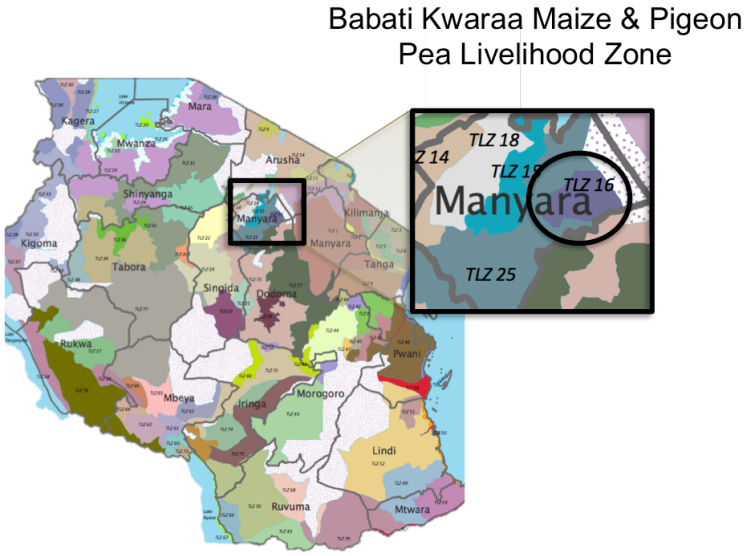
Tanzania Livelihood Baseline Profile

Babati Kwaraa Maize & Pigeon Pea Livelihood Zone (TLZ 16)

October, 2014[1]

Zone Description

The *Babati Kwaraa Maize & Pigeon Pea Livelihood Zone* is in Manyara Region and comprises all of Babati District. Tarangire National Park borders the zone to the east, and Kwaraa Mountain and Lake Babati are notable geographic landmarks in the zone. Set in the semi-humid midlands of the East African Rift Valley, at around 1200-1500 meters above sea level, this zone is made up of plains interspersed with undulating hills and mountains. The population density here is 55 people per square kilometre.



This is a moderately productive agricultural zone, with annual rainfall of 750 – 900 mm. Most of the soils are volcanic in origin and range from sandy loam to clay alluvial. Temperatures range from 22 - 25 degrees Celsius. Known as a food surplus area, the zone produces and sells maize, pigeon peas, and sunflower. The main crops for consumption are maize, beans, and small amounts of sorghum. Hand hoes, ox-ploughs and tractors are used for cultivation. Livestock in the form of cattle, shoats (goats/sheep), and chickens, are raised. They form an integral part of the local economy, providing traction, manure, milk, eggs, and cash income.

Better off households in this zone rely heavily on crop production for their food and cash income, supplementing this with income from their livestock. Poorer households meet around half of their annual needs with food from their own crops, filling in the gaps with purchases and food in exchange for labour. The local agricultural labour market is a critical source of cash and food for poorer households, who rely heavily on the demand for land preparation, weeding and harvesting labour from middle and better off households. This demand, in turn, is made possible by the cash generated from middle and better off household sales of crop surpluses and livestock.

The public services in this zone are modest. In the wet season drinking water is obtained from rivers, seasonal ponds, water holes, and in the dry season gravity-fed tap schemes provide water. Poorer households rely on temporary pit latrines for sanitation, whereas better off households build permanent "Eastern" type pit latrines. Public dispensaries and health centres form the basis of the health service. There are no local hospitals. For anything beyond the most basic of care people need to travel far distances to regional centres. Electric services are not publically available. Poorer households own small solar lamps or kerosene lamps. Better off households have solar lamps and solar panels for generating electricity. There is a good cellular network and all households own mobile phones. Some villages have primary and secondary

[1] Fieldwork for the current profile was undertaken in August 2014. The information presented in this profile refers to the reference year, the consumption year that started in May 2013 and ended in April 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 2018). All prices referred to in the document are for the reference year.

schools while other villages need to send their children to the bigger schools found at ward centres, usually some distance away. There are credit facilities offered in the zone through VICOBA (village community banks) and SACCOS (savings and credit cooperative organisations). Microfinance opportunities are provided through PRIDE. Savings schemes are not common in this zone. World Vision is the one NGO that works in this zone.

Markets

Market access in the *Babati Kwaraa Maize & Pigeon Pea Livelihood Zone* is relatively good. Markets are readily accessible in the district and at ward level (Gallapo, Mamire, and Babati and Gallapo town). The Babati - Kondoa - Dodoma road, and Babati – Kiteto - Simanjiro road are the main arteries. Roads are rough but serviceable, with no significant access problems during the dry season. In the wet season gullies form in some areas and other parts are slick, but overall access is not impeded.

The main crops sold are maize, pigeon peas and sunflower. Maize is especially important, sold between July and December by local farmers to local ward markets (such as Mamire and Gallapo) who sell to the central regional market of Babati with some supplies moving on to more distant markets like Arusha, Kilimanjaro and Kenya. Sunflower sales follow the same route, sold between June and November. Pigeon peas, sold locally between August and November via the same district markets, end up as far away as India, the Middle East and China. During the hunger season, from January to March, maize is also purchased by poorer households; and rice is bought by better off households (especially) throughout the year to diversify their diet.

Livestock are the other main commodity sold by local households. Individual households sell cattle, goats, sheep and chickens all year around to ward markets such as Mamire, Gallapo and Gidas, where they are gathered and taken to Babati and then on to Arusha, Kilimanjaro and Dar es Salaam.

The labour market is local, with the vast majority of poorer rural household members seeking seasonal employment on nearby farms during peak labour demand periods, mainly land preparation, weeding and harvesting. A small minority (around 15%) of households also find domestic employment in towns such as Arusha and Kilimanjaro. And an even smaller number (around 5%) work outside the zone in places like Magugu, where they harvest rice, or in Kiru on the sugarcane plantation.

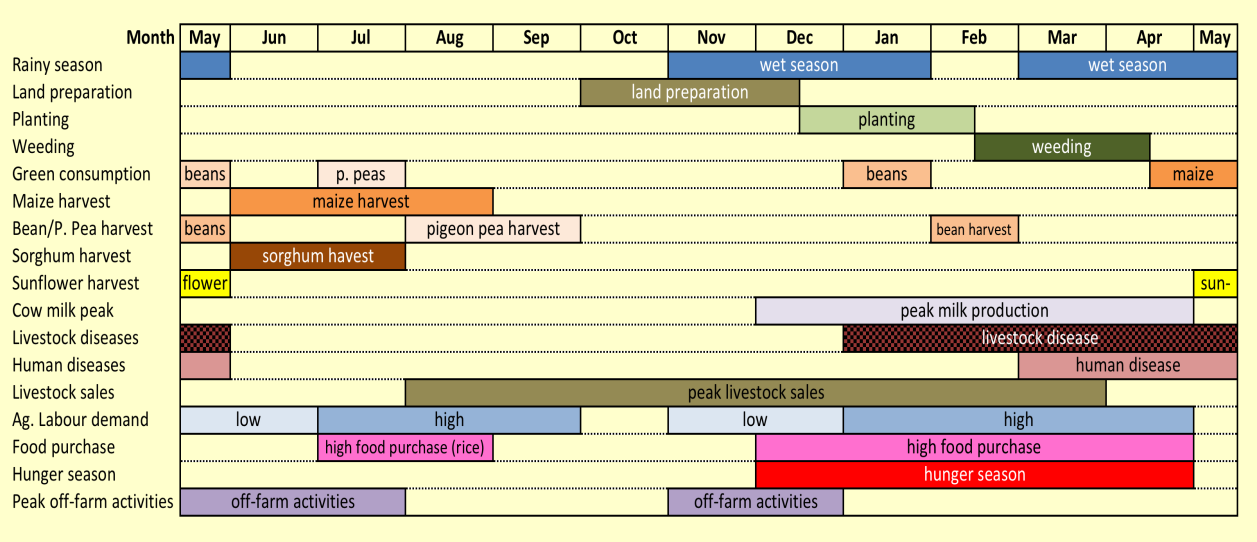
Timeline and Reference Year

The baseline assessment refers to a very specific time period called the reference year. In the *Babati Kwaraa Maize & Pigeon Pea Livelihood Zone* the reference year covered the consumption period from May 2013 to April 2014, which corresponds to the production year of 2012-13. During community leader interviews, key informants were asked to rank the last four years in terms of seasonal performance with '1' indicating a poor season and '5' an excellent season. The table below, which summarizes the responses of the community leaders, shows that the reference year (production year 2012-13) was ranked as average, with average rains and crop diseases affecting pigeon peas and maize. The baseline information presented in this profile, therefore, provides a view into how households in this livelihood zone make ends meet in a typical year, drawing on a normal range of options.

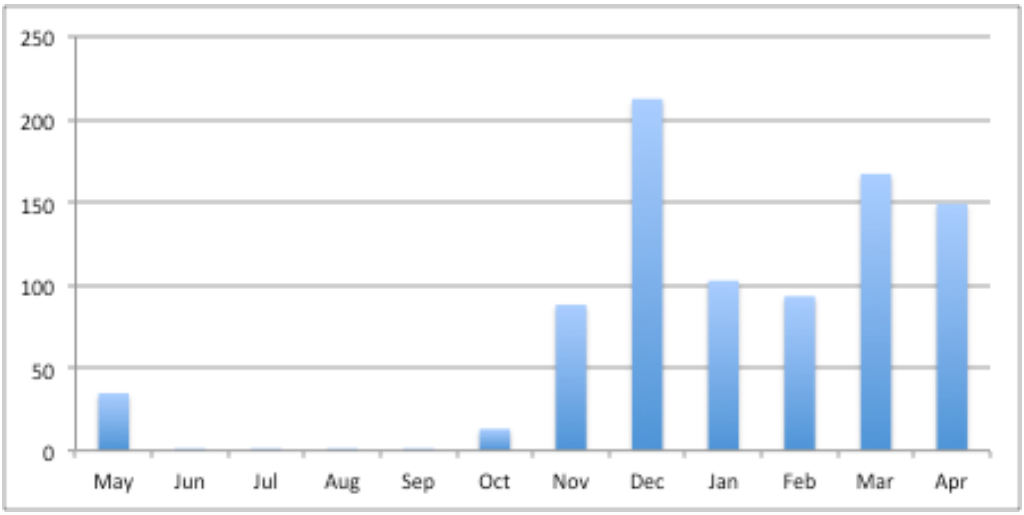
Production Year	Rank	Critical Events
2013-14	**4**	Good rains and good crop production
2012-13	**3**	Average rains, average crop production, limited pasture for livestock, pests and diseases in pigeon peas and maize (MLND)
2011-12	**3**	Average rains, average crop production, limited pasture for livestock
2010-11	**2**	

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 monthly rainfall in Bababti based on a recent 10-year average in mm, Source: TZ Met. Dept.



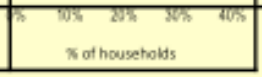
There are two rainy periods in the *Babati Kwaraa Maize & Pigeon Pea Livelihood Zone*: the long rains (*masika*) from March through May and the short rains (*vuli*) from November until February. The dry season occurs from June through October. The consumption year starts in May and ends in April of the following year. Planting occurs in December after a period of land preparation that starts in October. A short cycle crop of beans is grown from December to February, but this is not as important as the later crop grown from March until May. Long cycle crops include maize, grown from December until June/July; pigeon peas, grown from December to August/September; sunflower grown from December to May/June; and sorghum, grown from December to June/July. Maize and pigeon peas are intercropped while sunflower and sorghum are grown as single stands.

Livestock are moved locally, taken to fields not far from the villages during the cultivation period and brought back to the farms after the harvest period to feed on crop residues. There is no livestock migration during bad years and no pattern of regular seasonal labour migration either into our out of the zone.

The annual hunger season starts in December as the stocks of poorer households run out. It continues until

April/May of the following year, when green crops start to be harvested. The length and severity of this period depends on the previous year's harvest, and it is always marked by an increase in food purchases and higher prices. During this period of time, poorer households work on the farms of better off households, earning food or cash in exchange for weeding labour. Livestock disease and human diseases tend to be highest during this time, making it an especially challenging period of the year.

Wealth Breakdown

		Wealth Groups Characteristics				
		HH size	Land area cultivated (acres)	Large stock holdings	Small stock holdings	Other
Very poor		5-9 (7)	1 - 2	0 - 2 cattle (loaned)	0 - 2 goats	10 - 30 chickens
Poor		5-9 (7)	2 - 4	2 - 6 cattle	2 - 10 goats; 0 - 3 sheep	0 - 2 oxen; 10 -30 chickens
Middle		6-10 (8)	5 - 15	10 - 20 cattle	5 - 25 goats; 0 - 15 sheep	2 - 6 oxen; 0 - 1 donkey; 15 - 35 chickens
Better off		6-10 (8)	15 - 25	15 - 55 cattle	10 - 50 goats; 5 - 25 sheep	4 - 12 oxen; 0 - 2 donkeys; 15 -40 chickens
						

Note : The wealth breakdown percentages represent the mid-point of a range.

The main determinant of wealth in this zone is the amount of land cultivated. But this is determined in part by the number of livestock a household owns, since oxen provide critical traction services, and cattle provide manure to fertilize the fields. The very poor, cultivating 1 - 2 acres, comprise 15 - 30% of households, with slightly smaller average household sizes than the middle and better off. The poor group, cultivating 2 - 4 acres, make up 25 - 40% of households; middle households, cultivating 5 - 15 acres, represent 25 - 35% of households, and the better off make up 10 - 20% of households.

Crop production for the poorest households is constrained in large part by their exclusive use of hand hoes to cultivate; as one moves up the wealth spectrum, there is increasing reliance on ox-ploughs and tractors. Better off households cultivate up to 25 acres, using tractors and ox-ploughs. These households can own as much as 35 acres, putting the extra land to use for crop rotation as well as pasture for their livestock. Very poor households cultivate only 1 - 2 acres because they do not own plough oxen or ploughs and do not have enough income to rent ploughs or tractors. The amount of land they cultivate is limited to the area they can clear and cultivate by hand.

Cattle are used for traction, manure and for food (in the form of milk and meat). Livestock ownership increases in direct proportion with wealth. Very poor households own chickens and possibly a small number of goats. They may also have some cows on loan from a richer relative, giving them access to milk and manure. Better off households own as many as 55 cattle with a sizeable herd of goats and sheep along with oxen, donkeys and chickens.

Some poor households rent out a portion of their land to better off households to raise enough money at planting time to purchase local seeds and to buy food and other essentials. Planting time coincides with the hunger season and most poor households have run out of their own stocks by this time. In order to get access to plough oxen for their fields, poor households work for better off households, ploughing their land in exchange for a certain number of days of plough oxen time. This often leaves them ploughing their fields after

the most advantageous times for planting have passed, further exacerbating the constraints posed by their smaller plots of land and inability to buy improved seeds and other inputs.

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 2013 – April 2014. May represents the start of the consumption year because it marks the end of the hunger period, as people begin consuming green crops in significant quantities. Food is presented as a percentage of 2100 kcal per person per day for the 12-month period.

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

Households' own crop production provides the majority of their food in this livelihood zone, with maize and pigeon peas providing the main source of calories. Payment in kind (for very poor households), milk/meat and purchase make up the remaining sources.

In an average year very poor households obtain 45 – 50% of their annual calories from their own maize, and a very small percentage from pigeon peas. Almost a quarter of this is in the form of green maize, which poorer households need to consume earlier and for longer because their funds to buy food run out towards the end of the hunger season. Better off households obtain over 80% of their minimum calorie requirements from their own maize, with very little if any coming from maize eaten green. Better off households, producing around 14,000 kg of maize in an average year, could easily cover all of their food requirements from their own crops but sell off significant surpluses (around 11,000 kg) to generate cash income.

Purchases are the second-most important source of food for all wealth groups. The majority of food purchased by very poor and poor households is maize, helping these households meet a gap in their minimum household food needs each year. Middle and better off households purchase food not because they need to fill a gap, but rather to diversify their food sources, buying rice, beans, sugar, oil and small amounts of fish and meat.

Payments in kind (maize in exchange for work), make up around 10% of annual calories for very poor households and are especially common during the weeding season. Both men and women from these poorest households provide weeding labour for middle and better off households. For two months of the year (half of February through half of April) much of the food these households consume comes from payments of maize in exchange for weeding labour.

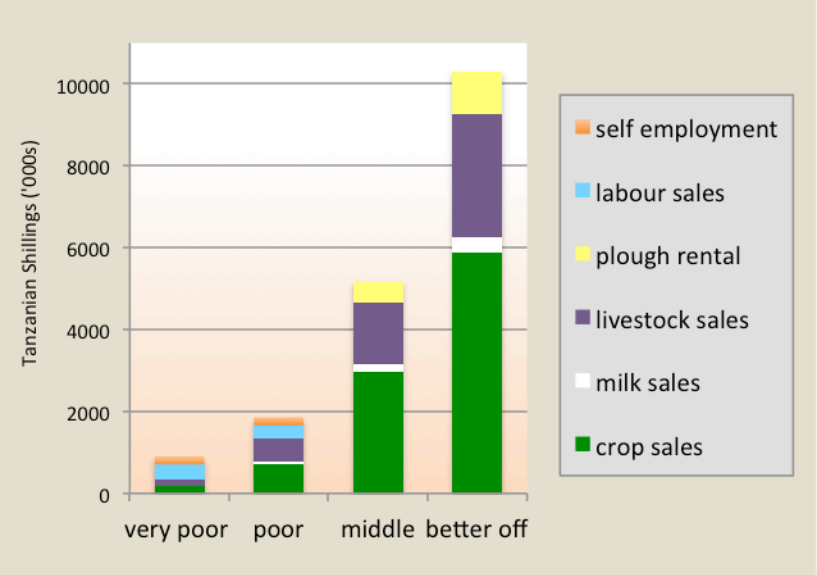
Milk makes up about 10% of annual calorie requirements for middle and better off households. Households at the upper end of the wealth spectrum have up to ten cows milking for most of the year, providing more than enough milk for the households' own needs. The surplus milk is sold, generating significant cash income.

Gifts are not common in this zone. Very few households from the very poor wealth group benefit from Zakat from the local Muslim community, and this is only during the month of Ramadan.

Sources of Cash Income

For the top two wealth groups, crop sales, milk sales, livestock sales and plough rental comprise the four main sources of cash income in this zone. The bottom two groups rely on crop sales, livestock sales, labour and self-employment.

Crop sales are the main source of cash income for the top three wealth groups. Maize is by far the most important cash earner of these crops, increasing in importance as you move up the wealth spectrum. For better off households maize comprises around 70% of the cash earned from crop sales; pigeon peas generates 25% and sunflower the remaining 5%. For very poor households, however, pigeon peas generate the most cash (43% of crop sale income), with maize close behind (35%).



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

INCOME SUMMARY TABLE (in Tanzanian Shillings)				
Wealth group	**Very poor**	**Poor**	**Middle**	**Better off**
Annual income per household [2]	700,000 – 1,100,000	1,200,000 – 2,500,000	4,000,000 – 6,000,000	7,000,000 – 13,000,000

Better off household cash income from crop sales alone is more than five times the *total* cash income (from all sources) of very poor households. Not only is this because poor households sell far less produce, but they also sell at the lowest prices, just after harvest, to middlemen within the villages. Better off households have the means to travel and they transport their goods to larger regional markets where prices are higher.

For very poor households the most important source of cash income is not crop sales, but agricultural labour sales, which generate around 40% of their total cash income. Harvesting and weeding times are most lucrative and this is when they earn around 75% of their agricultural labour income; the remaining quarter of labour income comes from planting and threshing. Both men and women from very poor and poor households work in the fields of middle and better off households. Children sometimes join their parents on the weekends. Land preparation is paid on a per-acre basis and is about 10,000 TZS per acre. Planting and harvesting are paid per day, with a typical day being 7 am - 12 pm. The rate ranges from 2,000 to 2,500 per day. Weeding labour is payable both in kind and in cash. Most households prefer to be paid in kind for weeding labour as this occurs during the hunger season, when food prices are high.

The next most important source of cash income for poor, middle and better off households comes from cattle, shoat, chicken/egg and milk sales. Cattle, oxen and shoats are managed and sold by men. Women care for the poultry and control chicken and egg sales. Very poor households are only able to sell chickens; which severely constrains their cash income. The sale of just one cow can bring in 350,000 TZS. Goats and sheep are also important, especially for poor households, who generate around 70,000 TZS on these sales each year, almost covering the costs of their seeds and tools (which are around 80,000 TZS). But it is middle

[2] The average exchange rate from May 2013 – April 2014 was US$1 = TZS1,600

and better off households who really cash in on their livestock, making 1.5 million and 3 million TZS (respectively) in a typical year from livestock sales. Not only do the better off sell more livestock, but they also time their sales to reap the most benefit, waiting to sell when their animals are in the best condition and traveling to central markets where prices are higher.

Milk is mostly sold during the long rainy season (*masika*) with small quantities also sold during the dry season. But while milk sales are a small proportion of total cash income for better off households, they are still significant in absolute terms, equivalent to more than twice as much as very poor households make from their total crop sales.

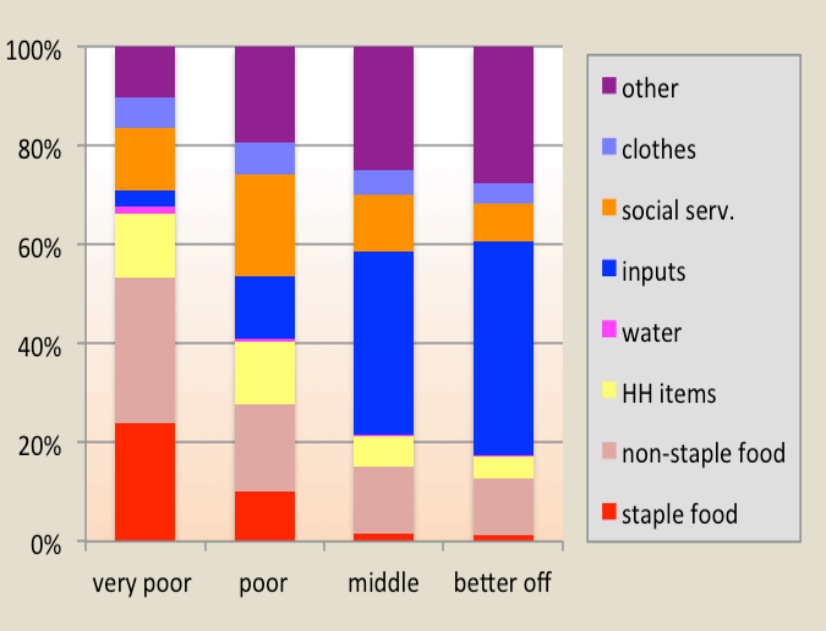
Very poor and poor households also depend on self-employment activities to generate cash income. These include sales of vegetables, firewood/charcoal collection and sales and brick making. Women gather and sell firewood within the village and in nearby centres, mainly to better off households. Men make and sell charcoal, taking it to far off markets like Gallapo and Babati on their bicycles. Men are also the ones in charge of brick making. These households engage in these activities when agricultural labour demand is low.

Better off households generate additional income through operating transport businesses (hiring boys to carry goods on motorcycles, which are used to ferry both goods and people), hiring out oxcarts and ploughs, and - for those who have tractors - hiring out tractors. A few also own kiosks. Except for the kiosks, which can be run by any family member, all of these extra businesses are managed by men.

Expenditure Patterns

The graph presents expenditure patterns for the reference year May 2013 – April 2014. While total expenditure increases with wealth (as shown in the cash income section), the expenditure breakdown by per cent in this graph shows the *relative* amount of income spent on different categories.

The graph to the right makes the striking point that the spending priorities for very poor households are quite different from those of better off households. Very poor households spend over half of their cash income trying to secure food for the current year (the red and pink bars).



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

Meanwhile, well over 40% of better off income (devoted to 'inputs' – the blue bar) is spent trying to secure the livelihood capital required to generate cash income for the coming year. This corresponds to the fact that poorer households do not grow enough food from their own fields to cover their annual calorie requirements, and must supplement with food from the market; better off households, on the other hand, grow more than four times what they need for consumption, thereby allowing them to generate significant cash income from crop sales. But this requires a serious investment in inputs. Better off households spend ten times as much as poor households on seeds and tools; but their biggest 'input' expenditure is on labour, which in turn creates important income for very poor and poor households.

Better off and middle households spend money on food as well, but most of this is for the purposes of diversifying their diets. They buy rice, beans, sugar, oil and small amounts of fish and meat. Poor and very poor households, on the other hand, buy maize and beans mainly, which are essential for covering their basic calorie requirements.

Expenditure on household items (tea, salt, soap, kerosene, grinding, etc.) are highest in relative terms for poor and very poor households. These daily or weekly expenditures add up over the year and take a surprising amount of cash income to cover.

Another point to note is that the burden of social service expenditures (which mainly means schooling, but includes a small component of medicine as well) falls heaviest on poor households. In absolute terms middle and better off households spend more on school than poor households, but as a proportion of their income, poor households devote the largest amount to education for their children. This investment in the future is a clear indication that they envision different lives for their children.

Hazards

The *Babati Kwaraa Maize & Pigeon Pea Livelihood Zone* is subject to a number of hazards, some of which undermine food security every year while others threaten food security periodically. The main hazards affecting the zone, in order of severity, are:

Crop diseases, such as Fusarium wilt, Stalk borer, American ballworm, Pollen beetle, Leaf minner, and Army worms. Army worms occur periodically, on average once every three years. The other diseases occur every year.

Livestock diseases, such as East Coast Fever (cattle), foot and mouth disease (cattle and goats) and Newcastle disease (chickens) occur regularly as well – typically during the wet season for cattle and shoats.

Close to the national park, wild animals cause damage to crops every year.

Droughts and floods occur once every 2 – 3 years.

Response Strategies

Households engage in a number of strategies in an attempt to cope with hazards and bad years. The responses vary by wealth group, with better off households increasing their income using their financial and physical capital, and poorer households depending more heavily on re-deploying their own labour.

Poorer households attempt to rotate crops in response to crop disease, and plant fast-maturing crop varieties such as sweet potatoes. When possible, with what little cash they have, they try to vaccinate their livestock against diseases. They also increase their reliance on income sources other than crops, intensifying efforts to build and sell bricks, for instance. In bad years, poor households typically increase the number of livestock they sell, although this strategy is clearly limited by the small numbers of livestock they own. They also try to increase the amount of agricultural labour they sell, sometimes going to other zones to seek employment, and accepting payment in food rather than cash. Another typical response is to increase firewood and charcoal sales, but this is constrained in bad years by competition from increasing numbers of households pursuing the same strategy. Finally, poorer households reduce expenditure on non-essential items, such as tea, soap, grinding, beer, phone credit, clothing, festivals, sugar, utensils, kerosene, community obligations, transport, meat and oil.

Better off households also rotate crops when faced with crop disease and also increase the use of pesticides. They draw on their cash reserves to vaccinate livestock, but also sell more livestock in years of

drought especially. In bad years, better off households reduce their expenditure on hired labour – just as poorer households try to find more work on better off household farms. They also rent more land from poor households at reduced prices in an attempt to balance out a loss in yields with an increase in area cultivated. Better off households also reduce expenditure on non-essential items, including tea, utensils, sugar, phone credit, festivals, beer, agricultural labour, gifts, meat, transport, clothing, school uniforms and livestock purchases.

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 *Babati Kwaraa Maize & Pigeon Pea 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 • Pigeon peas • Sorghum • Sunflower	• Maize – producer price • Pigeon peas – producer price • Sorghum – producer price • Sunflower – producer price
Livestock production	• Livestock herd sizes • Milk yields	• Livestock prices • Milk prices
Other food and cash income	• Agricultural labour opportunities • Self employment demand	• Agricultural labour rates • Self employment rates
Expenditure		• Maize price – consumer price

Programme Implications

The wealth group-specific longer-term programme implications suggested below include those that were highlighted by the wealth group interviewees themselves and those made by the assessment team following detailed discussions and observations in the field. These represent potential areas of further investigation and would require detailed feasibility studies and cost-benefit analyses.

Very poor	Poor	Middle	Better off
Provide oxen and tractors for ploughing for free or at affordable rates	Provide agricultural inputs on time and at affordable rates, possibly through a voucher system	Provide ploughs and tractors for ploughing	Provide market for produce and good prices for both crops and livestock
Provide agricultural inputs and extension services at affordable rates	Provide seed capital for agricultural activities and also enable creation of self-employment activities	Provide agricultural inputs	Create water points
Government should buy produce directly from farmers at fair prices hence eliminate middlemen	Create markets for farm produce and eliminate middlemen	Provide markets for agricultural inputs and improve prices for products	Improve vet services and drugs

Provide livestock	Provide livestock, ploughs and oxen	Provide animal drugs to curb frequent diseases that affect livestock	Provide agricultural loans to farmers
Provide affordable access to education	Create more water points and improve existing ones; introduce irrigation	Provide more land and designate grazing zones	Provide and designate grazing areas
Provide aid in bad years and support the elderly	Create job opportunities	Introduce commercial farming/modern agriculture and dairy livestock	Improve road infrastructure
		Provide reliable and clean water; provide water for micro-irrigation	Lower house building costs
		Provide higher quality education	