the other in Kilombero, in the central western part of Morogoro. The Kilombero part of the zone is very close to a major junction in Tanzania's railway line, with one arm extending from Mbeya to Dar es Salaam and the other heading north

to Dodoma. This part of the zone has ready access to the tarmac road that goes from Morogoro to Iringa. The other part of the zone is close to Tanga and Morogoro town. Feeder roads extend throughout the zone, from Dumila to Kilindi, Dumila to Kilosa, and Mikumi to Kilombero. Almost all roads are accessible throughout the year (even in the wet season) and most bridges are in good condition, with the exception of the Mjonga bridge to reach Digoma village. The zone is close to urban centres, which provide a steady demand for local commodities, and good roads make the movement of goods and services relatively easy. Morogoro is the main intermediary market, providing ready access to Dar es Salaam, the main terminal market for most goods.

Paddy, maize, pigeon peas and sesame are the main food crops sold by households in this livelihood zone. Sugar cane is the most important cash crop, but this is grown and sold only by middle and better off households. Poorer households rely on maize, pigeon peas, sesame and paddy to generate their crop-based cash income. Maize is sold after both harvests: in February (from the *vuli* harvest) and June to September (from the *masika* harvest). Maize is sold locally and generally does not get transported out of the zone. Sesame is sold from June through September and pigeon peas are sold in September. Paddy is sold at its lowest price from July through September and at higher prices from November through April. Only better off households are able to sell at higher prices because they produce surplus paddy and store it until prices peak. Traders come to the farm gate, traveling from village to village to buy up local commodities. They transport crops to Morogoro, where they are sold at retail; or on to Dar es Salaam. The terminal markets for sesame are India and China. It transported by traders to Morogoro and then on to Dar es Salaam, from where it is shipped eastwards on freighters. Pigeon peas follow the same route, but are usually exported only to India, not China. Sugarcane is sold to local sugarcane plantations where it is processed into sugar and sold for national consumption as well as export. There are numerous issues with the marketing of sugarcane that have led to a sense that local farmers are being treated unfairly. These include a lack of transparency with respect to the measurement of sucrose levels (which determines payment to the farmers), lack of representation when it comes to disputes, lack of awareness about rights, concerns about the deductions taken from the farmers' payments, and suspicion of corruption and exploitation on the part of the sugarcane executives.

Households in all wealth groups also buy some maize grain during the year, especially in the lean season, from January through April, when local stocks are low. Maize is the cheapest local staple, and most of this is sourced locally from traders who buy up maize at harvest time and store it for sale later in the year. Beans are also purchased throughout the year; these originate from Mbeya and come into the zone via the main Morogoro market. Non-food essentials, like salt, soap, batteries and kerosene, are sold in local kiosks owned by better off households.

The labour market is almost entirely local, with seasonal agricultural work taking place on the sugar plantations as well as on the farms of middle and better off households. It was estimated that in the reference year, 95% of seasonal labour was found within the zone. A very small percentage of work (around 5% of the total) is also found in local towns. There is some in-migration to this livelihood zones; people from other areas come to work on the sugar plantations.

Timeline and Reference Year

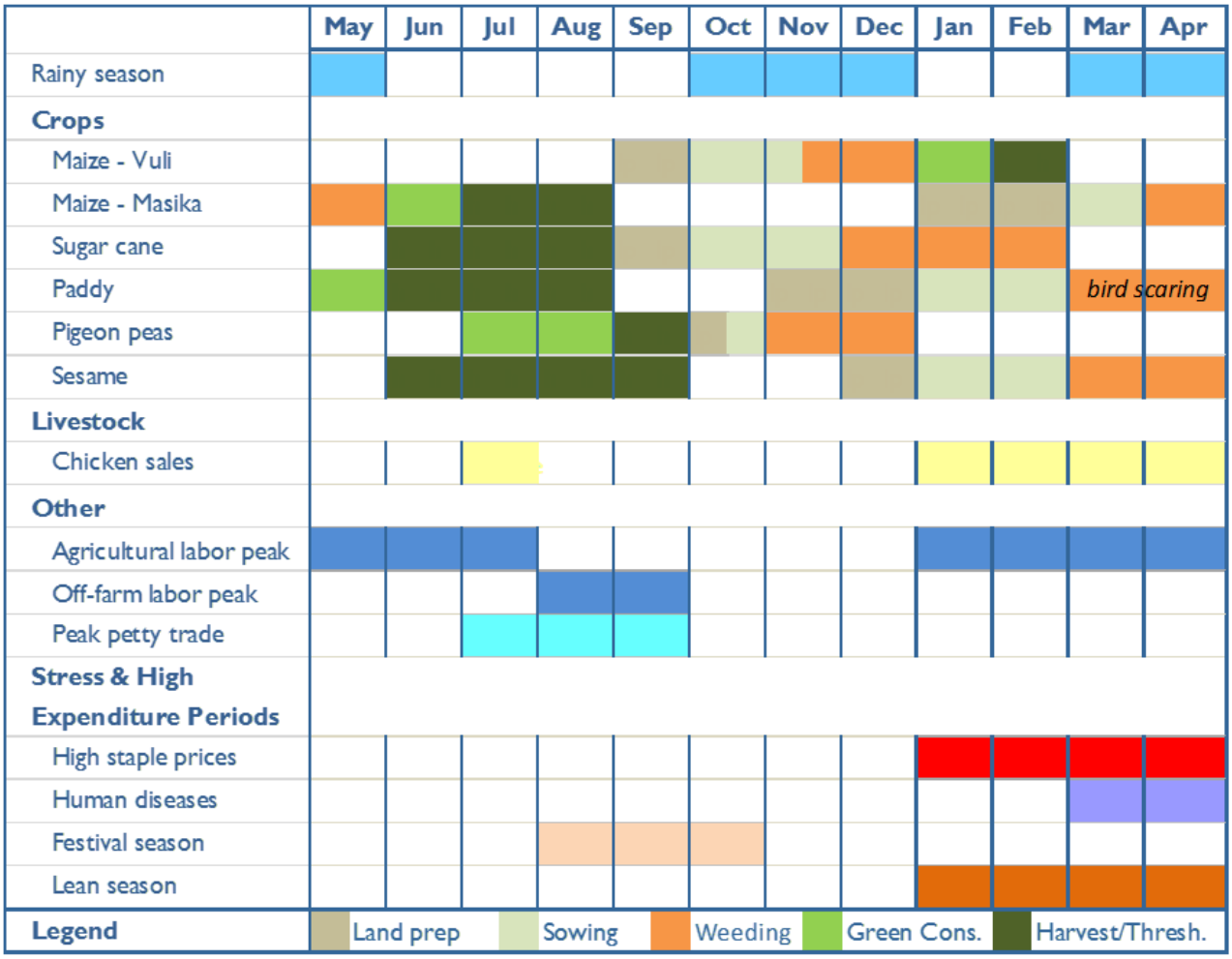
The baseline assessment refers to a very specific time period called the reference year. In the *Kilombera-Mvomero Paddy, Maize & Sugarcane Livelihood Zone* the reference year covered the **consumption** period from May 2014 to April 2015. During community leader interviews, informants were asked to 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 response of the community leaders, shows year quality by *production* year (which starts with the *vuli* rains in October/November and ends with the May through September harvest of the following calendar year.) Thus, the production year of 2013-2014 corresponds to the consumption year of 2014-2015. As shown in the table, the production year corresponding to the reference year was relatively good, with heavy rainfall, average yields and good crop prices. The past four

years have all been relatively good in terms of rainfall, with the exception of last year; although the incidence of pests and crop diseases is a limiting factor every year.

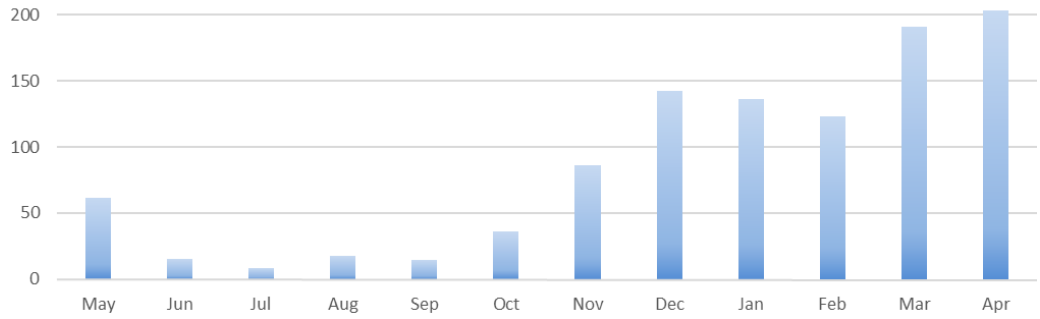
Production Year	Rank	Critical Events
2014-2015	**2.8**	Poor rainfall distribution; average crop yields; average staple food prices; occurrence of Rice Yellow Mottle Virus (RYMV) and *quelea quelea* birds
2013-2014	**3**	Heavy rainfall; average crop yields; good crop prices; rodents and grasshoppers
2012-2013	**3**	Good rainfall distribution; good yields; rodents and army worms
2011-2012	**3**	Average rainfall; average yields; average staple food prices; rodents

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 attack) for household food security

Seasonal Calendar for Reference Year



The graph to the right shows average monthly rainfall (mm) in Kilosa for a 50-year period from 1968 to 2008. Source: TZ Meteorology Department

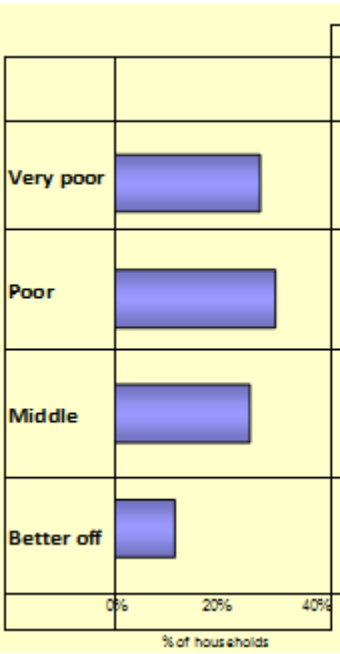


There are two rainy seasons in this livelihood zone. The first, called the *vuli*, is short, starting in October and ending in December; the second, called the *masika*, takes place from March through May. Because many of the crops grown here are medium- to long-cycle varieties, both rains play a role in the agricultural production season. However, it is after the *masika* season that the main harvests occur, with the exception of vuli maize, which is harvested in February. There are two maize harvests: the first is planted with the *vuli* rains in October and harvested in February; the second is planted in March, at the onset of the *masika* rains, and harvested in July. Pigeon peas are inter-cropped with maize in October, when the *vuli* rains are fully established. They are harvested seven to nine months later, with the green crop coming in July and the main harvest occurring in September. Sugar cane, another long cycle crop, is planted as a single stand in October and harvested seven to eight months later, from June to August. The paddy production cycle depends on both irrigation and the rains. The vuli rains help soften the ground to prepare for planting. Land preparation for paddy takes place in December, followed by planting in January and February. The green harvest is in May, and the main harvest takes place from June through August. Sesame is also planted in single stands, planted and harvested at the same time as paddy.

Given the long production season, and the intensity of labour required for the paddy and sugar cane crops, people here are busy with agricultural activities almost year-round. Land preparation activities begin as early as September and harvests end the following August. The peak labour requirements, however, occur from January through July. In some months, like January, paddy and sesame are being planted at the same time that fields for *masika* maize are being prepared, *vuli* maize is being harvested, and sugarcane needs to be weeded. This is a month when poorer household food stocks are low and staple food prices are high. It is the start of the lean season, which lasts through April; a time of relative hardship, when people are working hard and food is harder to come by. Two months of the lean season coincide with a higher incidence of human disease (March and April), which means that household expenditure requirements (to buy medicines) – already stretched from the need to buy more food at higher prices – are even higher. Poorer households, in need of extra cash at this time of year, work on sugarcane plantations and in the fields of middle and better off households, who need extra labour, especially to manage their paddy and sugarcane crops. Most of the cash that poorer households earn throughout the year comes from this seven-month period. The seasonal calendar also shows that chicken sales are highest at this time of year, helping supplement the cash from labour and crop sales.

May marks the beginning of the consumption year as households begin to eat paddy green, followed in June by the consumption of green maize and the main paddy harvest. Both access to food and cash flow starts to increase in June as a number of crops are harvested and sold, including sugar cane, paddy, and sesame. The harvest of pigeon peas in September finishes off the production cycle and brings in additional cash for all households. The festival season follows the harvest period, because this is a time when all households have a bit more cash and there is a brief respite before the next production season begins. Petty trade activities are at a peak in these months (July through September) as wealthier households buy up local produce to sell in central markets, and re-stock their kiosks full of basic commodities to be sold locally. Off-farm labour, like brick making and selling, also peaks at this time as poorer households take advantage of the dry season and a break in agricultural labour demand.

Wealth Breakdown



	Wealth Groups Characteristics				
	HH size	Land area owned (acres)	Land area cultivated (acres)	Poultry	Other
Very poor	5-7	1-2	1-3	5-15 chickens	1 cell phone; 1 bicycle
Poor	6-8	2-4	3-4	10-20 chickens	1 cell phone; 1 bicycle
Middle	6-8	4-8	5-8	15-25 chickens	2 cell phones; 1 bicycle; 0-1 motorcycle
Better off	6-8	10-20	8-15	20-30 chickens	2 cell phones; 1 bicycle; 1 motorcycle

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

Differences in wealth in this livelihood zone are determined by the amount of land a household cultivates. This, in turn, is related to how much land the household owns along with how much it can rent; and how much labour the household can draw on, both within the household and through hiring. Sugar cane and paddy – the most important cash crops - are both highly labour intensive crops, requiring extra labour investments (relative to the requirements for maize and other crops) at planting, weeding and harvesting times. In addition, ownership of productive assets, like motorcycles (which enable households to make money from *boda boda* - motorcycle taxi hire), contributes to the basis on which differences of wealth are determined. Livestock ownership is not an important differentiating factor. The graph and table above summarizes the percentage of households falling into each wealth group along with its associated productive assets.

One thing to note about the information in the table above is the difference between 'land area owned' and 'land area cultivated'. The existence of large sugar cane plantations limits the amount of land that people can use for planting food and cash crops. Many people start with inherited land or land allocated by the village government to plant sugarcane, but they add to that area by purchasing or renting more land for paddy and maize production. For the most part, the three lower wealth groups own less land than they cultivate, which means they need to rent extra land from either better off households within the zone or from non-resident land owners. The market for rented land has grown enormously in recent years as the squeeze on available arable land increases.

Very poor households plant on 1-3 acres, poor households cultivate 3-4 acres, middle households cultivate 5-8 acres, and better off households cultivate 8-15 acres. Thus, the typical better off households is cultivating more than five times the amount cultivated by the typical very poor household. The other critical divide between poor and middle households is that poor and very poor households need to work for others to earn enough cash to live on and middle households do not work for others. In other words, middle and better off households hire labour to work for them; very poor and poor households *provide* the labour that gets hired by these upper two wealth groups.

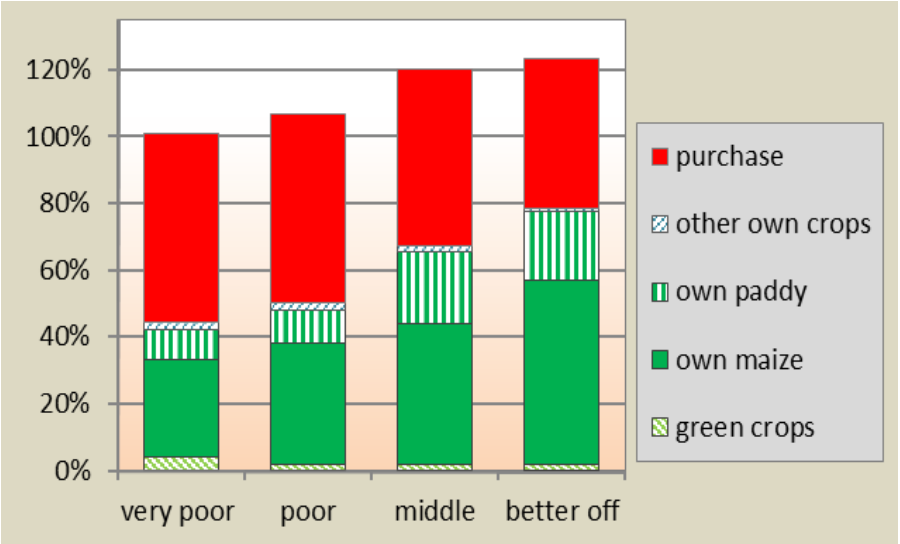
Middle and better off households are engaged in trade activities, providing them with another source of cash. This trade is enabled by their ownership of motorcycles. Almost all better off households own at least one motorcycle and some middle households do as well. Bicycles are another common means of transport, and all

wealth groups except for the very poor own at least one bicycle. Almost all households also own at least one cell phone. Over the last decade, cell phone ownership has become ubiquitous throughout rural Africa.

There are more households falling into the very poor and poor categories than into the middle and better off categories. Very poor (29%) and poor (32%) households together comprise just under two-thirds of the households in the zone. Middle (27%) and better off (12%) households combined represent just over a third of the population.

Sources of Food

The graph to the right presents the sources of food for households in different wealth groups in the livelihood zone for the period May 2014 to April 2015. May represents the start of the consumption year because it is when people begin to consume green crops - especially paddy - and it marks the end of the hunger period. Food is presented as a percentage of 2100 kcal per person per day for the 12-month period. This was considered an average year.



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.

There are only two sources of food in this livelihood zone: own crop production and the market. The relative importance of own crops increases as you move up the wealth spectrum, and the opposite is true for market purchases; poorer households need to buy more food than better off households. However, all households bought a substantial portion of their food in the reference year, which was an average (not a bad) year. This is generally not because households do not produce enough food to cover their own consumption needs: in fact, if households did not sell any of their crops, and consumed them instead, they would meet 140-520% of their minimum calorie requirements.[3] Even very poor households could have met their minimum food needs with their own crop production alone, which highlights the productive nature of this zone. However, because there are no other substantive sources of cash income – no livestock, for example – crops are the means for generating both food and cash requirements. Therefore, households needed to sell over half of their crops to fund all the other cash-related expenses in their lives, leaving them with a gap that got filled by the market.

In the reference year maize, grown and harvested in two seasons, was the dominant food crop. Although paddy generated more output on a seasonal basis in the one season it was grown, it is used more heavily as a cash crop. The average production reported for maize by households in the reference year was 800-1200 kg per acre, with most poorer households growing maize without the use of industrial fertilizers or pesticides. Combining both seasons, very poor and poor households harvested around 1,130 and 1,930 kg of maize, respectively, in the reference year. Over half of this was sold, leaving these households with enough to cover 29-36% of their minimum calorie requirements. The green maize (fresh maize) harvest covered an additional 2-4% of calorie needs. Middle and better off households produced around 2,350 kg and 4,680 kg of maize respectively, with a balance of approximately 70-80% grown in the *masika* season. After selling the majority of this, these households retained enough maize to cover 40-55% of their minimum calorie needs during the reference year.

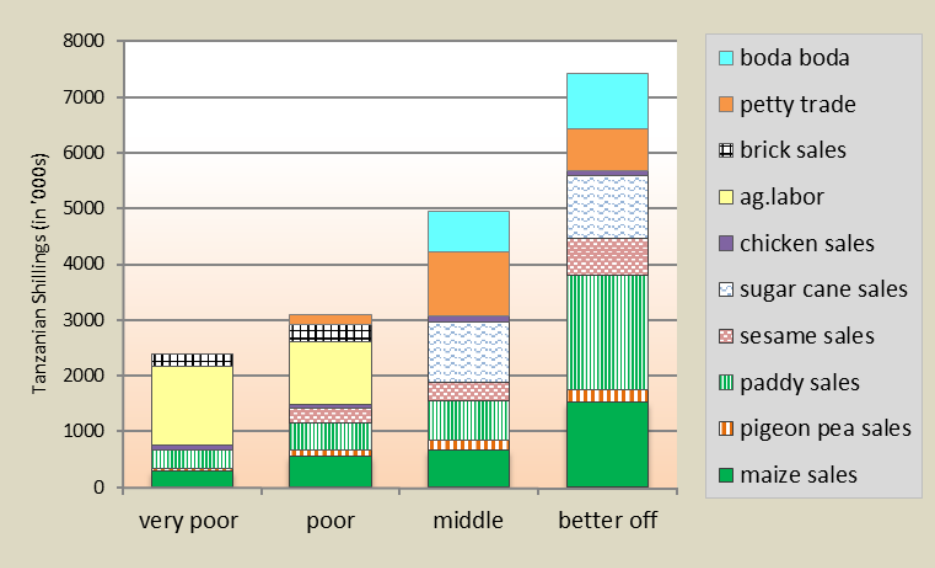
[3] Very poor, poor, middle and better off households would have been able to cover 140%, 210%, 315%, and 520% of minimum calorie needs respectively in the reference year with their own crop production alone.

Paddy is the second-most important food crop, although it functions more as a source of cash than food. The average production per acre for paddy during the reference year was 1000-1200 kg per acre. Thus, household production ranged from around 950 kg for very poor households up to 3,700 kg for better off households; 75-85% of this was sold, leaving households with enough paddy to cover 10-20% of minimum calorie needs. A very small contribution was also made from the sesame grown by the top three wealth groups, although again, most of this was sold. As a whole, own crops accounted for around 43-77% of households' minimum food needs in this zone during the reference year.

To fill the gap, all households purchased food. Poorer households bought mainly maize grain – the cheapest staple. They purchased maize for four to six months of the year, meeting 20-25% of their food needs this way; whereas middle and better off households bought maize for only one to three months of the year, covering 7-14% of their calorie requirements. All households also purchased rice, although at 1.6 times the price of maize, poorer households limited their expenditure on this grain. Nevertheless, purchased rice accounted for around 10% of household food needs for very poor households and around half of that for better off households. Other purchased foods, like beans, sugar, meat, oil, dried fish, sweet potatoes and vegetables, contributed an additional 23-33% of minimum calories for all wealth groups. Combining both staple grain and non-staple food purchases, households here relied on the market to cover 45-57% of their minimum calorie requirements in the reference year.

Sources of Cash Income

The graph to the right provides a detailed breakdown of the income sources in this livelihood zone. The main source of cash for the two upper wealth groups is crop sales. The main source of cash for the bottom two wealth groups is agricultural labour. Other sources of cash, depending on the wealth group, include brick sales, petty trade and *boda boda* (taxi hire). The income table below the graph summarizes absolute cash income ranges in Tanzanian Shillings for each wealth group in the reference year. The average income of better off households is at least three times higher than the average income of very poor households.



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 [4]	2,220,000 – 2,700,000	2,700,000 – 3,800,000	3,800,000 – 6,000,000	6,000,000 – 9,900,000

It is clear from the income graph that crops are the main driver of the local economy in this livelihood zone. Of particular importance are paddy and maize sales (for all wealth groups) and sugar cane sales (for the upper two wealth groups). As noted in the section above, households sell the majority of their crop production, retaining less than half for consumption. It is here – in this graph – that we see the economic value of that decision. For

[4] The average exchange rate from May 2014-April 2015 was 1 USD = 1,810 TZS

the upper two wealth groups, these sales are especially important, generating 60-75% of their cash income in the reference year. The bottom two wealth groups, with less to sell, derive 25-45% of their annual cash income from crop sales. Maize and paddy sales combined bring in over 90% of the crop-based cash income for very poor households; the other three wealth groups depend also on sesame sales (not grown by the very poor); and the top two wealth groups grow sugar cane. Maize is sold in both seasons, but the maize from the *masika* season brings in substantially more in terms of cash income, contributing – for example – 23% of crop-based cash income in the reference year for better off households, compared to the 4% brought in by *vuli* maize. In addition to maize from both seasons, paddy, sesame and sugar cane, pigeon peas are also sold, providing 4-9% of crop-based cash income in the reference year.

An even more important source of cash for very poor households than crop sales is seasonal agricultural labour. This source alone accounted for around 60% of cash income in the reference year for very poor households and around 36% for poor households. Sugar cane and paddy are highly labour-intensive crops, especially at planting and weeding times. Many people are also required to harvest sugar cane, and people are hired to scare birds from paddy fields in the weeks before the harvest as well. Better off and middle households, who cultivate fields that are larger than their household labour can manage on their own, hire members of very poor and poor households to help throughout the year. In the reference year, a typical very poor household sent 1-2 people to work on others' farms during land preparation, planting and weeding periods, bringing in, on average, over 1,000,000 Tsh from cultivation labour. Harvest labour (including harvesting, threshing and bird scaring) generated an additional 395,000 Tsh. Poor households, who had more of their own land to look after, brought in slightly less than this: around 800,000 Tsh from cultivation labour and 320,000 Tsh from harvest labour.

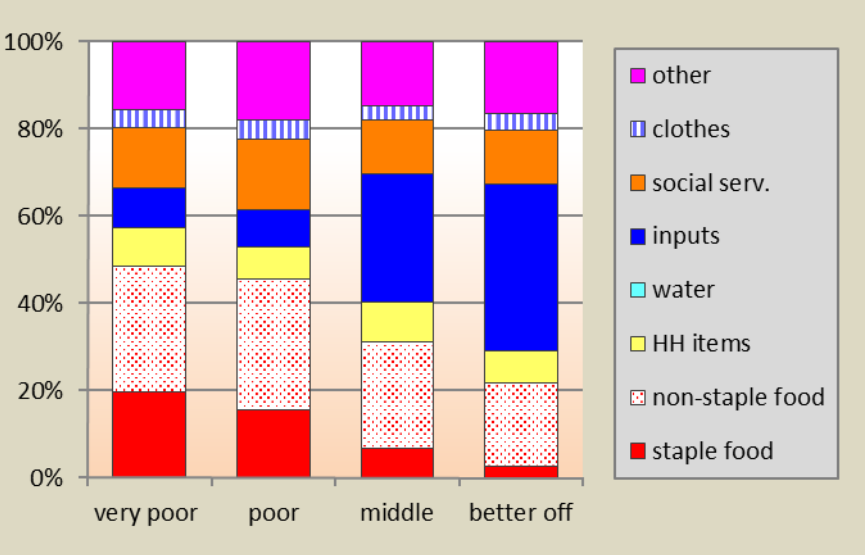
In the off season, when households have finished harvesting and before the rains start again, poorer households seek additional cash earning opportunities, making and selling bricks, preparing and selling food, brewing or gathering and selling firewood. Brick production was especially wide-spread in the reference year, bringing in around 10% of annual cash income for very poor and poor households. Some poor households also engage in small amounts of petty trade, although they are limited by a lack of transportation and investment capital.

Petty trade is more important for middle and better off households. These households have some extra money and some means of transport, allowing them to buy up sizeable quantities of local produce and sell it in more profitable markets to make a small margin. Better off or middle households may also have small kiosks where they sell salt, soap, kerosene or other household goods. In addition, many middle and almost all better off households have a motorcycle, which they hire out for a fee (called *boda boda*) to transport people or goods. These two sources of cash income (petty trade and *boda boda,*) combined, provided middle and better off households with (on average) 35-40% and 20-25%, respectively, of their cash income in the reference year.

Finally, all households derive a very small amount of cash by selling chickens. These are sold throughout the year when cash needs arise, but the total sales on an annual basis do not make up more than 3% of cash income.

Expenditure Patterns

The graph presents expenditure patterns for the reference year May 2014 to April 2015. While absolute expenditure increases with wealth in line with total cash income, 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

As in other parts of Tanzania, households in this livelihood zone have to buy a number of essential goods throughout the year, and they need to pay for basic services. These include food (both staple and non-staple), household items, productive inputs, social services (school and health), clothes and miscellaneous items. The graph highlights a number of points.

First, the two poorer wealth groups spend more money on staple food, in both absolute and relative terms; but the two upper wealth groups spend more in absolute terms on non-staple foods. As explained above in the section on 'Sources of Food', very poor and poor households bought maize grain for 4-6 months of the year. They spent between 260,000 and 290,000 Tsh on maize alone, taking up 15-20% of their cash income. Middle and better off households, on the other hand, spent 90,000 – 185,000 Tsh and had to devote less than 10% of their annual cash to maize. The rest of the staple expenditure was on a very small amount of cassava, beans, oil and dried fish. All households also spent money on other foods, such as rice, sugar, meat, sweet potatoes and vegetables. These are all included in the non-staple food basket. Better off households spent twice as much on non-staple foods as very poor households; the market helps middle and better off households increase their dietary diversity and provides access to preferred foods. Because these non-staple foods are generally more expensive, poorer households can afford to buy less of them, but what they do buy takes a larger chunk of their budget. For example, very poor and poor households spent around 30% of their annual cash on non-staple foods, whereas better off households (who actually spent more in absolute terms in this category) devoted around 20% of their annual cash to non-staple foods.

Second, middle and better off households spent a lot more money on productive inputs than the poorer two wealth groups. 'Inputs' on the expenditure graph above includes the following: house repairs, land rental, seeds and tools, pesticides and fertilizers, labour, small business investment, and phone credit. Very poor and poor households did not spend any money on pesticides and fertilizers, labour or small business, devoting the majority of their inputs budget to phone credit, followed by house repairs and then land rental. The least is spent on seeds and tools. Middle and better off households spent the majority of their inputs budget (60-70%) on labour. This reflects the high-labour requirements of sugar cane and paddy and highlights the fact that, although better off households make more than three times what very poor households make, this comes at a cost. Business investment and phone credit are the next most important input costs for these households. In absolute terms, better off households spent around 13 times more than very poor households on productive inputs. In relative terms, the poorer two wealth groups allocated around 10% of their annual cash to productive inputs and the top two wealth groups spent 30-40% of their annual income on this category.

Third, 'social services', which includes the money spent on education and health services, accounted for a significant proportion of annual expenditure. Education covers school fees, uniforms, stationery and

transportation. Absolute spending on school during the reference year increased substantially as you moved up the wealth spectrum. Very poor households spent around 245,700 Tsh on schooling compared to 735,300 Tsh spent by better off households. This is much higher than in neighbouring zones, where spending on school is less than half of this amount. In this zone, the poorer two wealth groups are typically sending their children to both primary and secondary school, whereas in other zones poorer households only sent children as far as primary school. This is, in large part, because of the cash income derived from sugarcane outgrowing[5]. Better off households are funding their children's education all the way through university. Also, as you move up the wealth spectrum, households are spending more on stationery, books, uniforms, school fees and transportation. Better off and middle households also spend more on medicine and health care; the poorer two wealth groups spent around 80,000 – 86,000 Tsh on health in the reference year, whereas middle and better off households spent 155,000 – 188,000 Tsh. Of course, these are general statements and individual households will have had very different requirements depending on whether or not a household member became sick and whether or not medical treatment was sought.

Fourth, expenditure on basic household goods ('hh items'), including all of the items bought by households over the year to meet basic needs, such as tea, salt, soap, kerosene, grinding services and utensils, took up 5-10% of the expenditure basket for all households. Within this category, very poor and poor households spent the most on soap (28% and 26% of the 'HH items' budget, respectively), followed by grinding (20% and 23% of the 'HH items' budget, respectively). Middle and better off households spent the most within this category on kerosene and firewood; these two items combined accounted for 45-50% of the 'HH items' budget in the reference year. Soap took up the next largest chunk. Finding ways to reduce the relatively high costs of soap and grinding for poorer households could help them free us some money for other productive uses.

Spending on clothes and other miscellaneous items are the last two categories included here. These two categories combined made up 18-22% of the expenditure basket for all wealth groups in this livelihood zone. The 'other' category includes things like beer, tobacco, cigarettes, cosmetics, hair braiding, transportation and festivals. This is discretionary spending that can be reduced or redirected in bad years to buy more essential items if necessary. As a reminder, the reference year was a relatively good year, so this discretionary category is higher here than it would be in bad years.

Hazards

There are a number of hazards that affect this zone on a regular basis. The first is **crop pests and diseases**, especially army worms, which affect maize and rice, rice blast and *quelea quelea* birds, which threaten the rice harvest, and rodents. Second, less of a hazard than a constraint, is a **scarcity of land for agricultural production**. This is a particular problem in the areas around the sugarcane plantations and near the national park (in the south). Third, **conflict between farmers and pastoralists** is high in this zone. Competition over scarce pasture and cropping lands as well as prime water sources has resulted in contested access to resources crucial for both farmers and livestock keepers. There are also occasional **floods** that can seriously undermine production during one or both seasons two out of every five years.

Response Strategies

In response to hazards and years with bad production, households attempt to meet their minimum food needs and cash requirements through a number of strategies. These strategies are detailed for this livelihood zone below:

[5] "Study of Sugarcane Outgrowing at Kilombero", May 2015, page 4, http://dspace.africaportal.org/jspui/bitstream/123456789/35492/1/Kilombero%20stakeholder%20report_English%20Version.pdf?1

- All households try to **reduce expenditure** on non-essential or more expensive items first, buying less sugar and rice, for instance, and using that money to buy the cheaper staple – maize – instead, or cutting down on festivals, tobacco and beer.

- Poorer households try to **increase their local agricultural labour**, working more days per month and sending more household members to work. There are limits on this strategy in a bad year since an increase in labour supply will inevitably drive down wages after a while. Thus, although more hours of work might be obtained by the household, the payment per day is likely to be reduced.

- Poorer households also try to **sell more chickens**. However, as the number of chickens owned by very poor and poor households does not exceed 20, and each chicken is worth only around 9,000 Tsh in a good year, this option will only go so far in terms of raising cash income, especially since the price is likely to drop in bad years.

- Middle and better off households try to **reduce the amount they pay for agricultural labour**, freeing up some of their cash income to spend on other essentials. This works in direct counterpoint to poorer households' strategy of attempting to increase their agricultural labour income.

- Middle and better off households try to **increase their sales of crops**, selling their surplus at a higher price given the limited supplies on the market.

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-Mvomero Paddy, Maize & Sugarcane 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 – vuli – amount produced • Maize - masika - amount produced • Pigeon peas – amount produced • Paddy – amount produced • Sesame – amount produced • Sugar cane – amount produced	• Maize – vuli – producer price • Maize - masika – producer price • Pigeon peas – producer price • Paddy – producer price • Sesame – producer price • Sugar cane – producer price
Livestock production	• Chickens - numbers	• Chickens – producer price
Other food and cash income	• Agricultural labour (land clearing and preparation, planting, weeding) – number of jobs • Agricultural labour (bird scaring, harvesting, threshing) – number of jobs • Petty trade – amount of trade • Bricks – numbers produced	• Agricultural labour (land clearing and preparation, planting, weeding) – wage rates • Agricultural labour (bird scaring, harvesting, threshing) – wage rates • Petty trade – margins on trade • Bricks – prices
Expenditure		• Maize grain – consumer price • Rice – consumer price • Beans – consumer price • Sugar – consumer price • Oil – consumer 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. All of these suggestions require further detailed feasibility studies.

1) Improve education services, ensuring that each school has an adequate number of qualified teachers
2) Provide access to affordable loans for agriculture
3) Set aside reserved areas of land for dedicated crop cultivation
4) Provide affordable agricultural inputs with adequate lead time for cultivation period
5) Improve health services by providing well-equipped dispensaries with affordable medicines at village level
6) Improve market infrastructure to ensure local households receive the best prices for their crops
7) Resolve conflict between farmers and pastoralists

In addition, there are specific problems related to the payment for sugarcane which lead to households receiving less payment than they should. These could be addressed as follows:

- Identify which policies of the sugarcane cooperative create unfair conditions for the local farmers.
- Reduce the deduction take from the payment received by farmers.
- Create a more open and transparent system of standard measurement so that systems for weighing, sucrose measurement and payment calcuation are more open and fair and involve representation from outgrowers.
- Rotate district agricultural officers who are responsible for farmers in sugarcane plantations to reduce potential for corruption.
- Regularly assess the amount paid per ton of sugarcane in relation to the economic situation facing the farmers and producers.