

Tanzania Livelihood Baseline Profile

Tabora Singida Midland Maize, Millet, Sunflower & Livestock Livelihood Zone (TLZ 24)

December, 2015¹

Zone Description

The *Tabora Singida Midland Maize, Millet, Sunflower & Livestock Livelihood Zone* is located in parts of Singida and Tabora regions and includes the district councils of Ikungi, Manyoni (in Singida) and Uyui (in Tabora)². The main ethnic group living here is Nyaturu, but Sukuma, Nyiramba and Warangi also reside in the zone. Although the zonal boundaries contain villages that are more or less similar in terms of livelihood pattern, a few exceptions can be found. For example, households in an isolated area of the zone, around Muhintiri Village, pursue traditional gold

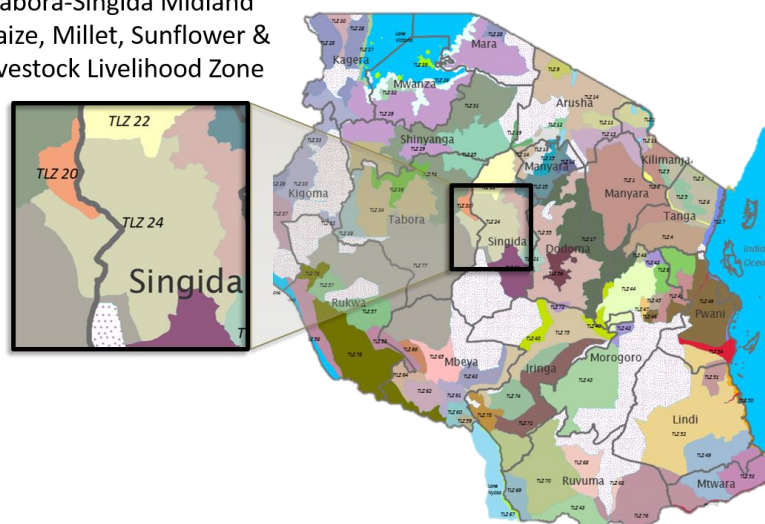
mining; and households in Nkuninkana, Village, in Puma Ward, grow a range of vegetables that are not common elsewhere, such as onions, tomatoes and sugarcane. Aside from these anomalies, a consistent livelihood pattern is found throughout the zone – one based on a mix of crop and livestock production, with sunflower and millet the most important cash crops.

The topography of this semi-arid midland zone is made up of flat plains with a mixed vegetation of bush and grass-covered savannah. There are two major seasonal rivers – the Kideka and Muanji. A number of major roads run through the zone, including one that connects Dodoma-to Singida; another that runs from Singida to Arusha; and a third connecting Singida to Mwanza. The Dodoma-Tabora Railway provides another important thruway. The population density is 28 people per km³.

Most of the zone lies between 1,200 and 1,550 meters above sea level. Temperatures range from 15-30⁰C, and rainfall averages 350-600 mm per year, although rains here can fluctuate a good deal from year to year and droughts are a common occurrence. Fertile clay soils predominate along with some sandy loams, which means that when rains are good, agricultural production can do well.

Rain fed agriculture and livestock production form the foundation of the local economy. Maize and bulrush millet are the two main staple grains grown here. Sorghum is also grown in smaller quantities along with sweet potatoes. Sunflower and finger millet are the two main cash crops, although some maize and bulrush

Tabora-Singida Midland Maize, Millet, Sunflower & Livestock Livelihood Zone



¹ Fieldwork for the current profile was undertaken in October 2015. The information presented in this profile refers to the reference year, which was the consumption year that started in April 2014 and ended in March 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 The zone includes the following wards in Ikungi DC: Mwaru, Sepuka, Minyughe, Ihanja, Puma, Dungunyi, Ikungi, Issuna, Mkiwa, Mgungira, Muhintiri; the following wards in Manyoni DC: Manyoni, Kilimantinde, Sasajila, Aghondi, Sanjaranda, Itigi, Ipande; and Kizengi Ward in Uyui

millet is also sold. All crops are harvested just once a year. Poorer households cultivate using hand hoes, while those in the upper wealth groups use ox ploughs and even tractors. Better off and middle households cultivate more land than they can manage on their own, so they hire local seasonal labourers, who come from poorer households throughout the agricultural season. Land preparation, weeding and harvesting are the most labour-intensive times of the year. Farmers do not apply chemical fertiliser, however some use animal manure, and insecticides are purchased by better off households who need them. *Quelea* birds pose a significant threat to the bulrush millet crop and stalk borers and maize streak both threaten the maize harvest on a regular basis.

Livestock is almost equally important as a source of cash for middle and better off households – cash that allows them to hire poorer households and to invest in their land. Cattle and goats are the main livestock kept (mainly by the two upper wealth groups), along with chickens, which are owned by all households. Oxen are used for traction; cows are used for milk, and bulls and goats are slaughtered for meat during festivals and also sold to generate cash. Chickens are eaten as well throughout the year as well as being sold whenever cash is needed. All livestock graze and/or browse freely, with chickens being fed crop residues and kitchen scraps. Rainy season water sources for livestock include seasonal pools and rivers as well as shallow wells dug in seasonal river beds. In the dry season livestock rely on water from deep wells. In some villages households purchase water for livestock during the dry season. Men are responsible for taking care of cattle and goats, whereas women manage the chicken flock.

Livestock are even more important in years when rainfall levels are too low for crop production, but good enough to sustain pastures. Part of Ikungi D.C. experiences crop-based food deficits one out of every three years; likewise, part of Manyoni D.C. can have a deficit one out of every two years. Livestock helps households reduce their risks in bad years, giving them a means of generating cash even when crops fail; and it helps them consolidate gains when rains are good. Not all households benefit from the contributions livestock make, however. Only those in the top two wealth groups own cattle (including oxen) and most poorer households do not own substantial numbers of goats, which means the poorer two wealth groups lack access to animal traction to cultivate their fields, animal manure to fertilise their fields, milk for both consumption and sale, occasional meat from animals that are slaughtered, and sizeable cash income from the sale of livestock on the hoof.

Poorer households, because they have smaller plots for crop production and very few livestock, depend heavily on seasonal agricultural labour to generate cash income. They also piece together additional cash resources by burning and selling charcoal, collecting and selling firewood, making and selling bricks, brewing and selling beer, and small petty trade activities. Most of these sources depend on demand from urban dwellers in local towns.

Services in this zone are quite limited. Water is obtained from open wells, where potable clean water is not always ensured. Sanitation facilities are the same as in most of rural Tanzania, with households dependent on pit latrines and garbage disposed of by burning. Most villages have a dispensary, which provides basic drugs and medicines; however more complicated medical procedures need to be dealt with at hospitals, which are found in the regional towns. In general, though, it is not easy to get access to good quality medical care unless you are better off and can afford to pay for care at one of the private hospitals. Primary schools are found in all villages, and secondary schools are available in the ward centres. Better off households typically send their children to private schools if they can afford the costs of uniforms, stationery, and transportation. Poorer households are often not able to afford to send their children beyond primary school. There is no electricity in this zone, and households depend on kerosene and torches or – in the upper wealth groups – solar lanterns for light. Households in all wealth groups have mobile phones, although the network is not reliable everywhere. Credit facilities are available, but tend to be open only to better off households who meet the minimum requirements to take out loans. Village Community Banks (VICOBA) offer households a chance to save money, operating according to agreements established by the members. A local NGO, the Tanzania Social Action Fund (TASAF) provides support to a small number of very poor households, supplying grants for education, buying livestock (gifts of dairy goats to feed children), and otherwise supporting livelihoods.

The transportation infrastructure in this zone is moderately well developed. The major roads in the zone are in good condition and vehicles can travel throughout the rainy season. A main tarmac road connects Dodoma and Singida; another one runs between Singida and Arusha; yet a third connects Singida to Mwanza. The Dodoma-Tabora Railway also runs through part of the zone. Smaller roads connect Singida to Itigi and Mgungira. However, smaller feeder roads to village centres are rough dirt tracks which quickly become impassable in the rainy season. Nevertheless, traders are able to reach most villages in the zone at harvest time by small vehicle or truck, since the harvest season occurs after the rains have stopped for at least a month; and people travel by foot, bicycle or *boda* (motorcycle taxi) from village to village. Many villages have only a weekly market, although wealthier households in some villages own kiosks where they sell things like soap, salt, kerosene, batteries and stationery goods. These are brought to the village on motorcycles or by ox-cart. In the lean season poorer households buy grain directly from better off households, somewhat mitigating the need for a physical market in the village.

Singida is a central intermediary market connecting villages in this zone to terminal markets like Kenya and Dar es Salaam. Kenya is the main terminal market for sunflower and sunflower products; and Dar es Salaam is the terminal market for livestock. Households depend on middlemen to sell their crops and livestock; these traders come to collect commodities at the farm gate, which leaves local households without much bargaining power. Maize is sold from July to October, transported from local villages to the Matongo farm gate, where it is collected and taken to Singida and then on to Arusha where it may get sold on to Kenya. Some surplus maize is retained by middle and better off households; they hold on to these stocks until January and February when local demand for maize (and corresponding prices) are highest. This is when poorer households have run out of their stocks and need to buy food. Sunflower seeds are collected in Mwaru and then transported to Singida and Arusha; from there they are transported to Kenya. An alternative route is from Iglansoni to Singida. This trade takes place from June to November. Sunflower oil is processed in Singida and then taken to Arusha, where it is transported to Dar es Salaam; and sunflower seed cake may be sent from Singida either to Kenya via Arusha or to Dar es Salaam. Finger millet is transported to commercial breweries in Arusha and Moshi for beer production.

Cattle, goats and chickens are the main livestock sold by households in this zone. Although livestock are sold throughout the year there are two peak periods. One peak is from May through August, when livestock are in the best condition and prices are highest. The second peak is in December and January, the lean season - when poorer households need to buy food. Households sell one or two animals at a time at the local market in the ward centres, including Sepuka and Mtavira for cattle and Sepuka, Ikungi and Njiapanda; traders collect and transport livestock to Dar es Salaam. The urban demand for meat drives the livestock trade, and Dar es Salaam is the main terminal market for livestock. Chickens provide small amounts of cash to households in all wealth groups; these are sold throughout the year in local markets, with sales peaking at times when expenditure requirements are high, such as June and December, when school fees need to be paid; or when unexpected medical costs arise.

Poorer households run out of food from their own harvests by December or January, even in good production years. They need to buy food at this time to cover their staple food needs. This maize is sourced from local households who produce a surplus (those in the upper wealth groups) and it also comes from other surplus areas in Tanzania via the Singida market. The external supply of maize becomes more important in bad years, when local stocks, even for better off households, dry up quickly. Beans are also purchased by all households, and especially by those on the upper end of the wealth spectrum. Beans come from Kagera to Singida and are then distributed to local village markets throughout the zone. Non-food essentials, like salt, soap, batteries and kerosene, are sold in local kiosks, often owned by better off farmers.

Charcoal is sold by poorer households to raise cash for food and other essential goods. The season for charcoal production is June through October. There is a high demand for charcoal from urban dwellers in Singida. Urban demand for building materials, like building poles and bricks, also generates income for poorer households in this zone.

Seasonal labour opportunities here are almost entirely local, driven by the demand for agricultural labour on the larger farms. It was estimated that in the reference year, 90% of casual labour was found within the zone. An additional 5% of labour demand comes from local towns and the final 5% is from outside the livelihood zone. Both men and women take on paid agricultural work. There are three peak periods of labour demand: September to December for land clearing, land preparation and planting; January and February for weeding; and May through July for harvesting. A very small number of people also find work outside the zone, but most people do not travel outside the zone for work unless it is a bad year. Bad years mean the demand for local agricultural labour dries up and people are forced to travel outside the zone, finding work on neighbouring tobacco cultivating farms in Mgandu. The period for migratory work during bad years is December to February. There is no labour migration into the zone from other areas in any year.

Timeline and Reference Year

The baseline assessment refers to a very specific time period called the reference year. In *Tabora Singida Midland Maize, Sunflower & Livestock Livelihood Zone* the reference year covered the consumption period from March 2014 to February 2015. 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. Due to poor recollection, only four years were recorded. The table below, which summarizes the response of the community leaders, shows year quality by production year (which starts with the planting season in November/December and ends with the harvest in March-June 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 reference year was the best of the four years shown, with good rainfall, good farm management practices and good crop yields. The baseline information presented in this profile, therefore, provides a view into how households in this livelihood zone make ends meet in a slightly above average year, drawing on a normal range of options.

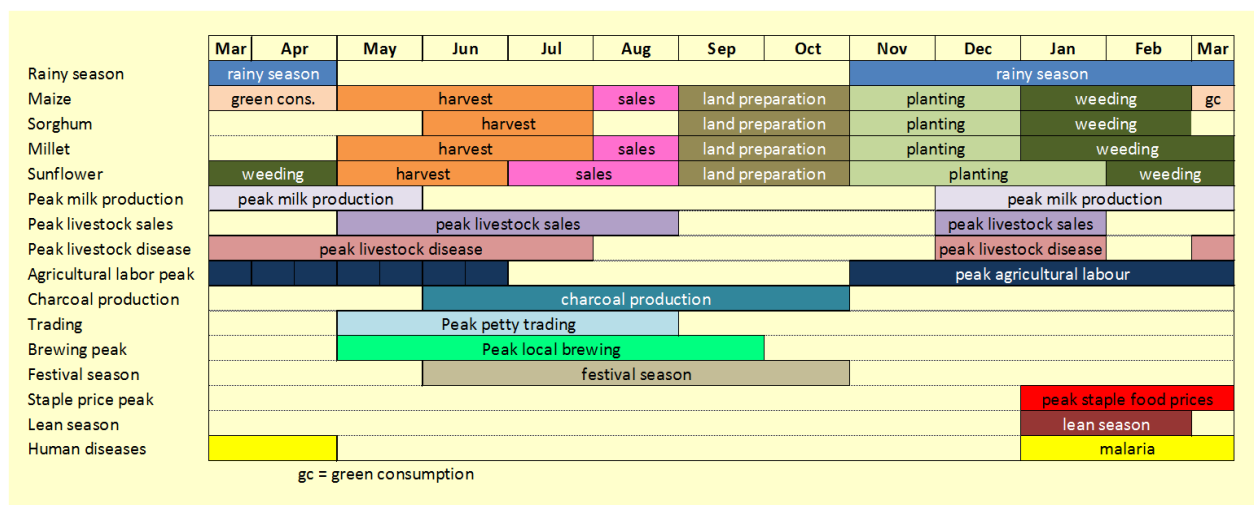
Production Year	Rank	Critical Events
2014-2015	2	Below average rains, inadequate for crop production in some areas
2013-2014	4	Good rains, good farm management, good crop yields
2012-2013	3	Average rainfall, good farm management, average crop yields, normal crop prices
2011-2012	2.5	Average rains, good farm management, average crop yields.

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

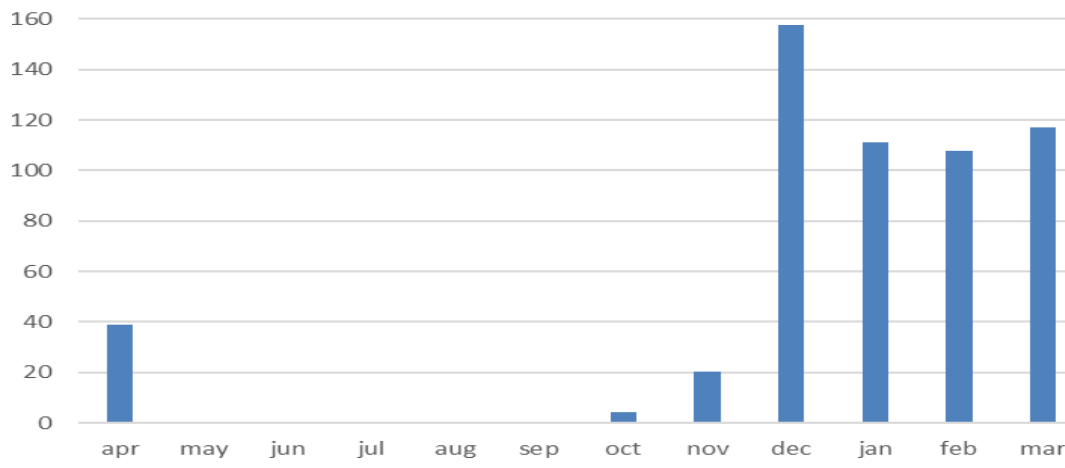
Seasonal Calendar for Reference Year

There is one long rainy season in this livelihood zone, starting in November and lasting until April. Land preparation (clearing and ploughing), by hand for poorer households and with animal traction for better off households, starts in September and lasts until November. Most planting takes place in November, once the rains are established. Maize is intercropped with groundnuts. Sunflower, finger millet and bulrush millet are grown in single stand plots. Once crops germinate and begin to grow, weeding becomes the activity that occupies most people's time. This takes place in January and February and typically involves a good deal of hired labour on the bigger farms. The weeding period coincides with a time in the year when poorer households have run out of their stocks from the previous year's harvest. Some, in fact, run out as early as November or December, but by January none of the poorer households have food stocks left at home. These households find themselves having to purchase all of their staple foods during these months, just when the price of staple

foods is highest; and as this is also the time of year when malaria is most prevalent, spending on health care may also become a pressing need. Thus, demand for labourers from middle and better off households helps provide needed cash to poorer households, allowing them to bridge the gap until March, when the green harvest comes in. However, by spending their time on the farms of their richer neighbours, rather than investing in their own fields, poorer households have less to harvest in the next season, as their yields and area cultivated decrease.



The graph to the right shows average monthly rainfall (mm) in Dodoma Region based on a recent 10-year period (2005 – 2014). Source: TZ Meteorology Department







In late March the green maize harvest is ready, helping poorer households bring an end to the lean season. The main harvest period starts in May, with maize, millet and sunflower, followed by sorghum in June. Maize, millet and sunflower are sold during the months following their respective harvests.

The post-harvest period is when the festival season occurs, since there is more cash in the local economy and people can afford to take some time off after the heavy demands of the agricultural season. Trading, much of which involves livestock, and some of which revolves around transporting and re-selling crops, is highest at this time of year. Poorer households take advantage of the post-harvest dry season to increase charcoal production and to brew and sell beer (which flows freely in the festival season) in an effort to put money together for the coming agricultural season and to pay back any loans accrued in the past year.

Livestock sales occur throughout the year, but peak at two particular periods: better off households sell most livestock from March through July, when livestock body condition is good and prices are high. This is a time when middle and better off households prepare for the coming agricultural season, putting away money to buy seeds and tools and to hire labour. Poorer households sell chickens (and goats if they have them) in January and February because they need cash at this time to cover their food needs during the lean season. For better off and middle households, who sell milk as well as livestock and crops, milk sales are highest from December through May.

Wealth Breakdown

		Wealth Groups Characteristics					
		HH size	Number of wives	Land cultivated (acres)	Livestock	Poultry	Other
Very poor		5 - 7	1	1 - 3	none	5 - 15 chickens	1 cell phone; 1 bicycles
Poor		6 - 8	1	2 - 4	0 - 6 cattle (borrowed); 0 - 8 goats	5 - 15 chickens	1 cell phone; 1 bicycle
Middle		7 - 9	1	4 - 8	2-6 oxen; 10-20 cattle; 10 - 15 goats;	10 - 20 chickens	1 cell phone; 1 bicycle; 1 ox plow; 0 - 1 ox cart
Better off		7 - 9	1 - 2	8 - 12	4-8 oxen; 20 - 30 cattle; 15 - 25 goats; 0-2 sheep	20 - 30 chickens	2 cell phones; 1 bicycles; 2 ox plows; 1 ox cart
0% 20% 40% % of households							

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

Wealth in this livelihood zone is determined mainly by the amount of land a household is able to cultivate, which is related to a number of factors, including how much land it owns, the amount of household labour on hand to work the fields as well as the ability of the household to hire additional labour. Whether or not the household owns plough oxen or can hire them, or hire tractors, is also a factor. Better off households cultivate 8-12 acres. These households own multiple sets of plough oxen and ox ploughs and are able to hire labour to help during critical times of the year. Very poor households, on the other hand, cultivate 1-3 acres by hand and do not have the cash available to hire either plough oxen or extra labour. In fact, these households, as well as poor households, are the ones who provide the additional labour force for middle and better off households, acting as a pool of local seasonal labourers. Poorer households need to work on the farms of others in order to secure enough cash income to make ends meet. This means that they are often not able to time the labour inputs into their own land in an ideal way, resulting in lower yields on less land.

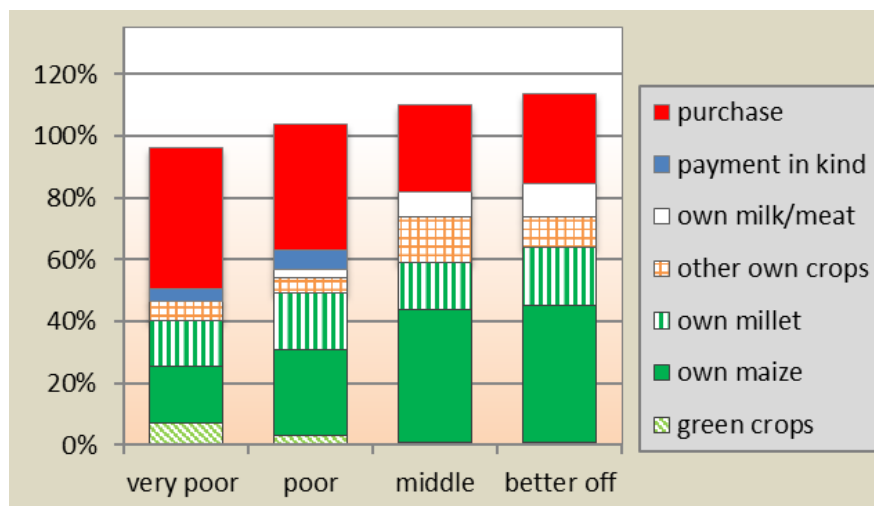
Livestock ownership is another determinant of wealth. Cattle, goats and chickens are owned by middle and better off households, whereas poor households own just goats and chickens, and may keep some cattle borrowed from relatives or neighbours; and very poor households have only chickens. Plough oxen are owned exclusively by the top two wealth groups. The more livestock a household owns, the more income it can generate, and the more food it produces (in the form of milk). Poorer households cash in on their chickens and goats during the lean season, selling them so that they can buy food. Better off households, on the other hand, tend to sell their livestock in the post-harvest period when livestock condition is at its peak and prices are highest. The cash generated from these sales is used in large part to fund agricultural inputs and to pay for labourers.

Intra-community labour exchanges are critical here. Better off and middle households rely heavily on the help provided by poor and very poor households. This agricultural labour provides substantial cash and food for those on the lower end of the wealth spectrum, and it provides those on the upper end with the ability to glean more productive outputs from their land. While a certain amount of redistribution takes place through these labour arrangements, it also means that when production is badly affected, due to a drought, or other natural hazard, not only do people's harvests take a hit, but so does the cash income earned from agricultural labour.

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. Middle (30%) and better off (16%) households combined represent just under half the population. However, as middle and better off households are slightly larger on average (7-9 people) than the very poor and poor households (5-8 people), the proportion of *people* (as opposed to households) in the top half would be more or less the same as, and possibly even more than, the bottom half.

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 April 2014 to March 2015. April represents the start of the consumption year because it is when people begin to consume green crops 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.



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.

Households here obtain their food in three ways: they grow it or produce it themselves (shown on the graph to the right as all four categories of own crops as well as 'own milk/meat'); they purchase it from the market (shown as 'purchase'); and they receive it in exchange for work they do ('payment in kind').

Even though the reference year was a relatively good year, and despite this being primarily an agricultural zone, none of the households relied exclusively on crop production to meet all of their food needs. Crop production covered 45-75% of households' minimum calorie requirements in the reference year, with maize and bulrush millet accounting for the majority of this. All households grow maize, sorghum, bulrush millet, and sweet potatoes; some households in the middle wealth group also grow groundnuts and better off households grow beans for consumption. Maize was the most important crop, providing 25-45% of households' required calories; this included the maize that was eaten green, or fresh, in the months before the main harvest. Poorer households consumed more of their maize green than better off households because their stocks from the previous year's harvest had been depleted by December, leaving them with a gap of around four months to fill with purchased food. As soon as the green harvest is available, therefore, these households take advantage of the fresh maize in order to preserve diminishing cash stocks. This also means they have less to harvest and store for the coming year, which contributes to their perpetual impoverishment. In addition to maize, all households grow and consume bulrush millet, a drought-tolerant crop that helps reduce the risks associated with unreliable rainfall – a problem that is common in this zone. Bulrush millet comprised 15-19% of minimum food needs in the reference year. The other crops (sorghum, sweet potatoes, beans and groundnuts) made up an additional 5-15% of annual food needs. The groundnuts and beans – only available for middle and better off households – provided an important source of protein and fat, which is missing from the maize-heavy diet of poorer households.

Food purchased from the market accounted for around 30-45% of household annual calorie requirements in the reference year, making it the second most important source of food for all households. The relative importance of purchased food decreases with wealth because the richer you are, the less you need to buy food and the more you rely on your own crop production to meet your food needs. Very poor and poor households

bought over a fifth of their staple food needs in the reference year, filling a sizeable gap in calories, whereas middle and better off households bought only 10-16% of their staple calories. In addition, while very poor and poor households almost exclusively purchased the cheapest staples – maize grain and millet – better off households bought mostly rice, which costs more than three times as much as maize grain, along with a small amount of wheat, also more expensive than maize and millet. Non-staple purchases included beans, sugar, oil and dried fish for the bottom three groups; better off households added meat to this list.

Taking a closer look at the data, it is clear that middle and better off households buy food to diversify their diets rather than to meet a production deficit. If these upper two wealth groups had kept everything they produced during the reference year for consumption, they would have been able to cover 191-285% of their minimum calorie requirements with crop production alone. Very poor and poor households would have covered 100-127% of their minimum needs if they did not sell any of their own crops. Although that might seem to suggest that poor households actually produce a surplus, the reality is that selling some crops is essential to generate sufficient cash income to buy the basic goods and services necessary to survive – such as agricultural inputs, school and medical expenses, and salt, soap and other household goods, etc. Thus, poorer households are left with a deficit when they sell the minimum needed to survive, and therefore need to purchase food. Middle and better off households, on the other hand, choose to buy food because it helps them diversify their diets and reduce the monotony of a staple-only diet.

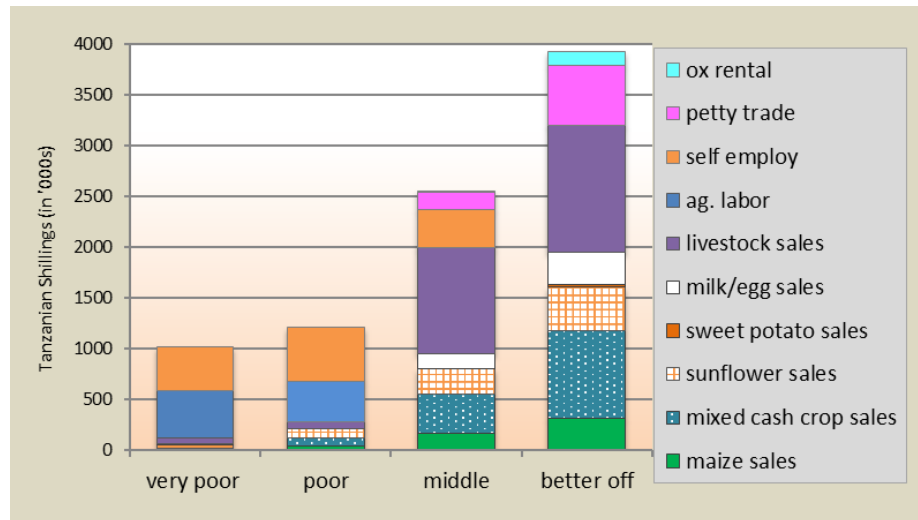
The poorer two wealth groups also depend on ‘payment in kind’ to help fill their food gap. These households get paid in both food and cash for a wide range of seasonal agricultural tasks which they perform for middle and better off households. Although cash is the most common way to be paid, land clearing and weeding are sometimes paid in food. Weeding takes place at a time of year when poor households have run out of their previous year’s stocks and staple food prices are high, so payment in food can be advantageous for them. Nevertheless, because cash payment is far more common, this activity accounted for only around 4-6% of poorer households’ minimum calorie requirements in the reference year.

Milk obtained from households’ own cattle also made a contribution in the reference year. A typical better off household had around 6 cows milking for seven months of the year; a typical middle household had around 4 cows milking; and poor households, who borrow cows from better off relatives or neighbours, typically had around 1 cow milking. During the rainy season, when pastures and water supplies were plentiful, cows provided around 1.5 litres a day. In the dry season this dropped down to 0.5 litres a day. On average, throughout the reference year better off households could expect to generate a total of around 1,350 litres of milk; middle households produced around 900 litres, and poor households around 225 litres. Poor households consumed all of this, whereas middle and better off households consumed 65-80% of the milk they produced, selling the rest. The proportion kept for consumption accounted for 8-10% of minimum calorie requirements for the two upper wealth groups in the reference year.

It is important to note that very poor households are left with a small deficit (around 3% of annual calorie requirements). These households find it difficult to make ends meet even in a good year like the reference year, which suggests that a bad year would be particularly harsh for very poor households in this zone.

Sources of Cash Income

The main sources of cash income in this zone are crop sales, livestock and milk sales, labour sales, self-employment and petty trade. Crop and livestock-related income, as well as petty trade, are the most important sources for middle and better off households. Labour sales and self-employment are the most important sources for the bottom two wealth groups.



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 household³	960,000 – 1,200,000	1,200,000 – 2,000,000	2,000,000 – 3,300,000	3,300,000 – 4,750,000

Better off households also sell sweet potatoes and all wealth groups except for the very poor sold maize in the reference year. Maize sales, were insignificant in relation to the main two cash crops: millet and sunflower. In the reference year, mixed cash crop sales, comprised 20-55% of the crop-based income for all wealth groups, increasing in line with wealth. Sunflower was the second most important crop-based income earner for most wealth groups. For very poor households, sunflower is, by far, the most important cash crop, accounting for almost 80% of their crop-based income in the reference year. For the other three wealth groups, sunflower sales made up 25-40% of crop income, decreasing in line with wealth. Thus a failure of the sunflower crop, or a drop in the price of sunflower seeds will have a bigger relative impact on very poor households than on the better off group, whereas a failure of the finger millet crop, or drop in finger millet price will affect better off households most severely.

Livestock sales are another important source of cash in this zone, especially for the top two wealth groups. Direct sales of livestock were more important than crop sales for middle households in the reference year (accounting for around 40% of cash income, compared to crop sales, which accounted for around 30%), and equally important for very poor households (both sources contributed only 5% of cash income). For better off households livestock sales were the second most important source of cash income, generating 30-35% of annual cash income, compared to crops, which brought in 40-45% of annual income. Middle and better off households are the only wealth groups who own cattle; poor households own goats and chickens, as do the upper two wealth groups. Very poor households have only chickens. Cattle are worth around ten times as much as goats. A typical household in the upper two wealth groups sold 3 cattle in the reference year, generating 930,000-1,050,000 TZS. Better off households can sell cattle at a higher price than middle households because their animals tend to be in top condition and they also sell at markets where prices are higher, and at the time of year when cattle bring in the most money. Cattle sales alone account for 85-90% of the total income from livestock sales for these upper two groups and 25- 35% of total annual cash income. A typical poor household sold only 1 goat in the reference year along with around 5 chickens. The income generated from these combined

³ The average exchange rate from April 2014-March 2015 was 1 USD = 1,675 TZS

sales was less than a third of what middle households obtained from the sale of just one of their cattle. Overall, better off households earned from livestock sales more than 17 times what poor households earned in this same category. This is important because it highlights the capacity of middle and better off households to convert their productive assets into cash, which enables them to invest in productive activities in good years and to make it safely through bad years. Poorer households, in large part because they do not own cattle, have serious barriers to doing either.

Another advantage offered with cattle ownership is the cash income earned from milk sales. In fact, milk sales alone accounted for 5-10% of the annual cash income for households in the top two wealth groups. Neither of the bottom two groups had milk for sale, but they did sell eggs. The income from egg sales, however, was negligible, barely showing up on the graph above.

Poorer households, unable to accrue and keep herds of cattle, turn to their own labour to help them generate the rest of the cash they need in the year. Seasonal agricultural labour and self-employment combined accounted for between 75% and 90% of all the cash earned by these two bottom groups in the reference year. Poorer households typically had at least one to two people working in the fields of middle or better off households during the entire agricultural season. Both wealth groups provided labour for land clearing, weeding and harvesting; very poor households also helped with threshing and miscellaneous other tasks. Very poor and poor households earn similar amounts of cash in the pre-harvest period, although poor households earn slightly more because they tend to have more productive labour within the household that can be deployed. For harvest labour, however, very poor households earn more than poor households, possibly because poor households are busier on their own farms at that time.

When the demand for agricultural labour slows, from July through September, poorer households find ways to earn cash on their own, taking on 'self-employment' activities. For very poor households this may mean brewing, which is done mostly by women, or selling firewood (done by women) and charcoal (done by men). Poor households do all of these things as well as selling bricks. Because poorer households are so dependent on the income earned from their own labour, it is especially important for them to stay healthy and productive. A sick member of the family can quickly turn into an income deficit. It also means that changes in wage rates have a large impact on the welfare of these households.

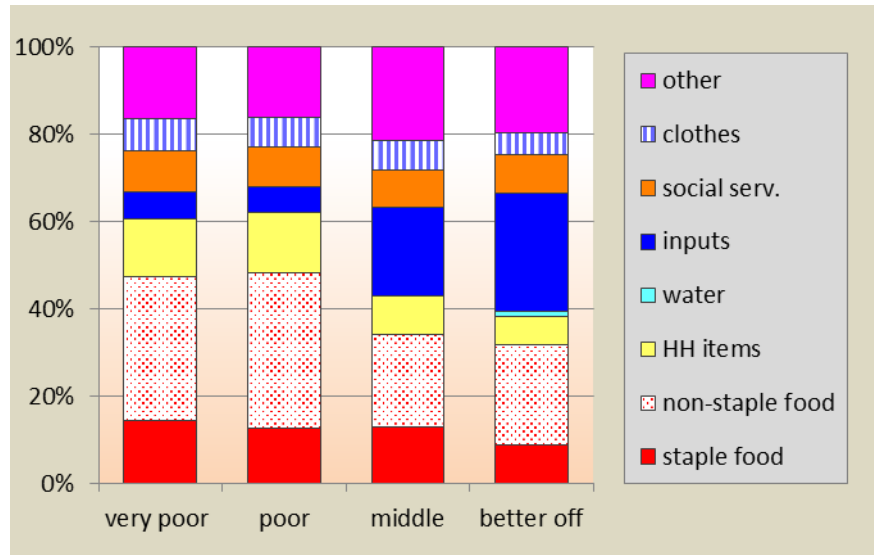
Middle and better off households supplement their crop and livestock income with trade and, for middle households, brewing. Middle households are able to earn more from brewing than the poorer two groups because they have on hand more of the supplies needed for brewing, such as maize, millet, sorghum and sugar. 'Petty trade' for better off and middle households tends to be in the livestock trade. It also might mean that they buy up local harvests and re-sell at a higher price; or they may own small kiosks, where they sell a range of household items, such as batteries, stationery, salt, and sugar. Brewing accounted for around 15% of the annual cash income for middle households in the reference year and cash earned from petty trade accounted for around 15% of the annual cash income of better off households. In addition, better off households used their oxen to earn additional money, renting them out for traction during the cultivation period, and renting them for transport purposes, especially at harvest time.

Expenditure Patterns

The graph presents expenditure patterns for the reference year April 2014 to March 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.

As in other parts of Tanzania, households here need to spend money on a range of essential items and services throughout the year, including: food (both staple and non-staple), household items, agricultural

inputs, social services, like schooling and health, along with clothing and other miscellaneous items. The patterns shown in the graph above highlight that very poor and poor households must devote a larger proportion of their annual cash to meeting immediate food needs; middle and better off households, on the other hand, invest a large proportion of their annual cash into their farming and livestock so that they are able to generate as much cash as they can from their productive assets.



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

In the reference year, the poorer two wealth groups bought 30-35% of their minimum calories in the form of staple food, in particular maize grain and millet, the two cheapest local staples. Without this purchased grain, they would have been left with a sizeable deficit, even though the reference year was a relatively good one. Middle and better off households also purchased staple food, but they did so to diversify their food profile, not to fill a real gap, buying rice (much more expensive than either millet or maize) and wheat to supplement their home-grown millet and maize. Middle and better off households spent a good deal more money on non-staple foods than poorer households. For example, better off households spend 5 times more than very poor households on meat, 3 times more on sugar and fish, and 2 times more on oil. Overall, better off households purchase 19% of their minimum calories in the form of non-staple foods, while spending around 23% of their annual income on this area of expenditure, whereas very poor households spent a larger proportion of their cash income on non-staple foods (33%) but derived only around 10% of their annual calorie needs from these purchases.

Taking a look at what households spent on productive inputs helps us understand difference in the priorities and potential constraints for each of the wealth groups. In this livelihood zone, expenditures on inputs during the reference year included: livestock drugs, water for animals, ploughing, seeds and tools, labour hire, livestock purchase, and phone credits. Of these items, the poorer two wealth groups spent money only on seeds, tools and phone credit. Middle households invested in everything but water for animals; and better off households spent money on all of the items, investing more than any other wealth group in maintaining and expanding their livelihood potential. Over the year as a whole, better off households devoted over a quarter of the annual income to productive inputs; for the poorer two wealth groups, on the other hand, money spent on inputs comprised only 5-6% of total expenditure. Spending on phone credit took up the largest proportion of the inputs budget for the two poorer wealth groups, equivalent to over five times what they spent on seeds and tools. Better off households spent most of their inputs budget on hiring poorer household members to work on their farms, followed by livestock purchase and then phone credit. Better off households also spent a portion of their budget on water for their animals in the reference year, devoting 4% of their inputs budget to this expense. On

average, better off households spent over 16 times more on inputs than very poor households did in the reference year.

The 'hh items' category includes basic household goods, such as tea, salt, soap, utensils, batteries, kerosene, and grinding services. Households tend to buy these items week by week in incremental amounts. Within this category, poorer households spent the most money on payment for grinding. Better off households spent the most on soap. On an annual basis, spending on basic household goods comprised 7-14% of total expenditure, generally decreasing as a proportion of annual expenditure as you move up the wealth scale.

The 'social services' category includes what households spent on education and medical services, including school fees, uniforms, stationery and transportation, where relevant. On a per capita basis, holding household size constant, middle households spend on education about 1.8 times more than the poorer two wealth groups and better off households spend over 3 times more than the poorer two wealth groups. This additional expenditure reflects the fact that poorer households are not able to afford to send their children beyond primary school, whereas those at the upper ends of the wealth scale are likely to send them through secondary school and even on to tertiary levels. The costs of secondary school are prohibitive for poorer households, including things like transportation, boarding, higher fees and more expensive uniforms and supplies.

Spending on clothes and other miscellaneous items are the last two categories included here. 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. In both absolute and relative terms, those at the upper end of the wealth spectrum have the most available in this discretionary budget; and because the reference year was a relatively good year, the two bottom wealth groups have more in this budget than they would in a bad year.

Hazards

There are two chronic hazards for all wealth groups in this zone: **crop pests and diseases** and **livestock diseases**. **Crop pests**, such as *quelea quelea* birds and Stalk Borer cause significant destruction on a regular basis. Maize streak regularly reduces the maize harvest. East Coast Fever and Foot and Mouth disease plague cattle and New Castle Disease can wipe out an entire flock of chickens. Livestock diseases cause significant income losses in a zone where livestock income is critically important.

One of the most devastating, periodic hazards is **drought**, which leads to severe crop failures, degradation of pastures, drying up of local water sources and spikes in food prices. These can occur as frequently as once every three years. **Floods** are another natural hazard that also occur once every three years. Floods damage crops, homes and infrastructure, causing prices to rise and blocking people from accessing markets. There can be positive after-effects from flooding, however, if residual moisture in low-lying areas offers people the opportunity to re-plant; and pastures can be renewed in areas where flood waters recede.

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:

- 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 and beer.
- Poorer households increase their **collection/production and sale of firewood and charcoal**, although there are limits on the effectiveness of this strategy; with more supplies of firewood and charcoal on the market,

prices drop, so the increased effort is not rewarded with a proportional pay out. There are also serious environmental concerns related to this strategy.

- Very poor and poor households try to increase cash income through **finding more local agricultural work**, and migrating to nearby zones, especially in the neighbouring livelihood zone (TLZ 77) where tobacco is produced and extra workers are often needed. The expandability of this option is also limited in bad years because of the increase in labour supply as more and more people look for work, which puts a downward pressure on wages. So even if people do find more days of work, they may earn less per day, making it hard to substantially increase cash income above normal year levels.
- The upper two wealth groups try to increase their cash income through **selling more livestock**. However, the value of livestock tends to drop in bad years, both because supplies increase as more people try to earn cash in the same way, and because their body condition deteriorates as grazing and water resources decline.
- Middle and better off households also try to **increase their income from selling more crops**. Better off households produce a surplus even in bad years. This means they are able to hold onto their stocks until prices reach their peak and then sell them at a profit. In bad years, crop prices tend to increase substantially, allowing better off households to offset some of their losses.

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 *Tabora-Singida Midland Maize, Sunflower & Livestock Livelihood Zone*. These should be monitored to indicate potential losses or gains to local household economies, either through ongoing 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	<ul style="list-style-type: none"> • Green maize – amount produced • Maize – amount produced • Sorghum – amount produced • Finger millet – amount produced • Bulrush millet – amount produced • Sunflower – amount produced 	<ul style="list-style-type: none"> • Beans – producer price • Maize – producer price • Finger millet – producer price • Bulrush millet – producer price • Sunflower – producer price
Livestock production	<ul style="list-style-type: none"> • Cow milk – yields • Cattle – herd size • Goats – herd size • Chickens – herd size • Oxen transport – number of trips 	<ul style="list-style-type: none"> • Cow milk – price • Cattle – producer price • Goats – producer price • Chickens – producer price • Oxen transport – price of trip
Other food and cash income	<ul style="list-style-type: none"> • Agricultural labour (land clearing and preparation, planting, weeding) – number of jobs • Agricultural labour (harvesting) – number of jobs • Demand for charcoal, firewood, bricks, beer, building poles 	<ul style="list-style-type: none"> • Agricultural wage rates (land clearing and preparation, planting, weeding) • Agricultural labour rates (harvesting) • Prices of charcoal, firewood, bricks, beer, building poles
Expenditure		<ul style="list-style-type: none"> • Maize grain – consumer price • Millet – consumer price • Rice – 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. All four wealth groups highlighted the same concerns, listed below:

- 1) Improve access to and availability of water
- 2) Improve access to health services and improve the quality of health services
- 3) Improve road infrastructure, especially feeder roads
- 4) Provide subsidised agricultural inputs to increase the availability of affordable fertilisers and seeds for poorer households