

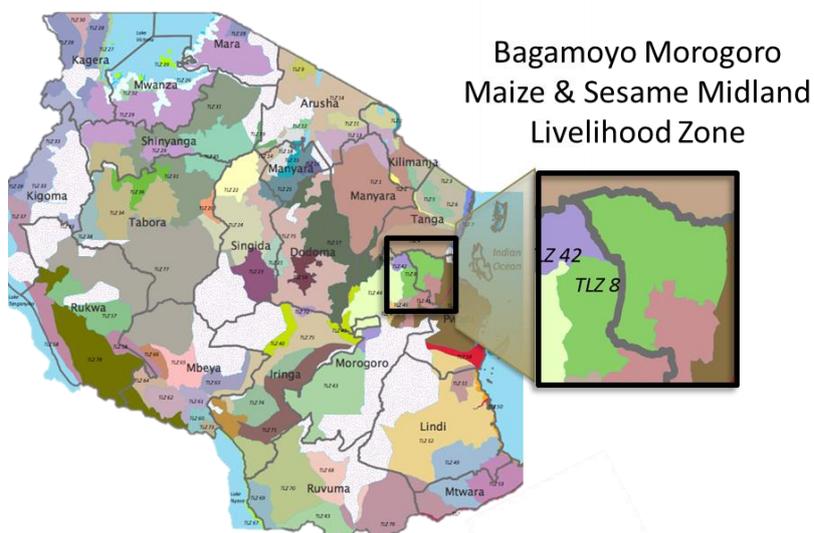
# Tanzania Livelihood Baseline Profile

## Bagamoyo Morogoro Maize & Sesame Midland Livelihood Zone (TLZ 08)

March, 2015<sup>1</sup>

### Zone Description

The *Bagamoyo Maize & Sesame Midland Livelihood Zone* is an inland area that lies just off the north-central coast of Tanzania. The zone is located in Bagamoyo District (Pwani Region) and Morogoro District (Morogoro Region) which lies off the north-central coast of Tanzania. It is bordered to the north by Tanga Region and to the east by the Indian Ocean coastal strip. Dodoma is to the west. The people of this zone are primarily Walugulu (Morogoro District) and Kwere (Bagamoyo District). The zone has a moderate population density of 25 people per km.<sup>2</sup>



The topography is undulating plains covered by a mixed vegetation of grass and bush scrub with some forests as well. Select forest areas fall within two reserves that are located in the zone: the Zigua and the Wamimbiki Forest Reserves. Natural resources include minerals (mainly gravel) as well as wild game and timber from the forested areas. There are two perennial rivers of note that flow through the zone: the Wami River and the Ngerengere River. The Wami River flows east from the northern highlands and empties directly into the Indian Ocean. It forms the southern border of the Saadani National Park which is a noted coastal wildlife sanctuary and a tourist destination. The Ngerengere River also begins in the northern highlands but flows south-east until it joins the Ruvu (or Pangani) River; from there it flows north-east before emptying into the Indian Ocean at Pangani. The Mindu Dam on the Ngerengere River provides water and electricity to the major urban centres (including Morogoro City). Temperatures in this inland zone are fairly moderate ranging from 13 - 30°C during the year. Rainfall averages 800 - 1,200mm per year during two wet seasons which, when combined with the fertile sandy-clay soils of the region, make it a productive zone for agriculture.

This low-to midland agriculture zone is a primary producer of maize. Fertile soils and a relatively wet climate allow farmers to produce a wide range of crops of which maize dominates both for consumption and sale. Sesame is the principal cash crop; the better-off grow sunflowers for sale too. Agriculture is supplemented by petty trade and sales of poultry, charcoal and building poles. Wealthier households run small *boda boda* (motorcycle taxi) businesses as well. This zone has seen moderately good production over the last few years, however, the short October to December rains are increasingly unreliable. Overall, it is considered a relatively food secure region.

<sup>1</sup> 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 May 2019). All prices referred to in the document are for the reference year.

Most crops in the zone are grown during the more dependable long rainy season (*masika*) which falls from March to May. The October to December *vuli* rains are increasingly irregular and although farmers will make use of the rains opportunistically to grow second season maize or cowpeas, the outcome is not reliable. Cultivation in this zone is rain-fed and is carried out using a hand hoe. Both men and women carry out manual labour on the farm. Most households use their own family labour for farm work but for those who can afford to pay, they tend to hire labour for the most labour-intensive tasks, such as land clearing and weeding. Soils are relatively fertile throughout the zone; hence farmers do not apply chemical fertiliser. However, many farmers use improved maize and sesame (*simsim*) seeds to boost production. Improved seeds are usually purchased from private agro-dealers. Army worm outbreaks are a big threat to maize production. These outbreaks are prevented by spraying pesticides on the crop (*karrate or selectron*). Chemical pesticides can be obtained free from the Ministry of Agriculture but if supplies are limited then they are bought from private suppliers. Fungal and viral diseases also affect various crops (including sesame, maize, tomatoes and watermelon) but a bigger threat to maize and cassava are wild animals and bird attacks. Households use traditional scaring techniques to ward off animals and birds. There is a chemical poison that can be used as well.

As agriculture is so fundamental to this zone, free-range grazing is very limited. Most households keep flocks of chickens. Only the better-off households rear goats. Chickens are fed meal scraps or forage around the compound for insects and worms. Seasonal ponds provide sufficient water. The main threat to poultry is Newcastle disease. Vaccinations are available but they must be paid for privately and most households do not use the service. Chickens are kept both for slaughter and sale. Chicken meat is especially enjoyed during festivals or local celebrations.

In general, households in this zone have quite good access to water and to primary health and education services. At the village level, there are water points with taps for domestic use as well as shallow wells as needed. Each village also has a dispensary and primary school. Secondary schools and health centres are located at the ward level (on average 10-20 km away). The main challenge for the government is keeping these facilities adequately stocked with supplies and staff. Sanitation facilities are fair at the village level and most households are equipped with a pit latrine. However, there is very little electricity supplied in rural areas. People use kerosene and torches for evening light. Notably, there is fairly good cell coverage and three mobile phone companies provide service to the zone: Vodacom, Airtel and Tigo. Banking and credit facilities are not available at the village level. However, the NGO TASAF provides cash transfers for the poor who are registered in their programme. Cash instalments are given every two months to assist the poor to afford essential goods and services during the year.

## Markets

This zone is relatively well connected by road to major urban centres. There is a primary tarmac road connecting Morogoro to Dar-es-Salaam. The other main highway that passes through the zone is the Dar-es-Salaam to Tanga road. Some villages are not accessible by vehicle but people move around either on foot, bicycle or by the widely-available *bodaboda* (motorcycle taxi). In general, traders are able to reach most villages in the zone at harvest time by small vehicle or truck. They come to the village to buy produce from farmers directly and to transport the goods to ward, district or regional markets. Some food and non-food goods are also purchased from urban centres for re-sale in village kiosks by wealthier households.

An important source of income for farmers in this zone is the sale of crops. Food crops, such as maize, and cash crops, such as sesame (*simsim*) and sunflower, are sold after the harvest in July-August-September. Traders typically come to the village to buy directly from the farmers. Much of this local produce is destined for the big city markets in Dar-es-Salaam and Arusha. There is also demand for cassava in Zanzibar and some traders take cassava from Bagamoyo and Morogoro districts to sell there. Food crops such as maize and cassava are also sold locally in district and village markets. Poor households are most likely to buy such food crops in order to fill the gap when their own produce is finished and before the next season's crop is

ready. Wealthier households buy rice which supplements what they produce themselves. Whereas maize is locally sourced, rice is brought into the zone by traders from ward markets in Mbeya and Shinyanga (Morogoro Region).

Non-food items are also marketed by the local population. Charcoal is a key item sold by the poor to raise cash for food and other essential goods. The season for charcoal production is August through to December. There is relatively high demand for charcoal in major urban centres, such as Dar-es-Salaam, as well as district centres. Building poles are another commodity that have fairly steady demand in district and regional centres.

There are relatively good opportunities for agricultural labour in this zone. It was estimated that in the reference year, 80% of casual labour was found within the zone. Poor labourers are usually hired to carry out agricultural work on nearby farms. Both men and women take on paid agricultural work. There are three peak periods of labour demand: September-November; January-April; and July-August. These peak periods correspond to the periods of heavy farm work. Demand is high enough that labourers from outside the zone migrate into the area in search of short-term casual work. There is also some demand for labour in the local construction sector and for brick making. The peak period for labour in this sector is August-September. During years of low crop production, poor labourers leave the zone for areas where they will likely find work. One destination is Kiwangwa and Gongo (Pwani Region) where they look for work weeding pineapple plantations. Another destination is Mtibwa Sugar Estates (Morogoro Region) where labourers may find work harvesting sugar cane. October through December is the peak period for harvesting sugar cane. The other place where general agricultural work can usually be found is Kiziwa and Kikunde. The period for migratory work in the agricultural sector is February-March.

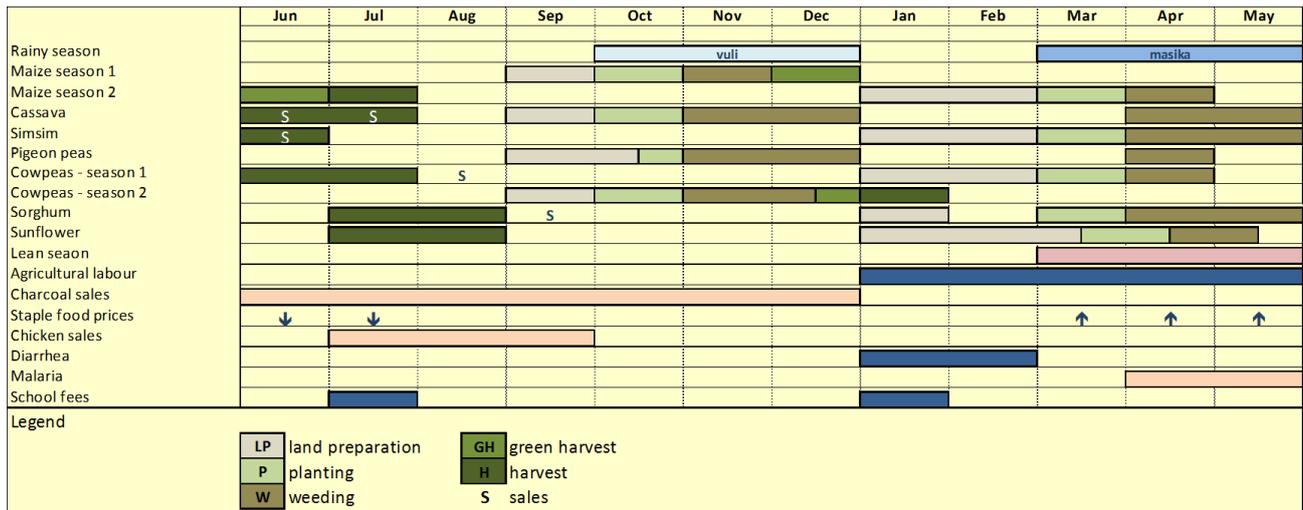
## Timeline and Reference Year

The baseline assessment refers to a very specific time period called the reference year. In the *Bagamoyo Morogoro Maize & Sesame Midland Livelihood Zone* the reference year covered the period from June 2013 to May 2014. During community leader interviews, informants were asked to rank the last five 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 that the reference year was ranked as an average, with poor *vuli* rains but good *masika* rains. The problem with *vuli* rains is becoming a regular occurrence for farmers in this zone. The baseline information presented in this profile provides a view into how households in this livelihood zone make ends meet in a typical year, drawing on a normal range of options.

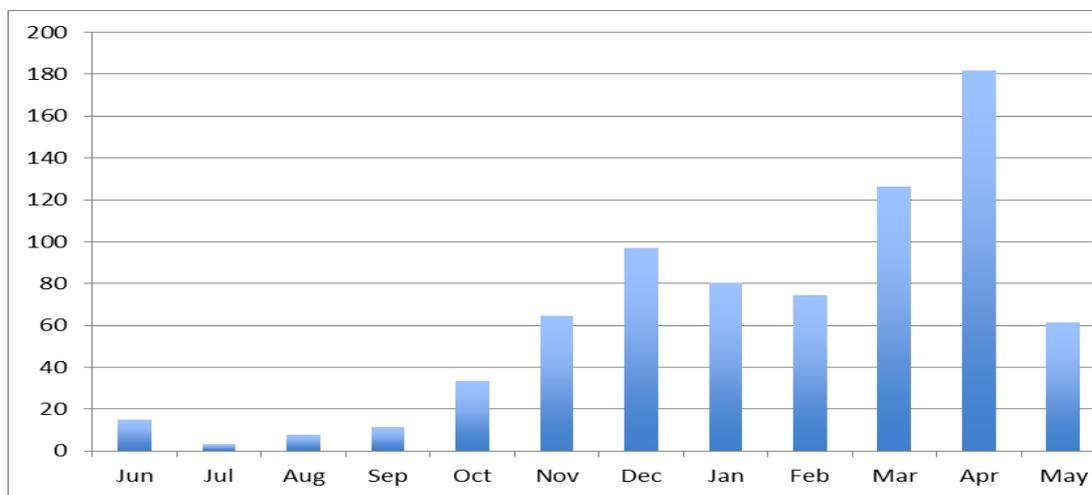
Year	Rank	Critical Events
2014-2015	N/A	Poor <i>vuli</i> rains. The current year was not ranked because the outcome of the season is still unknown.
2013-2014	3-4	Poor <i>vuli</i> rains but excellent <i>masika</i> rains.
2012-2013	2-3	Poor <i>vuli</i> rains but average <i>masika</i> rains.
2011-2012	2-3	Poor <i>vuli</i> rains but average <i>masika</i> rains.
2010-2011	3-2	Average <i>vuli</i> rains but poor <i>masika</i> rains.

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 Morogoro based on a recent 10-year period (2004 – 2013). Source: TZ Meteorology Department



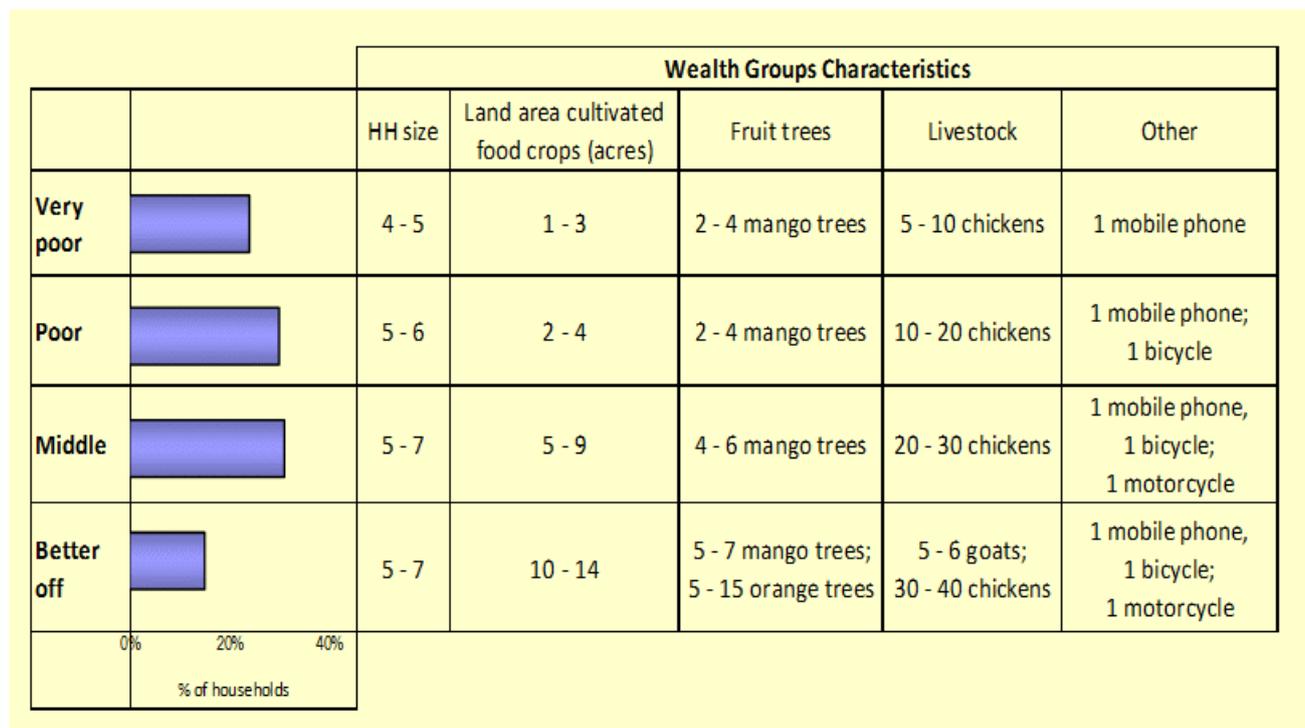
There are two rainfall patterns in Tanzania: bimodal and unimodal. The *Bagamoyo Morogoro Maize and Sesame Midland Zone* traditionally had a bimodal rainfall pattern common to the northern and north-eastern regions of the country. However, the *vuli* rains have become much more unpredictable in recent years, suggesting a possible shift to a unimodal pattern. In the reference year, households planted a little maize during the *vuli* season, but the rainfall outcome was too poor to produce a dry harvest and the small amount that grew was consumed “green”.

As indicated in the calendar above, the *vuli* rains typically come from October to December. The main *masika* rains are March to May. The agricultural calendar is organised around the timing of both seasons but in particular the *masika* rains. Land preparation is carried out 1-2 months in advance of the rains in January and February. Planting takes place once the rains are established (March). Once crops germinate and begin to grow, weeding is vital. This takes place throughout the growing season (April-May). Maize and cowpeas are eaten “green” in June. The main harvest period is July-August for both food crops and cash crops. Crops that are planted opportunistically with the *vuli* rains are the short cycle crops (pigeon peas and cowpeas as well as a short-cycle variety of maize). The harvest period for crops planted in October is January. Cassava is also planted with the arrival of the *vuli* rains but once the tubers mature (which takes a minimum of 8 months) they can be harvested as needed. To make most efficient use of land, farmers intercrop maize, cowpeas, pigeon peas and cassava. Sesame (*simsim*) and sunflower are planted as single stand crops.

Crops harvested in June, July and August usually last poor households 5-6 months before the stocks are finished. By December or January, food purchases rise, as do food prices. Prices peak during the *masika*

rainy season (March-May). This is also considered the “lean” season as most households are reliant on food purchases just at the time when prices are highest. To earn cash, the poor work as agricultural labourers. This helps fund some food purchases. Labour opportunities peak from January to April as local work can be supplemented with casual work found in Kiziwa and Kikunde or in Kiwangwa and Gongo weeding the pineapple crop. During the dry season (June-September), the poor earn cash by selling charcoal. Charcoal production sometimes extends into the *vuli* season (October-December) as well.

## Wealth Breakdown



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

The most important asset in this agricultural zone is land. Land sizes vary substantially from wealth group to wealth group. Very poor and poor households own about 4-5 acres, of which about half (2-3 acres) is cultivated. Middle and better off households own significantly more land (an estimated average of 12 acres and 20 acres respectively). By hiring labour and using some tractors, they are able to cultivate slightly more than half of the land owned (on average 7 acres and 12 acres respectively).

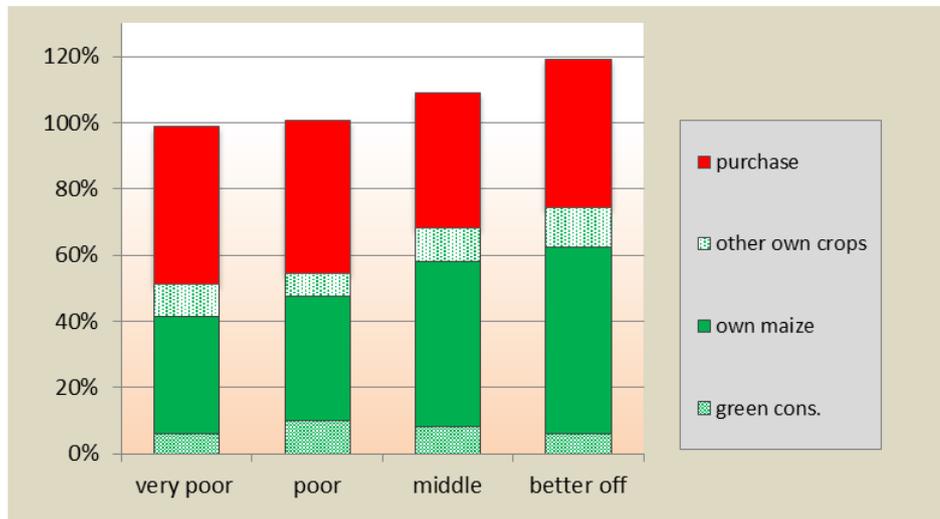
In this zone, a wealthy household is characterised as one who produces sufficient staple food crops to meet most of their annual food needs. They produce some surplus food crops as well as cash crops for sale. Better off households also have quite substantial flocks of chickens (about 25-50). A few keep goats as well. Those who rear goats typically own 15-25. A better off household supplements crop production with a small business, such as a village kiosk or a *boda boda* (motorcycle taxi) business. Middle households have a similar profile but they are distinguished from the better off by owning fewer assets. Like the better off, they supplement farming with petty trade and *boda boda* activities.

Poor and very poor farmers produce crops that in an average year are sufficient to cover about half of their annual food needs. Similar to the better off, the very poor and poor sell maize, sesame and poultry to generate cash. However, more of their income comes from casual labour and charcoal sales than crop and livestock sales due to less land and fewer poultry owned. The typical flock size of poor and very poor households is usually in the range of 5-20 chickens.

There is a fairly even distribution of wealth in this zone. The very poor (24%) and the poor (30%) together comprise just over half of the household population. However, as middle and better off households are slightly larger on average (6 people) than the very poor and poor households (4.5-5.5 people), the proportion of *people* (as opposed to households) in each wealth group would be largely the same.

## 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 June 2013 to May 2014. June represents the start of the consumption year because it is when people begin to consume green crops and 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.



*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.*

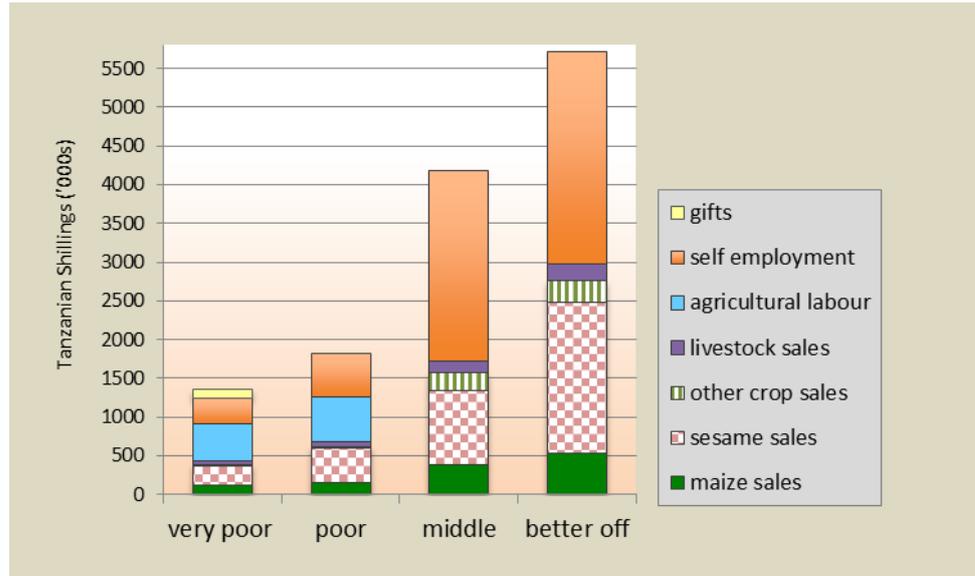
In this zone, there are just two food sources: own crop production and purchase. During the reference year, farmers secured about 50-75% of their annual household food needs from their own crop production. This proportion could be higher but farmers also have to sell some of their produce as agriculture is a primary source of cash as well in this area.

Maize dominates production and consumption patterns for all wealth groups. For instance, for the very poor, 50% of their annual food energy came from own crop production, of which 41% of annual calorie needs came from maize alone. By comparison, for the better off, 75% of their annual food energy came from own crop production, of which 62% came from maize. In part this reflects food energy from “green” maize. For about one month in June, households get half their daily food energy from green maize. Very small amounts of food energy come from maize planted during the *vuli* rains. The remaining calories came from cassava (4%-7%), cow peas (1%-2%) and pigeon peas (1%-3%).

Purchased food was the other source of food for all wealth groups. Maize grain (the cheapest staple) and maize meal were the main items purchased by the poor and very poor, supplemented by cassava, rice, beans, sugar, oil and dried fish and/or meat. By contrast, the main food items purchased by middle and better off households were rice (the most expensive staple), beans, sugar and cooking oil. Middle households supplemented rice with maize flour; the better off bought wheat flour instead. Both wealth groups also bought small amounts of dried fish and meat. In total, purchased food comprised 41-47% of annual household food needs in the reference year for all wealth groups.

## Sources of Cash Income

Crop income is a key source of cash for all wealth groups. Crop sales formed nearly 50% of income of the better off; 34%-38% of the cash income for middle households; and 28% of the total cash income for very poor households. Sesame was the primary income earner with maize coming in second and pigeon peas acting as supplementary crop income. Better off households sold a more diverse range of crops than the poor and very poor. Their crop sales included sesame, maize, sorghum, cow peas, pigeon peas, cassava and sunflower.



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
<b>Annual income per household<sup>2</sup></b>	1,195,000 – 1,360,000	1,650,000 – 2,100,500	3,300,000 – 5,620,000	5,840,000 – 6,600,000

Poor and very poor households did not earn sufficient cash from crop sales alone to meet their annual cash needs, and therefore carried out agricultural work which was typically paid in cash rather than in-kind. During the reference year, earnings from agricultural work comprised 32-35% of their annual cash income. They also sold charcoal and building poles which formed 25-30% of their annual cash income. In some villages, very poor households also received social support in the form of cash. These cash transfers (shown as 'gifts' in the graph above) from the NGO TASAF were typically received every other month throughout the year.

Petty trade and *boda boda* (motorcycle taxi) income added to the crop sale income of better off and middle households. Cash earned from these two activities comprised almost 40% of the annual cash income of middle households and 48% of the annual income of better off households. For middle households, the other income-generating activity of note was charcoal sales. However, although they profited from the sales, they did not make the charcoal directly. Instead, they hired the poor to make charcoal. The labourer received a daily wage and the sale income went to the employer.

<sup>2</sup> 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 to May 2014. While total expenditure increases with wealth, the expenditure breakdown by percentage in this graph shows the relative amount of income spent on different categories.

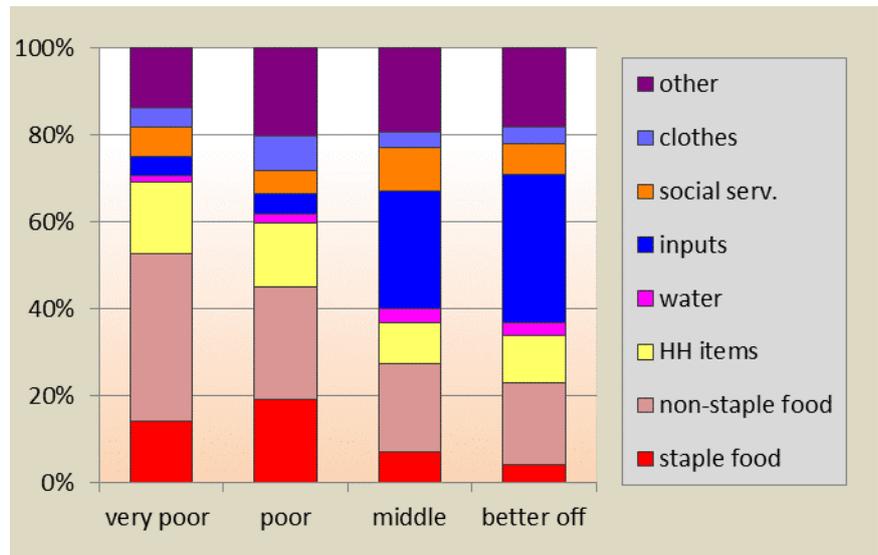
The *Bagamoyo Morogoro Midland Maize and Sesame Livelihood Zone* is an agricultural area where the staple food maize is relatively plentiful and prices remain fairly competitive even at their peak. Thus, in an average production year, staple

food expenses are proportionately low even for the very poor (around 15% of annual expenditures). Overall food expenses were high during the reference year (around 45%-50% of annual expenditures for the very poor and poor). However, in the reference year, food expenses were high (around 45%-50% of annual expenditures for the very poor and poor) due to the cost of non-staple purchases. These items included sugar, cooking oil, beans, cassava and some dried fish and/or meat. An estimated 25% of the annual expenditures of middle and better off households was on food, of which only about 5-7% was on staple food (mainly rice) and the rest of the expenses were for oil, sugar and protein foods.

For better off and middle households, the highest category of expenditure was livelihood inputs. Livelihood inputs comprised 25-35% of annual household expenditures. Labour was a significant cost, as was ploughing. The other expenses in this category were seeds, tools, land rental, pesticides and fertiliser.

In this zone, it was common for households to pay for water for home use for 4-8 months during the year. Middle and better off households also paid for firewood. Together with water, "household items" (including firewood, tea, salt, soap, kerosene and grinding fees) comprised about 15-20% of annual household expenditures for all wealth groups.

Once clothes (about 5% of annual expenditures) and social services (5-10% of annual expenditures) were covered, most households from all wealth groups had enough cash to cover discretionary items such as phone credit, cosmetics, gifts, festivals beer and tobacco, providing a small buffer.



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

## Hazards

One year in five, drought affects the zone: this is the most significant periodic hazard for the area. Another occasional hazard is land conflict between pastoralists and farmers during periods of livestock migration to dry season grazing areas. These conflicts are typically localised and become intensified during drought years. In addition to these periodic hazards, there are chronic problems that farmers face on a year to year basis. Wild animals are a frequent threat to crop production and this threat requires vigilance by farmers to protect their fields. Two other chronic problems are crop pests and disease. Newcastle disease is likewise a common threat to the household flock.

## Response Strategies

Households intensify their usual cash generating activities when there is a failure in crop production. In particular, the very poor and poor intensify charcoal sales and poultry sales. They also look for additional daily farm work either within the zone or in neighbouring agricultural areas. Better off and middle households increase their small business activity when they experience crop failure. Most are already engaged in these activities but they either increase the frequency or volume of trade in a bad crop year.

## 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 *Bagamoyo Morogoro Maize & Sesame 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
<b>Crops</b>	<ul style="list-style-type: none"> <li>• Green maize – amount produced</li> <li>• Maize – amount produced</li> <li>• Beans – amount produced</li> <li>• Cowpeas – amount produced</li> <li>• Green grams – amount produced</li> <li>• Sesame – amount produced</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Maize – producer price</li> <li>• Beans – producer price</li> <li>• Sesame – producer price</li> </ul>
<b>Livestock production</b>	<ul style="list-style-type: none"> <li>• Goats – herd size</li> <li>• Chickens – herd size</li> </ul>	<ul style="list-style-type: none"> <li>• Goats – producer price</li> <li>• Chickens – producer price</li> </ul>
<b>Other food and cash income</b>	<ul style="list-style-type: none"> <li>• Agricultural labour (land preparation, weeding) – number of jobs</li> <li>• Agricultural labour (harvesting) – number of jobs</li> <li>• Demand for boda-boda</li> </ul>	<ul style="list-style-type: none"> <li>• Agricultural wage rates (land preparation, weeding)</li> <li>• Agricultural labour rates (harvesting)</li> <li>• Boda-boda prices</li> </ul>
<b>Expenditure</b>		<ul style="list-style-type: none"> <li>• Maize meal – consumer price</li> <li>• School fees</li> <li>• Soap prices</li> <li>• Cooking oil price</li> </ul>

## 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.

The various wealth groups prioritised their development recommendations in different order (see the table below). However, there were some common themes:

- 1) Improve access to agricultural inputs (seeds; fertiliser; tractors) and improve crop production including crop storage (build godowns)
- 2) Improve road infrastructure
- 3) Improve markets for local produce
- 4) Plant more trees (mango, orange, cashew nut, timber)
- 5) Improve water supply to villages
- 6) Build modern houses
- 7) Improve poultry and goat production
- 8) Improve health services
- 9) Provide loans for agriculture (including for tractors)
- 10) Provide support for business expansion

Very poor	Poor	Middle	Better off
Improve markets for produce	Improve access to higher education for children	Improve agri-production	Increase access to tractors
Improve road infrastructure	Improve road infrastructure	Improve markets for produce	Improve road infrastructure
Build modern houses	Improve provision of health services	Support for tractor and motorcycle loans	Improve provision of health services
Removal of tree stumps in farms	Plant mango trees	Improve poultry and goat production	Improve access to agricultural inputs such as seeds and fertilizers
Improve access to agricultural inputs such as seeds and fertilizers	Improve access to agricultural inputs such as seeds and fertilizers	Improve provision of health services	Improve water supply
Plant timber trees	Plant timber trees	Improve water supply	Improve access to higher education for children
Improve the water supply	Improve the water supply	Build modern houses	Build modern houses
Conflict resolution	Conflict resolution	Plant mango and cashew nut trees	Expand businesses
Provision of agricultural loans	Provision of tractor loans	Increase access to tractors in land preparation	Loan to buy tractors and power-tillers
		Improve storage of crops; build godowns	