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**HOUSEHOLD ECONOMY ANALYSIS BASELINE
FOR THREE LIVELIHOOD ZONES IN TURKANA
COUNTY, KENYA
OCTOBER 2021**



HOUSEHOLD ECONOMY ANALYSIS BASELINE FOR THREE LIVELIHOOD ZONES IN
TURKANA COUNTY, KENYA, OCTOBER 2021

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ACRONYMS AND ABBREVIATIONS

FEG = Food Economy Group
FHH = female-headed household
HEA = Household Economy Analysis
HH = household
KAP = Kerio Riverine Agropastoral Livelihood Zone
KSh = Kenyan Shillings
LTF = Lake Turkana Fishing Livelihood Zone
LUZ = Lodwar Urban Livelihood Zone
MHH = male-headed household
NAWIRI = Nutrition in ASALs Within Integrated Resilient Institutions
OA = Outcome Analysis
TAP = Turkwel Riverine Agropastoral Livelihood Zone
TBP = Turkana Border Pastoral Livelihood Zone
TCP = Turkana Central Pastoral Livelihood Zone
USAID = United States Agency for International Development

EXECUTIVE SUMMARY

USAID Nawiri is a 5-year Development Food Security Activity (DFSA) program funded by USAID and implemented by a consortium of partners led by Mercy Corps, whose goal is to sustainably reduce levels of persistent acute malnutrition in Turkana and Samburu Counties. The program involves research for the first two years to establish *What Works* to inform the co-creation of program design and implementation.

This HEA baselines, along with other research and learning inquiries conducted by USAID Nawiri, will contribute to the design of nutrition-sensitive livelihood strategies and programming as well as exploration of cost-effective options for strengthening local markets to increase local availability of nutritious foods and incomes for poor households. The baseline set out to address learning questions that enable profiling of different livelihoods and livelihood strategies, determination, and characterization of wealth groups for a better understanding of vulnerabilities and identification of key parameters for monitoring the vulnerabilities. Key variables of analysis included income sources and levels, expenditure patterns, food sources, hazards, and response strategies.

Household Economy Analysis (HEA) baselines in three livelihood zones of Turkana County was conducted in 2021 and funded through the program. The baselines are presented in this report and will be used to assess food insecurity in future seasons and to conduct resilience analysis of potential livelihood opportunities for program design.

Household Economy Analysis (HEA) is a livelihoods-based framework that analyses the way different households obtain access to the things they need to survive and prosper. It helps determine households' food and income needs, and identify appropriate means of assistance, whether short-term emergency interventions or longer-term development programs or policy changes. It is based on the principle that an understanding of how people usually make ends meet is essential for assessing how livelihoods will be affected by acute or medium term economic or ecological change and for planning interventions that will support, rather than undermine, their existing survival strategies.

The **HEA framework** is made up of two components: the **baseline**, which provides a detailed understanding of how different types of households accessed the food and cash they need in a recent year; and the **outcome analysis (OA)**, the process which uses the baseline and forecast information to model how an identified shock, such as delayed rains, will impact households' abilities to meet their food and income needs in the upcoming months. The OA can also be used to model how different interventions will impact households, which enables the user to select the most appropriate interventions. **This report covers the baseline component of the HEA framework for four livelihood zones and does not cover any aspect of outcome analysis, which will be conducted in the future.**

The **Turkana Central Pastoral Livelihood Zone (TCP)** occupies a central position in the county, between the Border Pastoral Zone (to the north, west and south) and the Lake Turkana Fishing Zone (to the east). It includes parts of all seven sub-counties in Turkana County. Pastoralism is the preferred pattern of livelihood in this exceptionally hot, dry and arid environment and livestock provide an important source of food and cash income for middle and better off households, although even for these wealth groups this has been in decline in recent years. The remaining two-thirds of households are heavily dependent on a combination of self-

employment activities (charcoal, firewood, poles, handicrafts, petty trade), casual labor and safety nets. Camels are the most important type of livestock kept in the livelihood zone, followed by goats and sheep. There are fewer cattle, as there is insufficient grassland to support them. Compared to the Border Pastoral Zone, the Central Pastoral Zone receives less rainfall and has less grassland, with the result that fewer cattle and more camels are kept. There is also less livestock disease in the Central Zone (because of the lower livestock population density). The Central Zone is more secure (and suffers less raiding than the Border Zone) and has better access to the County's main markets (and therefore lower staple food prices) and to government services (health centers and schools).

The **Turkwel Riverine Agro-Pastoral Livelihood Zone (TAP)** is located along the Turkwel River, where irrigation schemes have been developed in what is otherwise a semi-arid to arid area. It includes villages in Turkana South and Loima Sub-Counties of Turkana County. It is an agro-pastoral livelihood zone, where households both grow crops and rear livestock, in addition to pursuing other income generating activities like charcoal production, handicrafts, brewing, petty trade, casual labor and building material sales. The population is made up of former pastoralists who previously only engaged in opportunistic farming. The main crops grown are sorghum, maize, green grams, cowpeas, vegetables, watermelon, pumpkins and butternut. The main types of livestock kept are goats and sheep, although some households also keep cattle and poultry and a few households keep donkeys and camels. Market access in this livelihood zone is fairly good compared to other parts of Turkana County, due to the proximity of the main road that runs from Kitale to Lodwar and the proximity of market centers. Own crop production and market purchases are the main food sources across all four wealth groups, supplemented by livestock production and school feeding. This profile contains additional information about children's role in the household economy based on separate interviews with child workers.

The **Lake Turkana Fishing Livelihood Zone (LTF)** stretches the length of Lake Turkana, but covers only a thin area from the shoreline to little over two kilometres inland. Fishing is the main economic activity of the zone, despite the population's pastoral background. The amount of income derived from this activity depends on household access to fishing equipment, the most important set of productive assets. Households also obtain income from livestock (especially goats and sheep), bush product sales (firewood and charcoal), construction labor, handicraft sales and petty trade. Households in this zone purchase most of their food because their own production is limited to fish and a small amount of milk and meat. These food sources are supplemented by school feeding, which is food consumed by children at school. This profile contains additional information about children's role in the household economy based on separate interviews with child workers.

Female-headed households are found in each wealth groups in each livelihood zone. During field work, in-depth interviews were conducted with female-headed households from the poor wealth group. The findings show that poor female-headed households and poor male-headed households shared a very similar pattern of food access across all three livelihood zones in the reference year. However, female-headed households had slightly lower income levels per person and slightly different income patterns. Compared to male-headed households in the same livelihood zone, poor female-headed households obtained less income from livestock sales and more income from self employment and safety net cash assistance in the Central Pastoral Livelihood zone; less income from crop sales and more income from self employment and safety

net cash assistance in the Turkwel Riverine Agropastoral Livelihood Zone; and less income from fishing and more income from self employment in the Lake Turkana Fishing Livelihood Zone.

Development priorities at community level vary by livelihood zone and relate to market access and road infrastructure; livestock production; crop production; fishing and processing; health, water, sanitation and education; access to credit; diversified livelihoods; and conflict resolution.

The baselines for Turkana County presented in this report represent the starting point for Household Economy Analysis to be used in the USAID Nawiri activity design through various thematic program intervention areas.

HEA was originally designed as a tool for **early warning**. Seasonal information on rainfall, crops and prices, which tend to be routinely collected by government monitoring systems, along with information on livestock and labor and self-employment opportunities, are used in conjunction with the baseline data to indicate which wealth groups within a population are likely to face a deficit of how much and when. Combined with population data, the analysis allows for an estimate of the number of people that will need assistance to protect livelihoods and/or prevent extreme hunger, and the total food or cash equivalent required and of the months when it will be needed.

These HEA baselines also offer a starting point for **measuring economic resilience**. Using HEA outcome analysis, it will be possible to project whether program interventions are likely to increase or decrease household resilience by modelling the impact of a typical hazard and incorporating data on program-generated income, program costs and opportunity costs.

The HEA baselines should be seen as a starting point for future analyses. A plan will be developed by program staff to use the HEA baselines described in this report for HEA outcome analysis to 1) assess food insecurity in future seasons, 2) conduct resilience analysis of potential nutrition-sensitive livelihood opportunities for program design.

1.0 BACKGROUND

1.1 INTRODUCTION TO TURKANA COUNTY

Turkana County is constrained by an arid environment, remoteness from the national capital and poor access to services, in addition to the underlying causes of poverty experienced elsewhere in Kenya. It is classified as an arid area, with temperatures reaching close to 40°C during the dry season. Average rainfall ranges from 120-500mm per year, with higher levels of rainfall in the west of the county. Nomadic pastoralism has traditionally been the backbone of the economy in Turkana. However, erratic rainfall and frequent droughts have been accompanied by outbreaks of livestock disease and abnormal migration. Livestock holdings have not kept pace with rapid population growth and, as a result, the ability of local populations to survive on a purely pastoral livelihood has been compromised and livelihoods have diversified.

1.2 BACKGROUND TO THE 2021 BASELINE UPDATE

USAID Nawiri (Nutrition in ASALs Within Integrated Resilient Institutions) is a 5-year Development Food Security Activity (DFSAs) program funded by USAID and implemented by a consortium of partners led by Mercy Corps, whose goal is to sustainably reduce levels of persistent acute malnutrition in Turkana and Samburu Counties. The program involves research for the first two years to establish *What Works* to inform the co-creation of program design and implementation.

HEA baselines were previously conducted in 2012 and in 2016 in six livelihood zones in Turkana County (Border Pastoral, Central Pastoral, Kerio Riverine Agro-Pastoral, Turkwel Riverine Agro-Pastoral, Lake Turkana Fishing, and Lodwar Urban) for Save the Children and Oxfam, with technical support from the Food Economy Group.¹ To capture changes in context and socio-economic opportunities and to inform appropriate programming, USAID Nawiri decided to update the baselines in three of the six livelihood zones in 2021: Central Pastoral, Turkwel Riverine Agro-Pastoral and Lake Turkana Fishing.

The baselines are presented in this report and will be used to assess food insecurity in future seasons and to conduct resilience analysis of potential livelihood opportunities for program design. Along with other research and learning inquiries conducted by USAID Nawiri, the HEA baselines will contribute to:

- the design of nutrition-sensitive livelihood strategies and programming that enables poor households to maintain year-round nutrition security for women and children and supports the sustainable reduction of persistent acute malnutrition in the face of shocks and stresses;
- the exploration of cost-effective options for strengthening local markets to increase local availability of nutritious foods and incomes for poor households.

Understanding the livelihoods of a given population is important to assess their ability to withstand and recover from shocks and stressors. Turkana County has experienced its share of shocks and stresses such as periodic droughts and more recently floods, locust invasion and the COVID 19 pandemic. To clarify how these shocks have affected how families obtain their food and income, HEA baselines have been conducted. These not only give an indication of how livelihoods have been affected but also point to the various coping mechanisms that have been put in place to mitigate some of these effects.

HEA is an approach that specifically responds to the information needs of USAID Nawiri Line of Enquiry No.4 Livelihoods, Poverty Graduation and Social Protection. It will directly inform gaps in understanding on how the different livelihoods of different wealth groups support (or not) household nutrition throughout the year. The study will not only establish an in-depth understanding of the current situation but will also enable USAID Nawiri to make evidence-based design decisions for proposed interventions in future seasons.

Household Economy Analysis (HEA) is a livelihoods-based framework that analyses the way different households obtain access to the things they need to survive and prosper. It helps determine households' food and income needs, and identify appropriate means of assistance,

¹ The reports for the 2012 and 2016 baselines are available at www.heacod.org.

whether short-term emergency interventions or longer-term development programs or policy changes. It is based on the principle that an understanding of how people usually make ends meet is essential for assessing how livelihoods will be affected by acute or medium term economic or ecological change and for planning interventions that will support, rather than undermine, their existing survival strategies. Therefore, in addition to informing the selection of appropriate livelihoods support, it can act as an effective early warning mechanism, triggering the need for assistance, before households have lost livelihoods or face food consumption gaps.

This particular HEA set out to address the following research questions:

Livelihood zoning:

- What are the common livelihood strategies among communities within the various geographic areas under targeted by the studies?

Wealth group breakdowns:

- How do households differentiate their levels of vulnerabilities at the household level?
- What are the productive assets common among households of different vulnerability levels?
- What are the average household sizes of households in the different vulnerability categories?
- Can household vulnerabilities be identified beyond economic considerations (female-headed households; households with particular individual vulnerabilities)

Livelihood strategies:

- How do households earn income over the course of the consumption year?
- When do households earn the income from different sources and what are the seasonal variations in those income streams?
- What are the largest expenditures for a household and when are those costs incurred?
- How much of household food consumption is produced compared to how much is purchased at market, as well as what periods of the years these proportions vary?

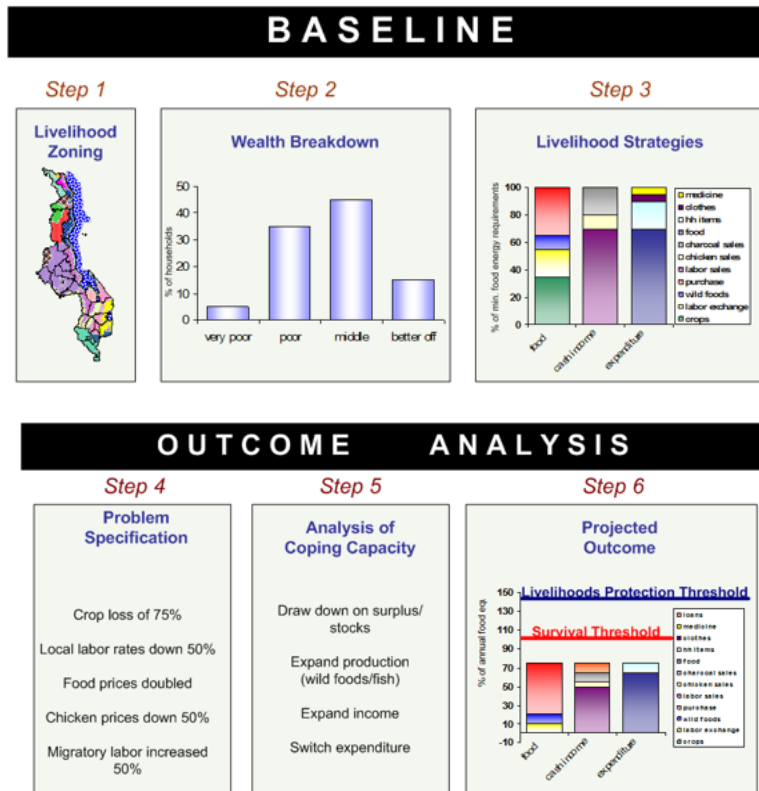
Outcome Analysis:

- What are the ‘key parameters’ that make up over 10% of household income, expenditure, or food consumption in one wealth group, or over 5% among multiple wealth groups, and how often should these KPs be collected to inform regular OA
- What are the most common shocks faced by households and quantify how the shocks impact their income, expenditures, and food access?
- When do households face food consumption gaps?
- What coping strategies can households expand during the period of consumption gaps, and how much of the gap can these strategies provide?

The HEA framework is made up of two components: the **baseline**, which provides a detailed understanding of how different types of households accessed the food and cash they need in a recent year; and the **outcome analysis (OA)**, the process which uses the baseline and monitoring

information to model how an identified shock, such as delayed rains, will impact households' abilities to meet their food and income needs in the upcoming months. The OA can also be used to model how different interventions will impact households, which enables the user to select the most appropriate interventions. The framework is summarized thus:

Figure 1: HEA Framework



There are three steps in an HEA baseline: livelihood zoning, wealth breakdown and livelihood strategies by wealth group. These are gathered for a recent 12-month period and can be reused for outcome (or scenario) analysis for 5-10 subsequent years, provided there are no fundamental changes to livelihoods. Outcome analysis also has three steps: identifying the severity of shocks or other changes (problem specification), analysis of household coping strategy in the face of those shocks, and the projected impact of those shocks on household economies.

This report covers the baseline component of the HEA framework for three livelihood zones in Turkana County and does not cover any aspect of outcome analysis. Outcome analysis to use these baselines to model food and livelihoods security in each future season and to analyze the resilience impact of potential livelihood programs will be conducted by the program in the future.

2.0 METHODOLOGY

The HEA baselines were conducted in the Turkana Central Pastoral, Lake Turkana Fishing and Turkwel Riverine Agropastoral Livelihood Zones. Team leader and team member baseline trainings were led by a consultant from the Food Economy Group (FEG). Fieldwork was conducted in May-June 2021 by trained field teams of staff from Save the Children; National

Drought Management Authority (NDMA); Ministry of Water and Irrigation; Ministry of Agriculture, Pastoral Economy and Fisheries; Ministry of Health; and Meteorological Department. Each team was led by a team leader who had previously participated in HEA baseline work in Kenya and who attended a team leader training.

Most of the field data was collected directly at village or settlement level from community key informants and focus groups through lengthy semi-structured interviews.

In HEA, the household is the basic unit of analysis. Data is collected for 'typical' households using a focus group interview approach. Participants for these focus group interviews are selected using a stratified sampling scheme, with two levels of stratification. The first level of stratification is geographical, by livelihood zone. The second level of stratification is by wealth group. Household members are selected on the basis that they are representative of typical very poor, poor, middle and better-off households in the livelihood zone. There are two steps to the process of selecting household members for interview. For both steps, a purposive sampling methodology is used.

The first step is to select villages that are typical of the livelihood zone. This is done in consultation with the local authorities. The second step is to select household members from each wealth group for interview. This is done during a 'wealth breakdown' interview at community level, which also generates valuable information on other questions relevant to the enquiry (e.g. seasonal patterns of activity). The advantages of purposive sampling over random sampling for this kind of assessment are as follows: a) the method is rapid and we are almost always tight on time; b) it does not require a complete list of locations to sample (i.e. villages in the livelihood zone) and accurate data on the population of each unit sampled. If this information is not available, or is incomplete or inaccurate or out-of-date (as is often the case), then the representativeness of a randomly selected sample is adversely affected; c) it is more efficient for small samples, since villages which are, for any reason, atypical of the livelihood zone can be avoided.

Eight villages/settlements were visited in each livelihood zone. In each village, interviews were conducted with 20-30 community leaders and with 4-5 people in each of 4 wealth groups, plus separate interviews were conducted with female-headed households from the poor wealth group in all livelihood zones and with child laborers in some livelihood zones. In total, approximately 350-400 people participated in interviews in each of the 3 livelihood zones. This sample size is not determined on the basis of statistical considerations, but on many years of practical field experience. This is the number of interviews required to generate a reasonably coherent set of data, from which most field teams are happy to draw conclusions with reasonable confidence in their accuracy and their representativeness. Interviews were also conducted with traders. The interview forms that were used in the field are listed below and available on request.

Field interview forms:

Form 1 = Sub-County Key Informant Interview Form

Form 2 = Market Trader Interview Form

Form 3 = Community Representatives Interview Form (rural version)

Form 4 = Wealth Group Interview Form (rural version)

Form 4a = Child Worker Interview Form

Note: A digital version of Form 4 was used during interviews in the field.

Some additional information was covered in 2021 compared to the previous baselines. Interviews with female-headed households from the poor wealth group were conducted separately in each livelihood zone. Interviews with children engaged in child labor were conducted separately in livelihood zones where children undertake paid labor. The results of these additional interviews are in the individual livelihood zone profiles that follow this overview.

Baseline analysis for each livelihood zone was conducted by the field teams in the HEA Baseline Storage Spreadsheet (BSS) and the full baseline summary has been transferred into the tools used for Outcome Analysis (the Livelihoods Impact Analysis Spreadsheet (LIAS) and the HEA Dashboard) for use in the future. The LIAS is the main tool for large-scale analyses, such as national seasonal assessments. Different problem specifications can be entered for each of the 20 districts included in the LIAS, which is useful when using national monitoring systems. The HEA Dashboard can be used for real-time analysis of selected areas (provided they share the same problem) or for scenario analysis of much larger geographical areas (e.g. for the development of a contingency plan). It is the main tool for resilience analysis because interventions (IGAs, assistance) can be analysed alongside a problem specification.

For more information on the Household Economy Analysis framework and methodology, please see the following resources:

1. HEA Guide for Program Planners and Policy Makers: <http://foodeconomy.com/wp-content/uploads/2015/09/HEA-Guide-for-Program-Policy-Makers.pdf>
2. HEA Practitioners' Guide: <http://foodeconomy.com/wp-content/uploads/2015/09/The-Practitioners-Guide-to-HEA.pdf>

3.0 FINDINGS

3.1 SUMMARY FINDINGS

3.1.1 Livelihood Zoning

This assessment uses the livelihood zone map that was defined in a meeting in 2012 with participants from the National Drought Management Authority, Ministry of Agriculture, Livestock and Fisheries, UNDP, World Vision, Oxfam, Child Fund and the Diocese of Lodwar.

The main difference compared to previous livelihood zone maps of the county was the split of the pastoral zone into two separate zones: a central pastoral livelihood zone (TCP in the map) and a border pastoral livelihood zone (TBP). The border pastoral zone has more rainfall than the central pastoral zone and consequently better pasture, browse and water access for livestock. The population in this livelihood zone is more nomadic than in the central pastoral zone, where permanent settlements are now well established. The Central Pastoral Zone is more secure (and suffers less raiding than the Border Pastoral Zone) and has better access to the County's main markets (and therefore lower staple food prices) and to government services (health centers and schools). There are close linkages between the two zones.

As with previous maps, two agro-pastoral zones have been identified along the Turkwel and Kerio Rivers (TAP and KAP in the map), where irrigation schemes have been developed in what are otherwise semi-arid to arid areas. The fishing zone along the western shore of Lake Turkana (LTF in the map) is similarly unchanged from previous maps.

In addition to these rural livelihood zones, urban areas were divided into several different types or zones:

- Lodwar, Kakuma: Large towns with NGOs (formal employment), livestock markets, transport businesses, and active airstrips. The two towns are quite different due to the presence of the refugee camp in Kakuma and the presence of the County Government, oil companies and NGOs in Lodwar.
- Lokichar, Kainuk, Lokori, Lokichoggio: Second level towns with small livestock markets and fewer NGOs.
- Kalokol, Lowarengak: Small lake side towns dominated by the fishing business and trade with Ethiopia and Marsabit.
- Kaaleng, Kalemunyang, Letea, Kalemungorok, Turkwel: The smallest towns with small livestock markets, but growing fast.
- A mining zone was also identified for the centers that have grown around gold mining.

In both 2012 and 2016, it was not possible to conduct HEA baselines in all of these types of urban livelihood zone and Lodwar town was selected for assessment. This urban baseline was not updated in 2021.

Using population data from the 2019 census, the population of each division has been assigned to a livelihood zone, resulting in the following estimated population split for the county:

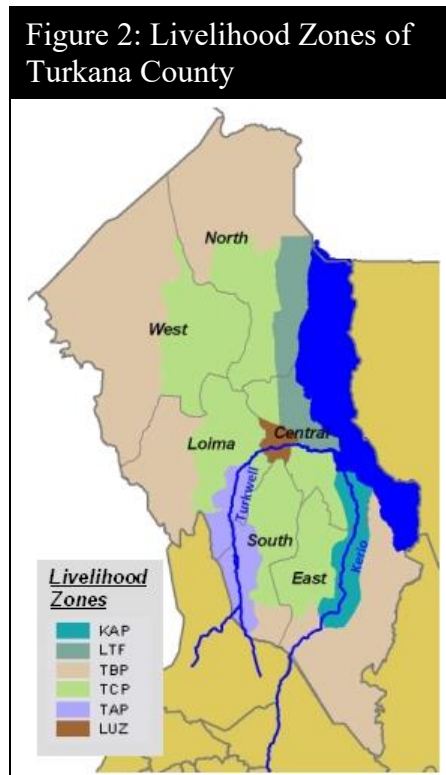


Figure 2: Livelihood Zones of Turkana County

Central Pastoral LZ	Border Pastoral LZ	Kerio Riverine LZ	Turkwel Riverine LZ	Lake Fishing LZ	Urban LZ	Total
288,092	188,610	82,014	104,766	68,742	194,752	926,976

3.1.2 Summary and Comparison of Livelihood Zones

The following tables provide a brief summary of the characteristics of each livelihood zone. They are followed by a more detailed comparison of the three livelihood zones that have been updated in 2021.

Central Pastoral Livelihood Zone (updated 2021)		
Livestock	Camels Sheep/Goats	<p>Pastoralism is the preferred pattern of livelihood in this exceptionally hot, dry and arid environment. However, in reality most households are heavily dependent on a combination of self-employment activities (charcoal, firewood, handicrafts, petty trade, etc), wild foods and safety nets.</p> <p>The number of permanent settlements in the zone has increased in recent years. These provide a base for accessing health and education and – most importantly for the poor households that make up the bulk of the settled population – safety nets and other assistance.</p> <p>Overall, the livelihood zone receives very little rain, with considerable variation from one year to the next. Compared to the Border Pastoral Zone, the Central Pastoral Zone has less grassland, with the result that few cattle are kept. The Central Zone is more secure (and suffers less raiding than the Border Zone) and has better access to the County’s main markets (and therefore lower staple food prices) and to government services (health centers and schools).</p> <p>Purchase was the main source of food for all wealth groups in the reference year. Milk/meat from own livestock was the second most important source of food and its contribution increased with wealth. School feeding was a minor food source.</p> <p>In terms of external assistance, safety net cash transfers have become less important in 2019-20 compared to the last baseline for 2015-16.</p>
Income Sources	Livestock sales Self-employment (bush products, handicrafts) Safety nets	
Food crops	None	
Cash crops	None	

Border Pastoral Livelihood Zone (updated 2016)		
Livestock	Camels Sheep/Goats Cattle	<p>The Border Pastoral Livelihood Zone receives more rain, has more grassland and more heads of cattle compared to the Central Pastoral Livelihood Zone. Given its location close to the border, it is also less secure, and has poorer market access and more limited access to social services such as health facilities and schools.</p> <p>Livestock and livestock product sales are key income earning activities for households in this livelihood zone, with the exception of poorer households which do not have sufficient herds to meet their annual cash needs. To supplement their annual earnings, they collect and sell bush products (e.g. building materials, firewood and charcoal).</p>
Income Sources	Livestock sales Self-employment (charcoal, mats, baskets, brewing, building poles) Safety nets	

Food crops	Maize Sorghum	<p>The contribution of livestock products to household food needs increases with wealth. Purchases are another important source of food. A new source of food in this livelihood zone in 2016 compared to 2012 was small-scale crop production.</p> <p>Market access in this livelihood zone is poor. Distances between commercial centers and villages are vast and the road network is in poor condition. In addition to the long distances there is a lack of reliable transportation.</p> <p>Insecurity is a problem in this zone due to its proximity to the border areas and hostile neighbouring tribes. This not only affects access to markets but also to grazing areas, water sources, and wild foods.</p>
Cash crops	None	

Kerio Riverine Agro-Pastoral Livelihood Zone (updated 2016)		
Livestock	Goats / sheep Camels Cattle	<p>Crop and livestock production (meat, milk and grain bought through livestock sales) are the basis of the riverine economy. So too is the sale of bush products. The riverine eco-system is fed by rainfall in the Cherangany Hills. This highland source creates sufficient water flow both for irrigation and for forest growth, sustaining herds and farms.</p> <p>Irrigation schemes are a story about opening up opportunities for livelihood diversification in Turkana. However, from year to year, production outcomes are highly variable and the schemes regularly require extensive rehabilitation efforts. The 2015 production year resulted in sufficient harvests to meet about 25-30% of annual household food needs across the four wealth groups. Most of the crop was consumed as market access is poor. Crop sales only provided 5-15% of household annual cash income.</p>
Income Sources	Livestock sales Self-employment (charcoal, building poles, firewood, thatch, petty trade) Crop sales Safety nets	
Food crops	Sorghum, maize, cowpeas, green grams	<p>Although herd sizes have increased since the previous baseline in 2012, the riverine zone does not support large herds. Frequent raiding and resource pressures around the settlements limit the numbers of animals kept. Nonetheless, milk and livestock sales are an important income source. For better off households, such sales added up to over half of their annual income.</p> <p>For very poor and poor households, bush products are their largest source of income, including the sale of charcoal, construction poles, tree pods (for fodder), thatch and firewood. In terms of external assistance, food aid has largely been replaced by safety net cash transfers in recent years.</p>
Cash crops	Small quantities of the food crops listed above are sold	

Turkwel Riverine Agro-Pastoral Livelihood Zone (updated 2021)		
Livestock	Goats / sheep Camels Cattle	<p>This livelihood zone is located along the Turkwel River, where irrigation schemes have been developed in what is otherwise a semi-arid area. Originally a seasonal river, the Turkwel now draws water from the Turkwel Gorge Dam and flows throughout the year. This is an agropastoral livelihood zone, where households both grow crops and rear livestock, in addition to pursuing other income generating activities like charcoal production and building material sales.</p> <p>The population is made up of former pastoralists who previously only engaged in opportunistic farming. Crop production relies on both rainfall and irrigation from the Turkwel River. The level of the river is key to the success or failure of a given season and depends on rainfall in the catchment area in West Pokot and beyond. Farmers usually harvest twice per year.</p> <p>Because this zone is dependent on both man-made irrigation schemes and the geography of the Turkwel River and its banks, there is quite a lot of variation in production from one village to the next within the same year. Another source of variation is market access: villages that have relatively easy access to Kainuk, Lokichar and Lodwar are geared towards vegetable production for the market, while other villages are less so.</p> <p>The main crops grown are sorghum, maize, green grams, cowpeas (mainly for leaves), vegetables (mostly kale), watermelon, pumpkins and bananas. The main types of livestock kept are goats and sheep, although some households also keep cattle and camels. Other important economic activities for households in this livelihood zone include charcoal production, firewood collection and sale, building materials collection and sale (poles, thatch, etc), handicrafts and honey production.</p>
Income Sources	Self-employment Livestock sales Crop sales Safety nets	
Food crops	Sorghum, maize, green gram, cowpeas, vegetables	
Cash crops	Small quantities of the food crops listed above are sold	

Lake Turkana Fishing Livelihood Zone (updated 2021)		
Livestock	Goats and sheep Camels	<p>This livelihood zone lies along the western shores of Lake Turkana. Fishing is the main economic activity of the zone, despite the populations' pastoral background. As such, the most valuable productive assets are fishing equipment (boats, rafts, nets, lines and</p>

Income Sources	Fish sales Fishing-related casual labor Handicraft sales Petty trade Livestock sales	hooks), whereas the importance of livestock to household income is relatively small. Access to a raft can increase a household's income from the sale of fish two fold, and access to a boat (by ownership or membership) can double such profits once more. Differences in access to markets and to fishing grounds have resulted in a degree of specialization along the lake. Fish is sold fresh, dried, salted and smoked depending on the distance to the market. The main fish trading centers in the zone are Lowerengak and Kalokol. The area around Kalokol and the Ferguson Gulf stand out for considerably higher levels of income derived from the sales of fresh fish, which is transported directly to Nairobi. Women are less engaged in fishing activities; they collect and sell firewood and charcoal and make baskets and mats from doum palm leaves, which they sell inside and outside the zone.
Food crops	None	
Cash crops	None	The absence of agriculture and the small herd sizes, mean households must purchase most of their food. External assistance directly to households is relatively small in this livelihood zone.

Lodwar Urban Livelihood Zone (updated 2016)		
Livestock	Goats/sheep Poultry	The Lodwar Urban Livelihood Zone, or Lodwar Town, consists of 11 sub-location villages. It is situated along the main road between Kenya and South Sudan.
Income Sources	Casual labor (unskilled/skilled) Salaried employment Business/shops/petty trade Charcoal and firewood sales Weaving/basketry	Livelihoods in this zone are primarily labor-based. Many households rely on the natural resources immediately available: selling firewood, charcoal, collecting hard-core, ballasts, weaving/basketry. Casual unskilled and skilled labor opportunities associated with Lodwar's shops and businesses provides residents with a variety of income earning opportunities. The presence of many NGOs, government offices and faith-based organisations offers many formal employment opportunities. With devolution and the formation of the County government from 2013, a significant percentage of the population has been employed formally within the various sectors and departments of the government. Construction work has also become plentiful since that time due to increased demand for offices and residential houses.
Food crops	None	

Cash crops	None	Household production of crops and livestock products is minimal in this urban livelihood zone. All households get the bulk of their food from the market. External assistance was relatively small in the reference year. Market access is good. Lodwar is located on the trans-African highway that runs up into Juba, the capital of Southern Sudan. Most of the food found in Lodwar's markets is transported from Kitale. The agriculture schemes in the Kerio and Turkwel Livelihood Zones also supplement what is transported from Kitale.
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3.1.3 Seasonal Calendar, Reference Year and Wealth Breakdown

The **seasonal calendar** is broadly similar in all six livelihood zones, with two rainy seasons: the long rains from March to May and the short rains from October to December. Camels usually conceive near the beginning of one of the rainy seasons and give birth in the same season of the next year. Camels give birth typically once every 2 – 2.5 years. Cattle usually conceive towards the end of one rainy season, after recovering from the harsh dry season, and give birth after nine months, usually in the month before a rainy season, that is either March or September. Shoats usually conceive during one rainy season and give birth after five months, during the next rainy season. Milk production is generally high in the rainy seasons and low in the dry seasons. This general pattern can be disrupted by drought.

For households with few livestock, income-generating activities like firewood, charcoal and construction materials collection, handicrafts, petty trade and brewing are year-round activities.

For the two livelihood zones with agricultural production (Kerio and Turkwel Riverine Agro-Pastoral Livelihood Zones), a small amount of casual employment is available during the rainy seasons through different types of agricultural work: land preparation, planting, weeding and harvesting. The main harvest season starts in June.

Each baseline assessment refers to a very specific time period called the **reference year**. In HEA, the reference year is a recent consumption year, starting with the month when own household production peaks and usually marking the end of the main hunger season. The reference year in selected for the 2021 baselines was 2019-20, although the starting month varied from zone to zone. In the pastoral zone, the reference year started with peak milk production, usually during the main rainy season (April). In the agro-pastoral zone, the reference year started with the main harvest period (June). In the fishing zone, the team found that there was no clear start to the consumption year, as fishing activities varied enormously across wealth groups, different areas of the lake and different years. For practical reasons, the selected reference year in the Lake Turkana Fishing Livelihood Zone was April 2019 to March 2020 (the same as for the Turkana Central Pastoral Livelihood Zone).

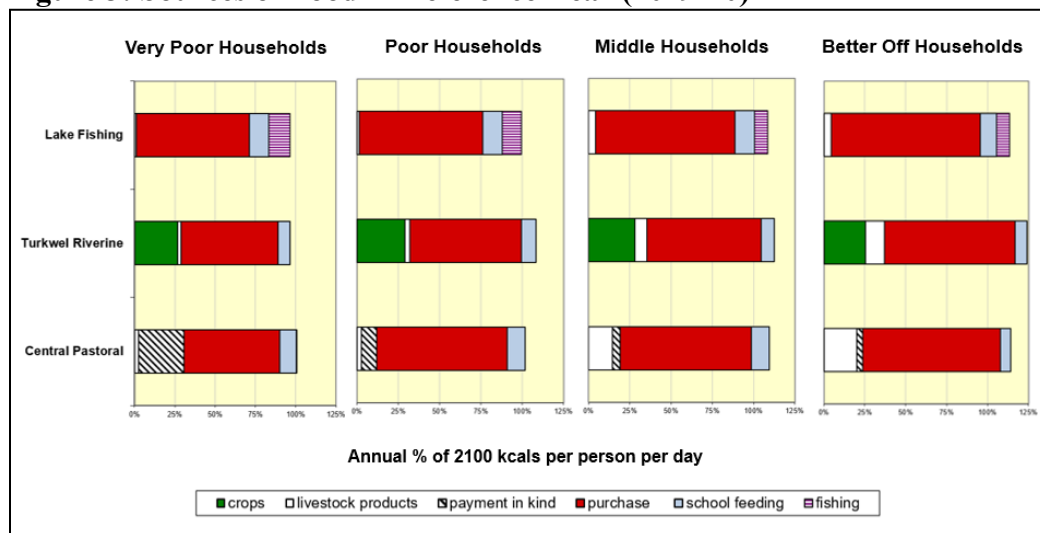
Provided there are no fundamental and rapid shifts in the economy, the information in these HEA baseline profiles is expected to remain valid for approximately five years (i.e. until about 2026).

In all livelihood zones except the urban and fishing zones, **wealth** is locally defined by the types and the number of livestock a household owns. Other factors affecting wealth, such as land areas cultivated and household size and composition, are usually considered secondary to livestock holdings. In the fishing zone, in contrast, livestock holdings are minimal and wealth is

determined by the fishing equipment a household owns. Household sizes generally increase with wealth, especially in the zones with significant livestock holdings, both because wealthier men have the option of marrying more than one wife and because additional people are required to manage larger herds.²

3.1.4 Food sources

Figure 3: Sources of Food in Reference Year (2019-20)



A few things stand out in the above graph, which compares the **sources of food** in the reference year for households in different wealth groups in three livelihood zones. All wealth groups in all three livelihood zones obtain most of their food from market purchase (in red). The wealth groups in the Lake Turkana Fishing Livelihood Zone supplement purchased food with fishing (in purple horizontal stripes), school feeding (in pale blue) and milk/meat (in white) as food sources.

Households in the pastoralist livelihood zone obtained their food from a combination of market purchase, own livestock production (milk/meat), payment in kind (in black and white horizontal stripes) and school feeding. The contribution of own livestock production increased significantly with wealth. The payment in kind category includes payment for local labor in food and food eaten by migrant laborers while away from home.

Crop production (in green) was an important source of food for households in the Turkwel Riverine Agro-pastoral Livelihood Zone, in addition to livestock production, purchase and school feeding. The proportion of food obtained from own crop production was quite similar across the wealth groups in the reference year.

School feeding was a small source of food in all three livelihood zones in the 2019-20 reference year. Other forms of food assistance were not common.

² For the purpose of this assessment, a household was defined as people eating from the same pot and also sharing the same resources. Household sizes take into account multiple wives and children and where relevant include live-in workers and extended family members and omit family members in the case that they are living away from the family for education or employment purposes.

In all livelihood zones, market purchases were dominated by staple food (primarily maize), both in terms of the amount of money spent and in terms of kilocalorie contributions. Other commonly purchased foods included beans, oil, sugar, rice and meat.

3.1.5 Sources of cash

The graphs below compare the **sources of cash income** in the 2019-20 reference year for households in different wealth groups in three livelihood zones. The first graph compares absolute levels of cash income per household from different sources, while the second graph compares the proportions of cash income from different sources. The third graph compares absolute levels of cash income per person from different sources (thus adjusting for the large differences in household size in the middle and better off wealth groups across livelihood zones).

The importance of livestock (in orange) and livestock products (in white) sales increased with wealth in the reference year. Self-employment is important for all wealth groups in the Turkana Central Pastoral and Turkwel Riverine Agropastoral Livelihood Zones. Households with few livestock have little alternative but to rely on their own labor by exploiting the natural environment around them. The bush products that are collected and sold include firewood, charcoal, and construction materials (such as thatch and building poles). This category also includes income from brewing, handicrafts and petty trade.

Cash income levels (per household and per person) are highest in the Lake Turkana Fishing Livelihood Zone and lowest in the Central Pastoral Livelihood Zone.

Figure 4: Sources of Cash Income in Reference Year (2019-20)

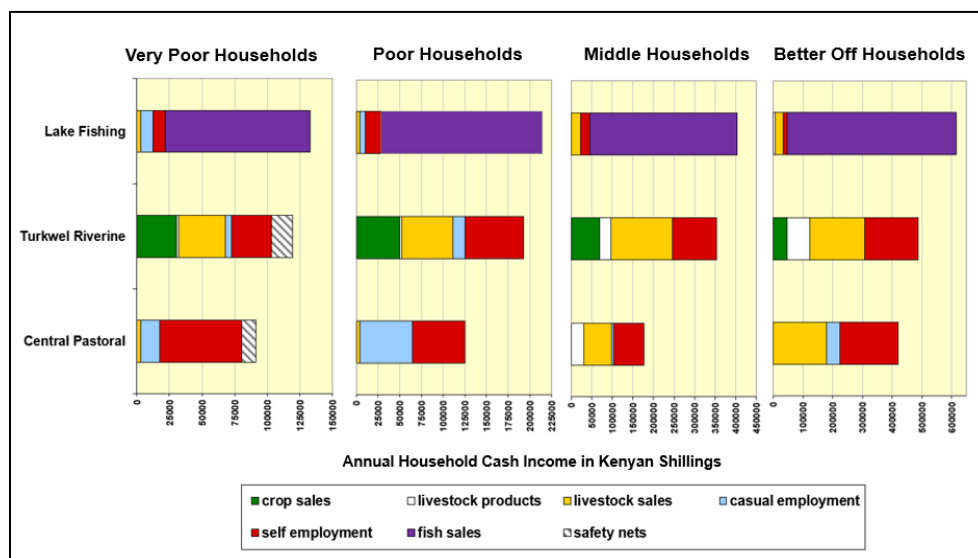


Figure 5: Sources of Cash Income in Reference Year (2019-20)

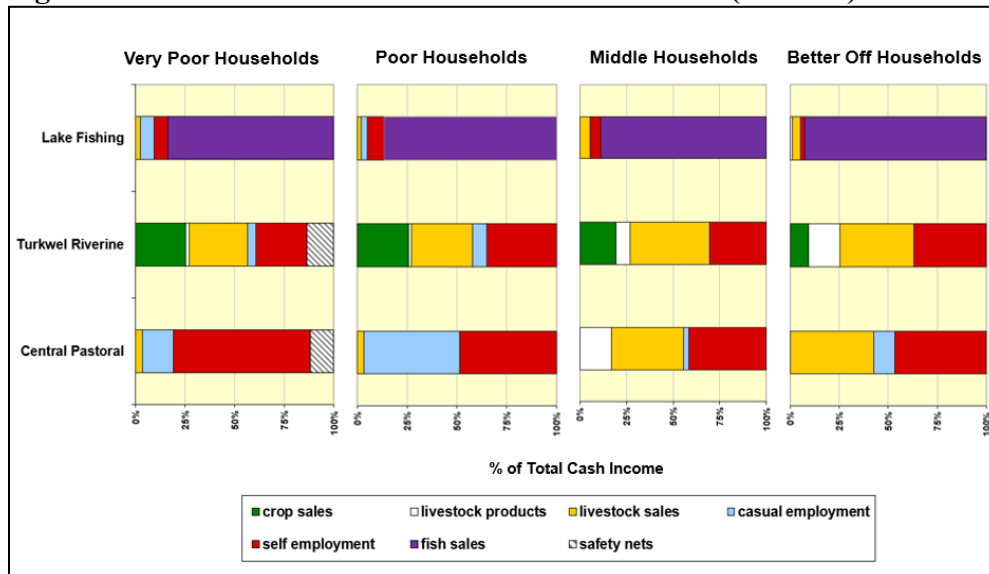
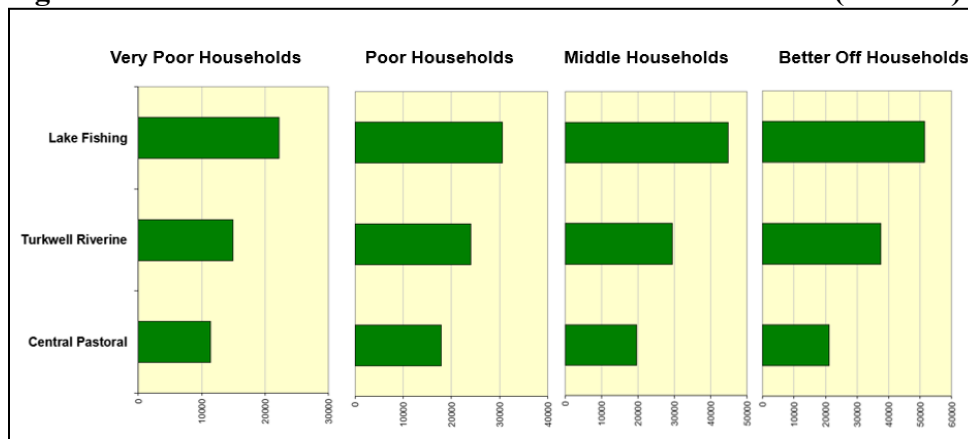


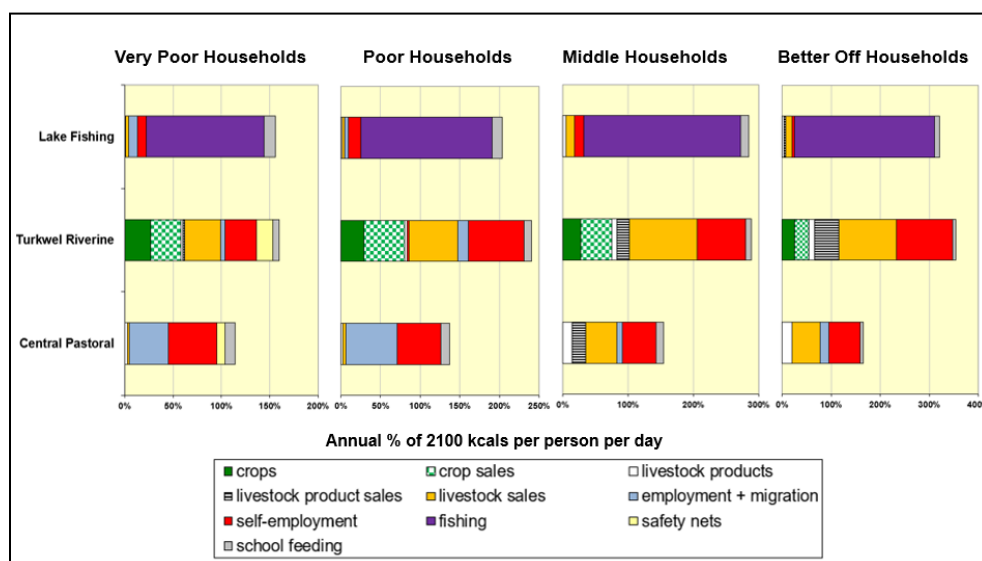
Figure 6: Cash Income Levels Per Person in Reference Year (2019-20) in Kenyan Shillings



Within each livelihood zone, it is expected that cash income levels per person increase from one wealth group to the next and this is what is normally seen in HEA baselines. What is surprising in Turkana is the very small amount by which incomes per person increase in the Central Pastoral Livelihood Zone. In this zone, greater wealth is associated with a larger total cash income and a larger household size. As a result, the total income per person varies less than might otherwise be expected across the wealth groups.

3.1.6 Total income (food + cash)

Figure 7: Total Income (Food + Cash) in 2019-20

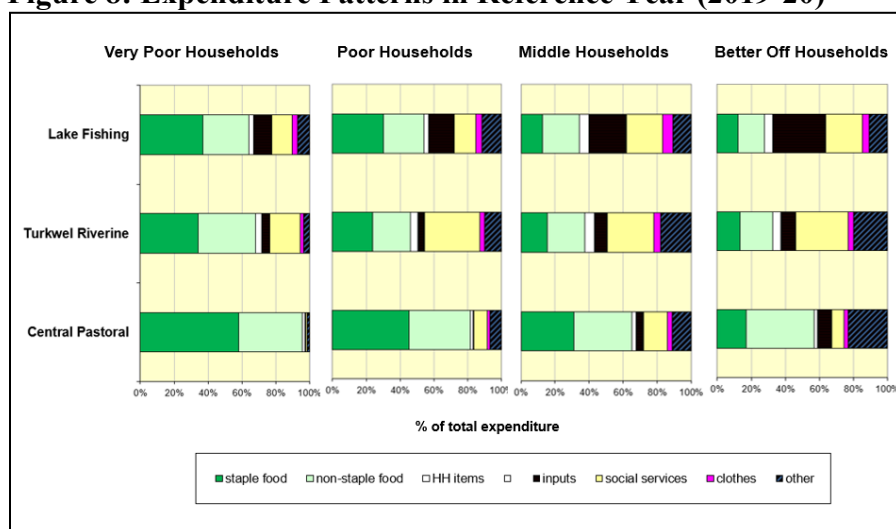


The graph above presents total income (food plus cash). Total income is expressed as a percentage of minimum food requirements, with cash income converted into its food equivalent based on the amount of staple food (mainly maize) that could be purchased, assuming that all cash from each source were used to purchase staple. Total income levels are highest in the Turkwel Riverine Agropastoral Livelihood Zone, closely followed by the Lake Fishing Livelihood Zone. Total income levels in the Central Pastoral Livelihood Zone are much lower.

3.1.7 Expenditure patterns

The graph below compares **expenditure patterns** in the reference year for households in different wealth groups in three livelihood zones. The proportion of income spent on food (the two green sections in the graph) declined with wealth during the reference year, but was generally much higher in the Turkana Central Pastoral Livelihood Zone than in the other two livelihood zones.

Figure 8: Expenditure Patterns in Reference Year (2019-20)



3.1.8 Hazards and response strategies

Drought is the major **hazard** in all of the rural livelihood zones. Livestock diseases are another common hazard, negatively affecting herd numbers and the productivity of all livestock types. Since successful livestock production in arid areas is highly dependent on mobility, conflict and border closures are also damaging hazards. Households in the poorer wealth groups in all of the livelihood zones are highly dependent on their own labor to obtain cash income. Human diseases can have a damaging effect on labor availability at household level. Although floods usually have a beneficial longer term effect on pasture, browse and water availability, which is good for livestock keepers, in the short term they can cause significant problems, including an upsurge of livestock diseases and market inaccessibility. For areas with crop production, flooding can destroy a season's investment. Crop diseases and pests are a chronic hazard in the Turkwel Riverine Livelihood Zone that reduce yields every year, with periodic outbreaks of more severe infestations. Rough weather conditions and changes in the volume of water in Lake Turkana are particular hazards for the Lake Turkana Fishing Livelihood Zone. More recently, during the long and short rains in 2020, locusts were a serious problem for availability of pasture and for crop production.

Common household **response strategies** to deal with hazards include the following.

Switching of expenditure – Reduced expenditure on non-essential items such as clothes, and on expensive foods such as rice, wheat flour and sugar, is a strategy pursued by all wealth groups in bad years, so that they can purchase cheaper staple foods like maize.

Increased bush product collection and sale – The sale of firewood, charcoal, construction materials and handicrafts are intensified in bad years. The environmental implications of this strategy can be damaging.

Increased livestock sales – Households from all wealth groups sell additional livestock in bad years. Livestock sales serve the dual purpose of increasing income to cover basic food and non-food expenses and of destocking to reduce the pressure on pasture and browse and to reduce the expenses required to maintain the herd (both in terms of livestock drugs and feed). However, the

extent to which this strategy of increased livestock sales can be pursued without damaging future livelihoods is quite limited. Middle and better off households are in a better position to exploit this strategy.

Further livestock migration – If there is a shortage of pasture, browse and water, herders with their livestock migrate further than normal to locations outside their usual migration areas. This strategy poses some risks if the more distant areas are prone to conflict.

Labor migration – Members of very poor, poor and, to some extent, middle households travel to the main urban centers within and outside Turkana County for longer periods to look for casual work and gifts from relatives.

Increased reliance on crops and farming – The diversification of livelihoods into agriculture has been a mid- to long-term strategy in the riverine livelihood zones to cope with the damage that successive years of drought and livestock disease have inflicted on livestock herds.

Many of these strategies are unsustainable and cannot in all cases mitigate the harsh effect of hazards and shocks, particularly during severe droughts spanning several seasons.

3.1.9 Changes from 2012 to 2016 to 2021

With previous HEA baselines on hand, it is possible to make some preliminary statements about what has changed since the last two baselines. We can compare the baseline results from the previous two baselines to the current 2019-20 reference year results, and we can also take a look at changes in rainfall in recent years to help put the current reference year in context.

Rainfall trends

Rainfall in this mostly arid region is variable at best. The graphs below for the northern part of Turkana show rainfall trends for the long rains and short rains since 2001.

Figure 9: Long rains 20-year comparison for Northern Turkana County (using RFE; LTM = long term mean)

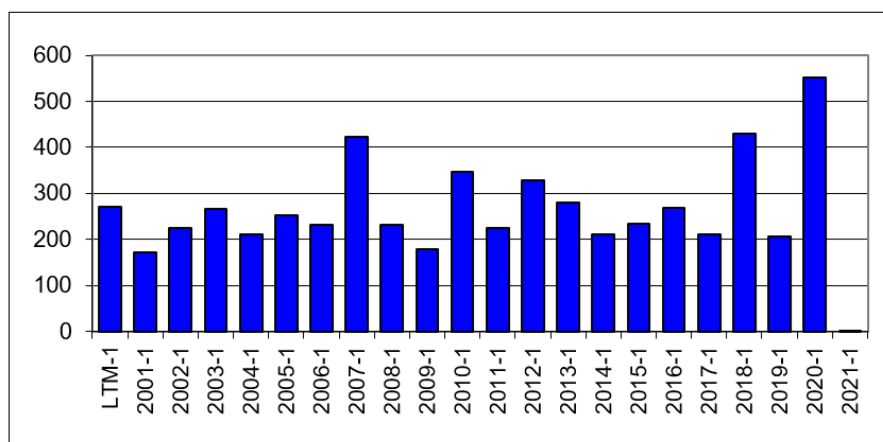
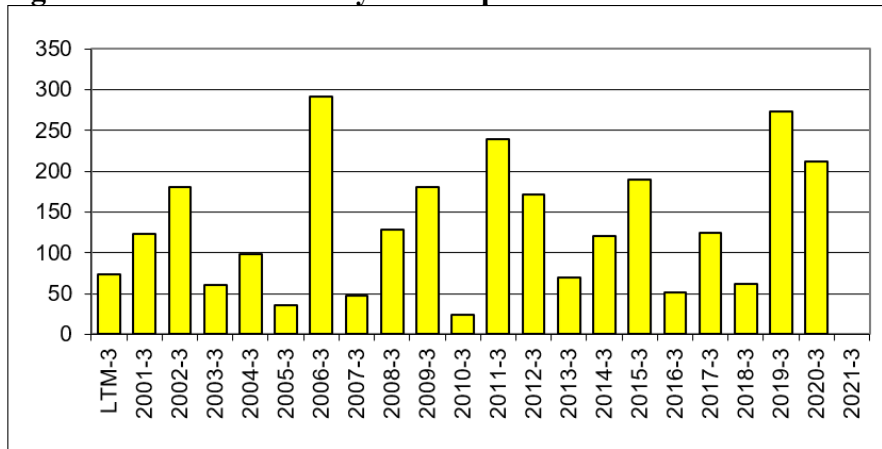


Figure 10: Short rains 20-year comparison for Northern Turkana County (using RFE)



The graphs below for the southern part of Turkana show rainfall trends for the long rains and short rains since 2001.

Figure 11: Long rains 20-year comparison for Southern Turkana County (using RFE)

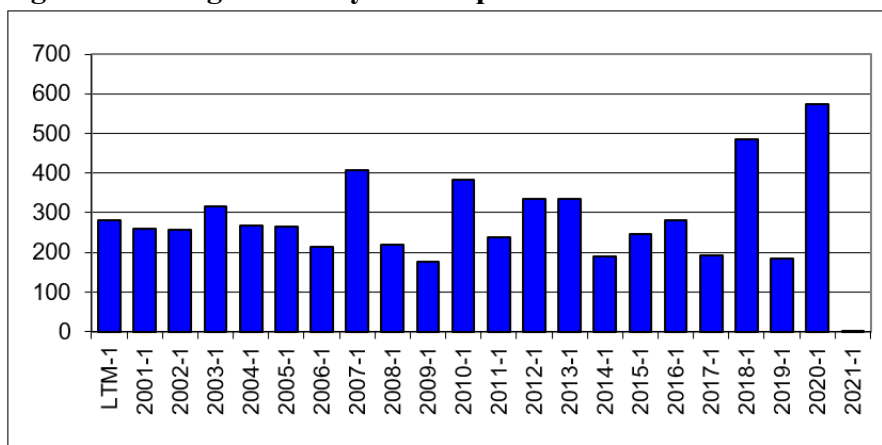
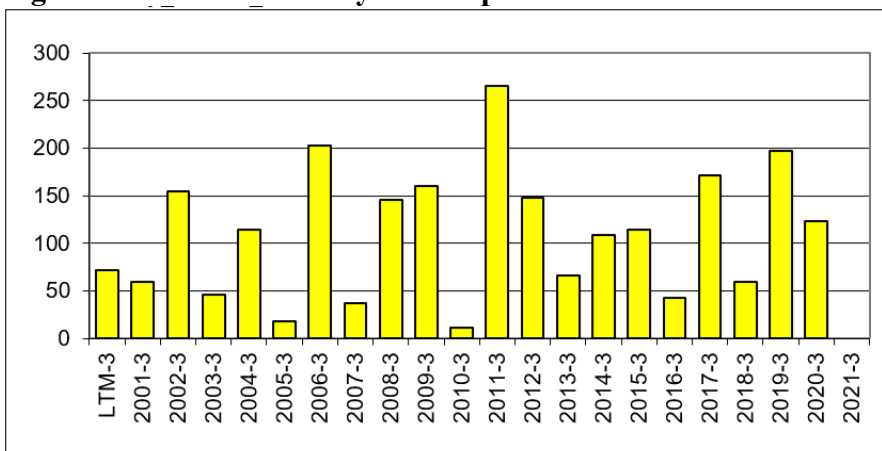


Figure 12: Short rains 20-year comparison for Southern Turkana County (using RFE)



Changes in asset levels

The following tables summarize the asset levels for each wealth group in each livelihood zone in the three baselines (conducted in 2012, 2016 and 2021). All the figures are the mid-point of a range. Where a decimal point appears, this is the mid-point of a range (e.g. 0.5 means a range of 0-1). Note that goats and sheep were combined into one 'shoat' category in the Central Pastoral Livelihood Zone in 2012.

Livestock holdings have decreased significantly in the Central Pastoral Zone (TCP) and the reasons for this are not clear. There have been some below average rainfall seasons, which could have resulted in decreased livestock holdings. Another possibility is that poor pastoralists have been attracted to this zone from the Border Pastoral Zone since 2012 due to the previous high coverage of cash safety nets and the relative availability of self-employment income. It is also possible that the community in the Central Pastoral Zone are reluctant to reveal livestock holdings for fear of being removed from assistance programs. It would be interesting to explore these questions further.

In the Turkwell Riverine Agropastoral Livelihood Zone (TAP), land areas cultivated have increased for all wealth groups in the 2021 baseline compared to the previous baselines conducted in 2012 and 2016. Ownership of small livestock (goats and sheep) has increased compared to the previous baselines conducted in 2012 and 2016, while ownership of large livestock (cattle and camels) has decreased.

In the Lake Turkana Fishing Zone (LTF), ownership of fishing equipment is not presented below because there has been a shift in recent years from individual household ownership to collective ownership through Beach Management Units.

Table 2: Asset levels for each wealth group in each livelihood zone

TCP	Very poor			Poor			Middle			Better off		
	2012	2016	2021	2012	2016	2021	2012	2016	2021	2012	2016	2021
camels	0.5	0	0	9	1.5	0	28	10	7	50	20	25
cattle	0	0	0	5	0	0	8	0	3	23	0	10
goats	23	14	7	55	20	7	115	55	35	200	100	120
sheep	X	9	3	X	11	3	X	36	14	X	60	40
donkeys	1	0	0	3	0	0	5	0	2	13	0	0
TLUs	3.3	2.3	1.0	19.5	4.6	1.0	46.8	19.1	14.8	92.0	36.0	48.0
wives	1	1	1	1.5	1	1	2.5	1.5	1.5	3.5	2.5	4
HH size	7	8	8	10	8	7	16	11	9	22	13	20
% of HHs	35%	35%	32%	30%	30%	35%	20%	23%	23%	15%	12%	10%

TAP	Very poor			Poor			Middle			Better off		
	2012	2016	2021	2012	2016	2021	2012	2016	2021	2012	2016	2021
camels	0	0	0	0	0.5	0	2	2	0	6	13	0
cattle	0	1	0	0	2	0	4	8	5	10	20	12
goats	7	5	10	17	9	22	35	17	46	90	56	80
sheep	2	3	5	9	4	8	11	8	14	25	25	25
donkeys	0	0	0	0	0	0	0	1	0	3	5	0
TLUs	0.9	1.2	1.5	2.6	3.2	3.0	9.4	10.6	9.5	26.0	37.6	18.9
land cultivated (acres)	0.5	0.3	0.75	0.75	0.5	1	1	0.75	1.75	1.5	0.3	2
wives	1	1	1	1	1	1	2	1.5	2	3	2.5	2
HH size	6	7	8	8	7	8	12	8	12	17	13	13
% of HHs	36%	27%	32%	30%	45%	45%	20%	18%	15%	14%	10%	8%

LTF	Very poor			Poor			Middle			Better off		
	2012	2016	2021	2012	2016	2021	2012	2016	2021	2012	2016	2021
camels	0	0	0	0	0	0	0	2	0	1	4	0
goats	1	5	3	4	10	6	10	17	19	20	40	30
sheep	0	5	2	2	6	2	5	13	7	5	20	10
donkeys	0	0	0	0	0	0	0	1	0	0	4	0.5
TLUs	0.1	1.0	0.5	0.6	1.6	0.8	1.5	5.5	2.6	3.5	12.0	4.3
wives	1	1	1	1	1	1	1	1.5	1.5	2	2	2
HH size	5	6	6	6	7	7	6	7	9	5.5	8	12
% of HHs	36%	28%	27%	34%	43%	36%	18%	19%	22%	12%	10%	15%

Changes in food sources

Central Pastoral Zone (TCP) - Compared with the previous baselines conducted in 2012 and 2016, the contribution of livestock products (milk and meat) to annual food needs has greatly decreased and purchased food has increased.

Turkwel Riverine Agropastoral (TAP) - Compared with the previous baselines, the contribution of livestock products has decreased across all wealth groups, reflecting the decrease in holdings of large animals. Purchased food has increased. Although land areas cultivated have increased, the contribution of own crop production to food needs hasn't changed much. Most of the change in relation to cultivation is in crop sales rather than consumption (see below).

Lake Turkana Fishing Zone (LTF) - Compared with the previous baselines, food purchase remains the largest source of food for households in all wealth groups in this livelihood zone. The proportion of food obtained from livestock products is lower than in 2016 but higher than in 2012. Food aid was a food source in 2012, but not in 2016 or 2021.

Changes in cash income levels

Compounded inflation from the 2011-12 reference year to the 2019-20 current reference year was almost 60%, using official national inflation rates from the Kenya National Bureau of Statistics. In other words, prices generally went up by 60% in the years between these two HEA baselines. Compounded inflation from the 2015-16 reference year to the 2019-20 reference year was 25%.

Cash incomes per household have gone up by more than inflation rate in most wealth groups in the Turkwel Riverine Livelihood Zone, as illustrated in the table below. (Note that 100% in the table indicates no increase between the two years; 130% indicates a 30% increase. All figures are the mid-point of a range.)

The situation in the Fishing Zone is mixed. Cash income levels per household exceed inflation when comparing 2011-12 and 2019-20 (by only a small amount for very poor households, but for much larger amounts for other wealth groups). When 2015-16 and 2019-20 are compared the picture differs by wealth group. The proportion of income obtained from fishing compared to other income sources has greatly increased across all wealth groups. Other income sources (self-employment, livestock and labor) were very minor in the 2019-20 reference year. This change is most marked for the very poor wealth group. In the baseline conducted in 2012, very poor households obtained 20-20% of their total cash income from fishing. In the baseline conducted in 2021, this increased to 80-90%.

Cash income levels per household have not kept up with inflation in the Central Pastoral Zone for poor and middle households when comparing 2011-12 and 2019-20 and for all wealth groups except the better off when comparing 2015-16 and 2019-20. This picture is complicated by: 1) the large amounts of safety net cash transfers received by very poor and poor households received in 2015-16 compared to the other two years; 2) differences in household size between baselines for middle and better off households. If safety net cash transfers are removed from the comparison, then very poor and poor household incomes in 2019-20 kept pace with inflation since 2015-16. Cash income per person in 2019-20 exceeds the income levels in 2011-12 by more than general inflation for all wealth groups.

Table 3: 2019-20 Household Annual Cash Income as a Percent of 2011-12 Household Annual Cash Income

	Very poor	Poor	Middle	Better off
Turwel Riverine	277%	299%	356%	342%
Central Pastoral	171%	126%	120%	170%
Fishing	167%	223%	314%	395%

Table 4: 2019-20 Household Annual Cash Income as a Percent of 2015-16 Household Annual Cash Income

	Very poor	Poor	Middle	Better off
Turwel Riverine	146%	199%	207%	171%
Central Pastoral	78%	87%	86%	139%
Fishing	110%	124%	125%	115%

3.2 DETAILED FINDINGS

3.2.1 Livelihood Zone Profiles

The livelihood zone profiles that follow are divided into a number of sections:

Zone Description offers a general description of local livelihood patterns (livestock rearing, crop production, off-farm income generation etc).

Markets contains basic information on the marketing of local production and on any importation of staple food into the zone.

The **Reference Year** section explains the one-year period for which information has been gathered in each livelihood zone.

Seasonal Calendar sets out the timing of key activities during the year. This is useful in a variety of ways, e.g. to judge the likely impact of a hazard according to its timing during the year, or to assess whether a particular activity is being undertaken at the normal time in the current year.

This is followed by four sections that provide the core information on the ‘Household Economy’ of the zone.

The **Wealth Breakdown** section describes four main wealth groups (‘very poor’, ‘poor’, ‘middle’ and ‘better-off’), explaining the differences between these groups and how this affects potential access to food and cash income.

The **Sources of Food** and **Sources of Cash** sections examine patterns of food and income access at each level of wealth, relating these to the characteristics of each group. An annual picture is presented, with food expressed as a percentage of 2100 kcals per person per day. The sources of cash income are presented in absolute Kenyan Shillings earned per year. The **Expenditure Patterns** section is of interest in showing what proportion of their annual cash budget households at the different wealth levels spend on food, on household items, on production inputs, etc.

The section on **Hazards** provides information on the different types of hazard that affect the zone, while the **Response Strategies** section describes the various strategies available to households in the zone.

The section **Key Parameters for Monitoring** suggests the key indicators to monitor in each livelihood zone, based upon an understanding of local livelihood patterns.

The final section in each profile, **Program Implications**, outlines some preliminary ideas for longer-term programming.

3.2.2 Central Pastoral Livelihood Zone

Turkana Livelihood Baseline Profile

Central Pastoral Livelihood zone

July 2021³

Summary: The Turkana Central Pastoral Livelihood Zone occupies a central position in the county, between the Border Pastoral Zone (to the north, west and south) and the Lake Turkana Fishing Zone (to the east). It includes parts of all seven sub-counties in Turkana County. Pastoralism is the preferred pattern of livelihood in this exceptionally hot, dry and arid environment and livestock provide an important source of food and cash income for middle and better off households, although even for these wealth groups this has been in decline in recent years. The remaining two-thirds of households are heavily dependent on a combination of self-employment activities (charcoal, firewood, poles, handicrafts, petty trade), casual labor and safety nets. Camels are the most important type of livestock kept in the livelihood zone, followed by goats and sheep. There are fewer cattle, as there is insufficient grassland to support them. Compared to the Border Pastoral Zone, the Central Pastoral Zone receives less rainfall and has less grassland, with the result that fewer cattle and more camels are kept. There is also less livestock disease in the Central Zone (because of the lower livestock population density). The Central Zone is more secure (and suffers less raiding than the Border Zone) and has better access to the County's main markets (and therefore lower staple food prices) and to government services (health centers and schools). Longer-term program priorities include improved market infrastructure; livestock production; diversified livelihoods; health, water and education.

³ Field work for the current profile was undertaken in May 2021. The information presented refers to April 2019 – March 2020, an average year for food security by local standards. Provided there are no fundamental and rapid shifts in the economy, the information in this profile is expected to remain valid for at least five years (i.e. until at least 2026). All prices referred to in the document are for the reference year. Note that the results for the better off wealth group are less reliable than for other wealth groups and should be considered approximate.

Zone Description

This baseline profile is an update of a previous profile that was written in 2016, which was itself an update of a profile that was written in 2012. The text, wealth breakdown, and all information on household food and income sources and expenditure patterns have been updated based on HEA baseline fieldwork that was conducted in May 2021.

This livelihood zone (coded TCP on the map) occupies a central position in the county, between the Border Pastoral Zone (to the north, west and south) and the Lake Turkana Fishing Zone (to the east). It includes parts of all seven sub-counties in Turkana County.

Pastoralism is the preferred pattern of livelihood in this exceptionally hot, dry and arid environment and livestock provide an important source of food and cash income for middle and better off households, although even for these wealth groups this has been in decline in recent years. The remaining two-thirds of households are heavily dependant on a combination of self-employment activities (charcoal, firewood, poles, handicrafts, petty trade, etc.), casual labor and safety nets. The number of permanent settlements in the zone has increased in recent years. These provide a base for accessing health and education and – most importantly for the poor households that make up the bulk of the settled population – safety nets and other assistance.

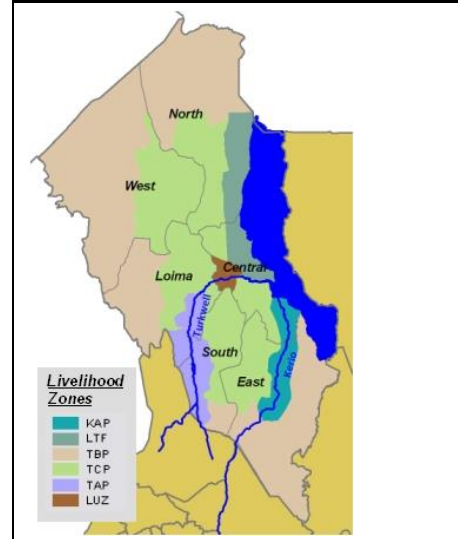
External assistance has been provided throughout Turkana on a regular basis for many years. In the last decade, increasing efforts have been made to target food to specific groups within the population, either on the basis of wealth (community-based targeting) or to specific vulnerable groups (widows, orphans, the disabled, the elderly etc.) There has been a shift from relief food assistance to cash transfers.

Geographically the livelihood zone consists of sandy and rocky plains interspersed with hills and dissected by numerous seasonal rivers. The predominant vegetation cover is acacia scrub and grassland, with larger trees growing along the river beds. The permanent settlements are generally sited close to a seasonal river; providing access to water and to shade for both the human and animal populations. The main wild food species also grow alongside the rivers. Of these the doum palm is the most important. Not only do the fruits and seeds provide a source of food, the leaves also provide the raw material for mat, brooms and basket-making.

Overall, the livelihood zone receives very little rain, with considerable variation from one year to the next. Long-term mean rainfall is about 250 mm per year (compared to nearly 400 mm in the neighbouring Border Pastoral Livelihood Zone). On average, roughly three quarters of the annual total falls during the long rains (April-May) and the remainder during the short rains (November-December).

Camels are the most important type of livestock kept in the livelihood zone (judged in terms of their contribution to total herd size measured in TLU or Tropical Livestock Units), followed by sheep/goats ('shoats'). There are fewer cattle, as there is insufficient grassland to support them.

Livelihood zones of Turkana County



Compared to the Border Pastoral Zone, the Central Pastoral Zone receives less rainfall and has less grassland, with the result that fewer cattle and more camels are kept. There is also less livestock disease in the Central Zone (because of the lower livestock population density). The Central Zone is more secure (and suffers less raiding than the Border Zone) and has better access to the County's main markets (and therefore lower staple food prices) and to government services (health centers and schools).

In fact, the relationship between the two Turkana pastoral livelihood zones is very close, with movements between the two depending on the type of year. If a household builds up large livestock numbers, part of the household moves to the Border Pastoral Zone, where it is possible to keep such large numbers due to browse and pasture availability. The reverse is also true: if a household loses many livestock, they move back to the Central Pastoral Zone in order to engage in charcoal production and other self-employment activities. Perhaps as a result of these livestock shifts, recurrent droughts, and the attraction of safety net programs, the herd sizes reported in the Central Pastoral Livelihood Zone are lower in 2019-20 than in 2015-16, which was in turn lower than in 2011-12.

In terms of services, water for human consumption is obtained from boreholes and open wells. Water for washing and laundry, and for livestock, also comes from these sources. There are no payments for water. Sanitation facilities are not common, with most households from all wealth groups using the bush rather than latrines. Health care is obtained from local dispensaries. Primary and secondary education is mainly accessed locally, with some better off children sent to boarding schools for secondary education. All tertiary education is outside the livelihood zone. There is no electricity in the livelihood zone and the main sources of light are firewood and torches. Firewood is the main fuel used for cooking. Most households have at least one mobile phone. There are few sources of credit or saving schemes. Organisations working in the area include Save the Children, World Vision, IRC, Concern, Unicef, Education Trust Fund, Mary's Meals, Ampath and Afya Timiza.

The typical age at which boys/men generally get married is 20-25 years. Boys/men from better off households tend to get married at a younger age than boys/men from poorer households because it can take time for poorer households to save a dowry. For girls/women, the youngest age of marriage is 12 years and the average age is 15-20 years. Girls/women from better off households tend to get married at an older age than girls/women from poorer households because marrying off a daughter is an income source for the family. A typical dowry ranges from about 30 goats/sheep for a very poor household to 200 goats/sheep for a better off household. The cost of the ceremony also increases with wealth, from up to 20,000 KSh for the very poor to 100-150,000 KSh for the better off. Polygamy is common for middle and better off households. Men marry additional wives when they can afford it and need more household labor.

Markets

Markets in the livelihood zone are poorly developed, despite attempts at improvement by the County Government since 2014. The roads are all weather surface roads, with the major roads improved by grading. There has been investment in market infrastructure with construction of market sheds, but there is still little investment in promoting use of the sheds. The livelihood zone has relatively good access to the major towns in Turkana County, including Lokori,

Lokichar, Kerio, Lorugum and Kakuma on its external borders and Lodwar centrally. However, Turkana County is sparsely populated and those parts of Uganda, South Sudan and Ethiopia that border Turkana are also sparsely populated and poorly integrated into their own national markets and offer little in the way of opportunities for either import or export. Turkana's main urban markets are therefore internal and small or are to be found – at a considerable distance - in the Kenyan highlands to the south. In addition to these markets, the refugee camps at Kakuma, and Lodwar, Lokichar and Kerio towns generate significant demand for local items such as livestock, firewood and charcoal.

The size of the county, low population density and lack of purchasing power of the population are significant factors contributing to poorly developed markets in Turkana. The county is very large with a sparse and widely dispersed population. This means that goods have to be moved over long distances with obvious increases in cost. The low population density and low purchasing power of the population mean that demand for goods and services is low and rarely sufficiently concentrated to support the growth of spontaneous and competitive markets. Recent experience with cash transfers is interesting in relation to this. This has shown that traders will travel to outlying areas to sell non-food items at the time of a cash transfer, i.e. when it is known that large numbers of people will have significant additional purchasing power at one particular time and at one particular place. Presumably, these types of markets do not develop spontaneously because demand is rarely concentrated in any one place at any one time. Because there are few traders operating in rural areas, there is relatively little competition and prices paid to sellers in rural areas (e.g. for livestock or for mats and baskets) are very low.

Insecurity also plays a part in isolating Turkana from potential markets, although there have been efforts to promote peace with neighbouring counties and this has achieved some level of success in the southern and western parts of the county from 2018 to date.

In the past, it was very common for pastoralists in Turkana to barter livestock for staple food and other items (including tobacco), but it appears that transactions for cash are now the norm. Where barter occurs at all this is in particular circumstances, e.g. the exchange of livestock for grain with neighbouring agro-pastoral communities.

Maize and beans are the main food items imported into the livelihood zone. They come from Kitale to Lodwar and then onwards to local markets. The main markets for camels are Kakuma, Lodwar, Lorengipi and Lokichar and for cattle Kakuma, Lodwar and Kalemngorok. For shoats the main markets are Lokori, Lokichar, Lodwar, Kakuma, Kerio and Gold. Cattle and shoats are consumed locally and are exported to Chwele and Dagoreti (Nairobi) and in the case of shoats to Kariobangi as well.

Charcoal and firewood are sold to the main population centers within the zone (Lodwar and Kakuma) and are also exported from the county to Kitale and Nairobi. Handicrafts are sold to traders in Lodwar who trade them on to large cities within Kenya and abroad.

The Reference Year

The reference year ran from April 2019 to March 2020; it began at the start of the 2019 long rains and included the effects of the short rains in the same year. These two seasons were both rated (in terms of food security) as fairly average by the pastoral communities visited. This is fairly consistent with satellite-based estimates of rainfall. The long and short rains of 2019 were

0-10% below the long-term mean in the northern half of Turkana and 15-30% below the long-term mean in the southern half of Turkana.

In addition to the reference year itself, it is important to consider conditions in the year before as well (because animals giving birth in the reference year will have conceived in this preceding year). The long rains of 2018 were 80-90% above the long-term mean, while the short rains of 2018 were 50-55% below the long-term mean.

Seasonal Calendar

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Rainy seasons	long rains						short rains					
Dry seasons												
Livestock												
Camels												
conceptions												
births												
milk production												
Goats/Sheep												
conceptions												
births												
milk production												
Livestock migration - average year												
Livestock migration - bad year												
Livestock disease												
Livestock sales												
Other Income												
Firewood/charcoal sales peak												
Labour migration peak												
Petty trade / brewing												
Stress & High Expenditure Periods												
High staple prices												
Festival season												
Human diseases peak												
Lean season												

The timing of rainfall determines the seasonality of livestock production and livestock movements. In general terms the long rains fall from April to June and the short rains from October to December. The local names for these rainy seasons are *Akiporo* and *Akicheres* respectively. *Akiporo* is followed by *Ait*, which lasts one month (July) and is characterized by the persistence of dry pasture generated by the long rains. Once this is exhausted, the bulk of animals are moved away from the home areas (where they spend the long rains) into dry season grazing areas. If the short rains are good, they may return to the home areas again in October-November, but frequently they stay away until the start of next year’s long rains.

In general terms, animals come into heat and conceive during the rains. The timing of births is then determined by the length of pregnancy (camels give birth after 12 months and sheep/goats after 5 months). Levels of milk production peak during the rains; this is the time of year when less staple food is purchased (and staple prices are therefore lower) and few livestock are sold (and livestock prices are higher). It appears that staple food prices respond more to local patterns of demand than

to the timing of harvests in the areas of production (since the main harvest occurs in June-July in the agro-pastoral livelihood zones of Turkana and in August-September in Kitale, the source of grain from the highlands). The ‘hunger’ seasons coincide with the dry seasons, when milk production is lower.

Charcoal burning and handicrafts (the main self-employment activities) and labor migration are undertaken throughout the year, but peak during the dry/lean seasons. Wild food collection is seasonal, with a number of wild fruits and seeds available for only 1-2 months in the year. The most important wild food – the doum palm – is generally collected from August.

Livestock Migration

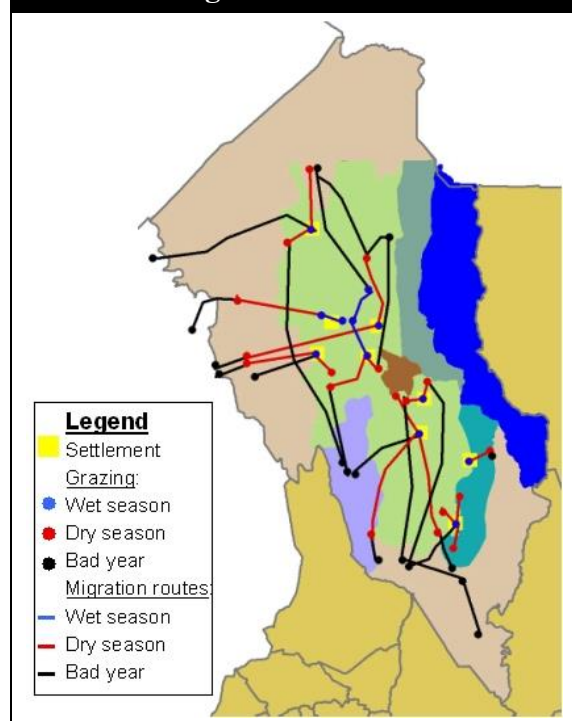
The figure (right) shows the pattern of livestock migration between wet and dry season grazing in the reference year (for the settlements visited in the course of the current field work). It also shows the routes followed to more distant dry season grazing in a ‘bad year’.

In general, the herds return to the home (settlement) areas during the rains and move away during the dry season. Some milking animals are left behind to provide milk for the women and children, but most of the animals are taken to dry season grazing by the adult and young men, together with some of the younger women. Dry season grazing areas are typically located in the hills and close to seasonal riverbeds where water can be accessed via hand-dug wells, either within the Central Pastoral Livelihood Zone itself or in the neighbouring Border Pastoral Livelihood Zone.

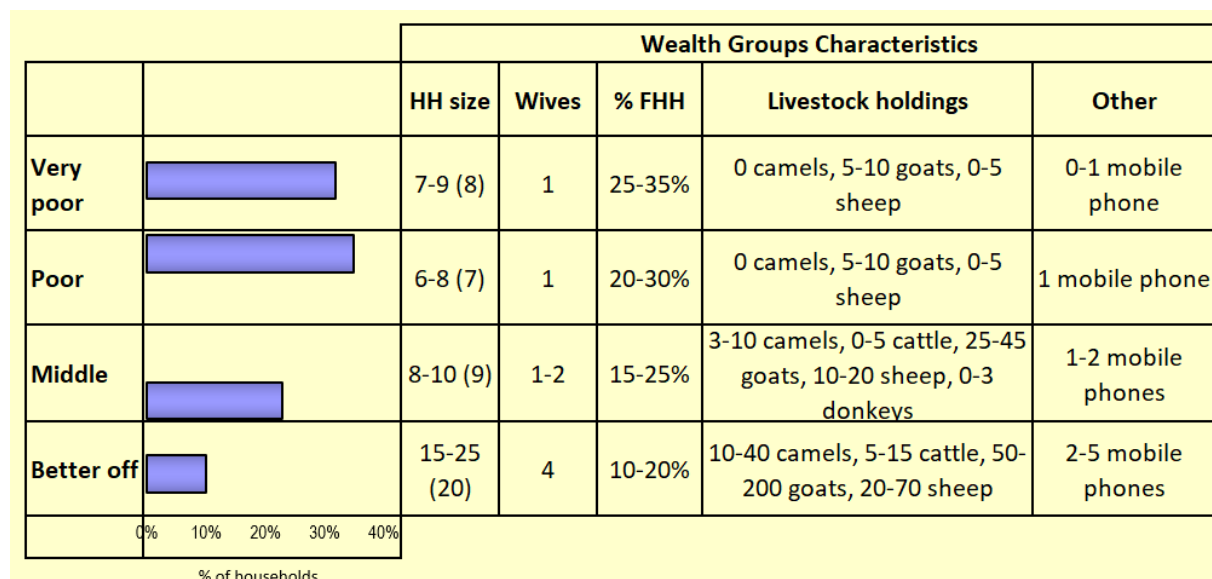
In a bad year, all except the weakest animals (generally from among the sheep/goats) will migrate to more distant ‘bad year’ grazing areas. These tend to be closer to (or across) the border with Uganda to the west, and closer to (but not across) the border with the Pokot to the south. These movements into border areas carry with them the risk of conflict and loss of livestock to raiding.

Although the Turkana are divided into different clans, each of which has its ‘home’ area, there is no conflict between the clans and all are free to move wherever they like within Turkana County.

Livestock Migration Routes



Wealth Breakdown



Livestock ownership is the main factor determining wealth in the Central Pastoral Livelihood Zone, although its importance is declining over time. With increasing livestock holding comes the ability to maintain more wives and a larger household size, so that the better-off have an average of 4 wives (compared to 1 for the very poor and poor) and a household size of 15-25 (compared to 6-9 for the very poor and poor). The total livestock holdings of the different wealth groups are compared in the table below, with total livestock holdings expressed in TLU or Tropical Livestock Units (a common method for comparing holdings of different types of livestock). This shows that total holding (and total holding per person) both increase with increasing wealth. Two things are of note, however. Firstly, how small and similar are the holdings of very poor and poor households. Secondly, the differences per person between the other wealth groups are not all that large. The practice of marrying more wives and increasing household size as livestock are accumulated has the effect of reducing the holding *per capita* among the better-off groups.

Such large differences in household size between the wealth groups means that there are also large differences in the percentage breakdown of households and population by wealth group (see table below). Although the very poor make up ~32% of households they constitute ~28% of the population (small household size) while the better-off make up ~10% of households and ~22% of population (large household size).

	Total Livestock Holding		Wealth Breakdown	
	TLU	TLU/pers on	% of HHs	% of pop ⁿ
Very	0.95	0.12	32%	28%
Poor	0.95	0.14	35%	27%
Middle	14	1.6	23%	23%
Better	48	2.4	10%	22%

Note: Results are the mid-point of a range.

TLU (Tropical Livestock Unit); camel=1; cattle=0.7; shoat=0.1.

Sources of Food for the Reference Year (2019-20)

The graph presents the sources of food for households in different wealth groups in the livelihood zone for the period April 2019 to March 2020.

The proportion of food obtained from own livestock products (milk and meat, in white) increases with wealth. Purchase is the other main source of food for households in all wealth groups.

The dark blue sections in the graph are food payments for labor or food eaten while migrants from the household

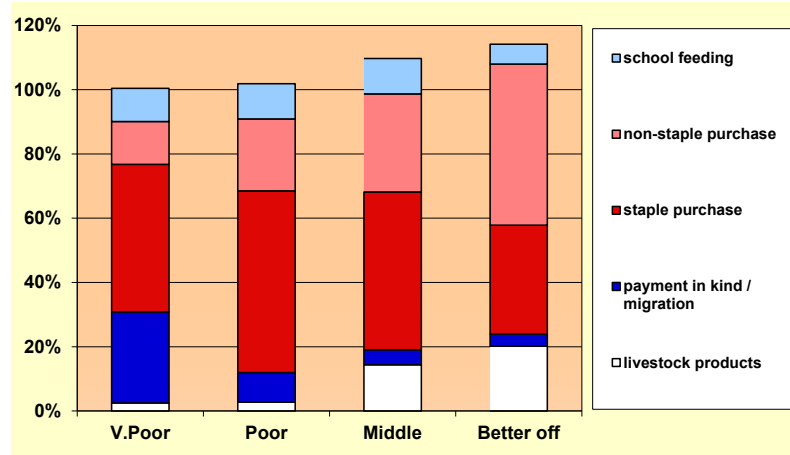
are away from the home base. Payments in food for labor were said to be more common than previously because of the inaccessibility of markets.

Assistance made only a small contribution to annual food needs in 2019-20, and almost all of this was from school feeding.

Wild foods were consumed in the reference year but were not quantified during the baseline fieldwork in 2021 (and therefore do not appear in the graph above). The most commonly consumed wild foods were doum palm (*engol* in Turkana), *Zizyphus Mauritania* (*ngakalalio*), *Salvadora Persica* (*esekhon*), and wild berry *Dobera Grabla* (*edapal*).

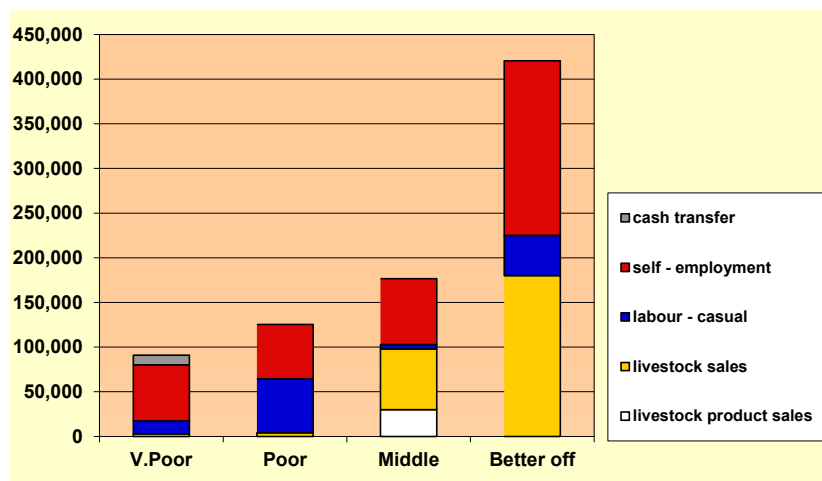
Compared with the previous baselines conducted in 2012 and 2016, the contribution of livestock products (milk and meat) to annual food needs has greatly decreased and purchased food has increased to compensate for this.

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.



Sources of Cash for the Reference Year (2019-20)

The graph provides a breakdown of total cash income according to income source.



Annual income (KSh)	80-100,000	100-150,000	150-200,000	200-600,000 ⁴

firewood collection and sale, handicrafts (mat and basket making), building materials (e.g. pole collection and sale, livestock trade and petty trade.

The labor category in the graph includes labor migration, which was more common in 2019-20 than in previous years. The explanation was that household members gained experience of labor migration during recent bad years and have continued to pursue this income source in more average years.

Milk sales as a cash income source has decreased since the previous HEA baseline in 2016 and only appears to be typical for households from the middle wealth group.

Total income increases with wealth, but so does total household size, with the result that there was only a modest increase in total per person cash income across the wealth groups.

Compared with the previous baseline conducted in 2016, household-level total cash income has declined for the very poor, poor and middle wealth groups, while the better off group cash income has increased. On a per person basis, cash income has declined for all wealth groups. Very poor and poor households received a large amount of cash income from the safety net program during the previous baseline (conducted in 2016 for the 2015-16 reference year) and if this is removed from the comparison, then very poor and poor household incomes in 2019-20 kept pace with inflation since 2015-16. Cash income per person in 2019-20 exceeds the income levels in 2011-12 by more than general inflation for all wealth groups.

The graph presents income sources by wealth group for the reference year April 2019 to March 2020.

Better-off households derive a large part of their cash income from the sale of livestock, supplemented by self-employment (charcoal and handicraft sales and trade) and some labor migration by members of their large households.

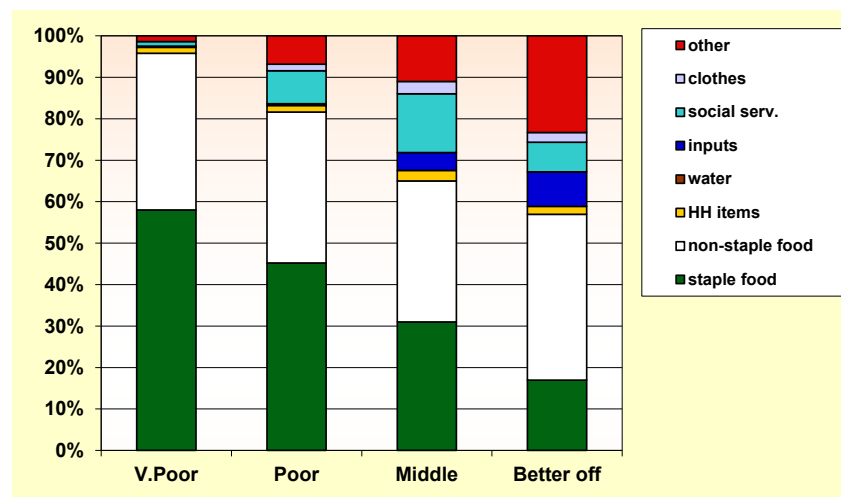
For the other three wealth groups, self-employment provided the largest source of cash income. Among the activities pursued were charcoal burning and sale,

⁴ Note that the results for the better off wealth group are less reliable than for other wealth groups and should be considered approximate.

Division of labor by gender	
<i>Women and girls</i>	<i>Men and boys</i>
Milking livestock	Herding livestock
Watering livestock	Watering livestock
Slaughtering livestock	Slaughtering livestock
Firewood and charcoal collection/production and sale	Selling livestock
Handicrafts production and sale	Fencing
Brewing and petty trade	Building shelters
Construction labor	Care of sick animals
Preparing meals	Construction labor
Collecting water and firewood for domestic use	Labor migration
Washing clothes and utensils	
Feeding small children	

Expenditure Patterns for the Reference Year (2019-20)

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



The proportion of expenditure on staple food (which is mostly maize, beans and vegetable oil, in dark green in the graph) decreased with wealth in the reference year, from nearly 60% for very poor households to about 15-20% for the better off. Combining staple and non-staple food, households spent a very large proportion of their income on food: declining from an exceptionally high 95% for

very poor households to over half for the better off.

There was limited expenditure on health and education (combined into the social services category), and on livestock inputs (mainly drugs) for all wealth groups. Other expenditures included clothes, household items (tea, salt, soap), phone credit and transport. Spending on water was not common.

Compared with the previous baselines conducted in 2012 and 2016, the proportion of expenditure on food has increased for all wealth groups, while that on household items, inputs and clothing has decreased. The proportion of expenditure on social services (health and education) has decreased for households in the very poor wealth group, but increased for other wealth groups.

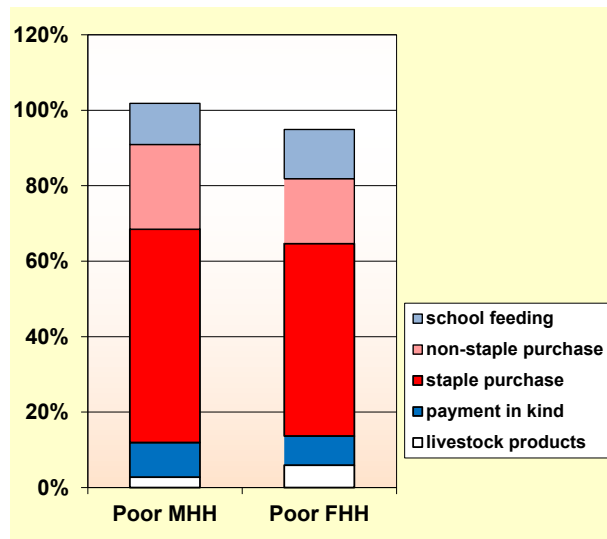
Female-headed households

Female-headed households are found in each of the wealth groups, as shown in the wealth breakdown table above. During field work, in-depth interviews were conducted with female-headed households from the poor wealth group. This is a group that faces similar constraints and characteristics as male-headed households in the same wealth group, but may be further disadvantaged by a lack of productive intra-household labor and, potentially, constraints on certain types of asset ownership, productive work, or income generating activities.

The graph on the left below illustrates that poor female-headed households and poor male-headed households share a similar pattern of food access. Most food for this wealth group is purchased, with small contributions from own livestock products (milk/meat), payment in kind (food payments for casual labor activities) and school feeding. The contribution from livestock products is slightly higher for female-headed households. The explanation given for this is that some female-headed households were originally in other wealth groups (before their husbands died) and so they have slightly higher livestock holdings than the male-headed households in this wealth group. Total food needs met are a little below 100% (of 2100 kcals per person per day) for the female-headed households in this group, but they may have lower needs (depending on household composition).

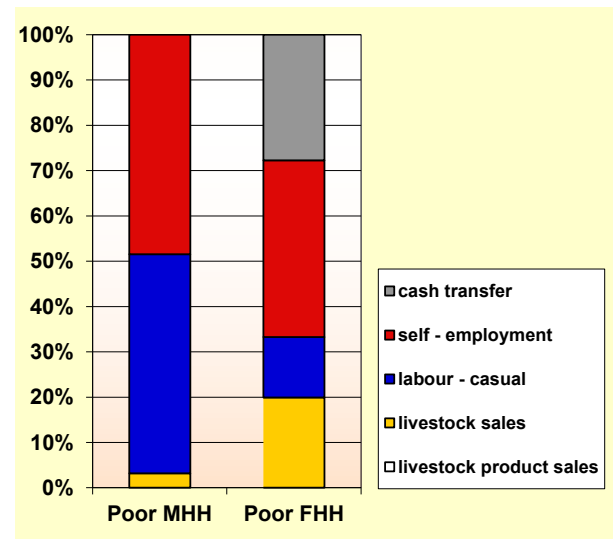
Cash income shows a different pattern between male- and female-headed households in the poor wealth group. Poor female-headed households obtain more income from livestock sales and from safety nets. They have less income from self-employment and casual labor. Their absolute cash income levels are 20-25% lower than male-headed households in the same wealth group at a household level, and about 10% lower per person (with female-headed households having a slightly smaller household size of 6 members rather than 7 members). Expenditure patterns (not shown) are almost exactly the same.

Sources of food: poor female headed households vs poor male-headed households



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.

Sources of cash: poor female headed households vs poor male-headed households



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

Hazards

The Central Pastoral Livelihood zone is subject to a number of hazards, some of which undermine food security every year, while others threaten food security in some years more than others. The main hazards affecting the zone are:

Chronic shortage of rain and drought. Lack of rain is a chronic problem in the zone. Rainfall is also highly variable from one year to the next, and drought years are therefore relatively common (strictly speaking a drought is a prolonged period of abnormally low rainfall when compared to the norm for a particular area; a drought in an area of low average rainfall is therefore a period of exceptionally low rainfall). The main effects of drought are to reduce the availability of pasture, browse and water leading to reductions in milk output, loss of livestock body condition (leading to reduced livestock prices), reduced rates of conception and increased mortality.

Livestock disease. This is also a chronic problem. The biggest problems are CCPP (contagious caprine pleural pneumonia), PPR (*peste des petits ruminants*) and Orf, which affect small stock. Mange and haemorrhagic septicaemia are the most significant problems for camels.

Locusts. More recently, during the long and short rains in 2020, locusts were a serious problem for availability of pasture.

Floods. In years of above average rainfall, flash flooding can be a problem. This has been exacerbated by continued harvesting of trees for firewood and charcoal production, which has caused erosion. Flooding can be a threat to human life and their homes and livestock.

Conflict and Raiding. Insecurity plays a part in isolating Turkana from potential markets, although there have been efforts to promote peace with neighbouring counties and this has achieved some level of success in the southern and western parts of the county from 2018 to date.

Response Strategies

People in the zone pursue a range of strategies in an effort to cope with the effects of a hazard. The first strategy is intended to safeguard and protect livestock in the event of a drought. The remaining strategies are pursued in order to maintain access to food and income.

Livestock migration. All types of stock are moved to 'bad year' grazing areas when there is a serious failure of the rains. These tend to be in or close to the less secure border areas. Herds may be split to spread the risk across more than one geographical area. Unusual patterns of migration bring with them the risk of conflict and loss of livestock to raiding.

Increased sale of livestock. This is a key strategy in most pastoral settings. There are obvious limits to what can be achieved, given that prices fall as livestock condition deteriorates and given the limited market demand (unless local demand is supplemented by de-stocking interventions). This is especially so in the case of camels, since there is no market outside the county for this species.

Increased self-employment. Households spend more time on activities such as firewood and charcoal collection and mat and basket making. As in the case of livestock, there are obvious limits to the expansion of these activities, primarily due to limitations in market demand.

Increased wild food collection. This is an important strategy. However, for some types of wild food, production is rainfall dependant, in which case availability can go down in a drought year. There will also be increased competition for wild foods as more households participate in their collection.

Increased remittances and increased social support. Gifts of cash and of livestock (for sale or for slaughter) will increase in a bad year. Gifts of milk will decline, however, in line with the general reduction in milk availability in a bad year.

Labor migration – Members of very poor, poor and, to some extent, middle households travel for longer periods to urban areas, both within and outside Turkana, to look for casual work.

Switching of expenditure to cheaper foods. Expenditure on non-food items (utensils, clothes, beads, etc.) and on more expensive foods (e.g. wheat flour, rice and sugar) will be decreased by all groups in a bad year.

Key Parameters for Monitoring

The key parameters for a livelihood zone are the most important variables to monitor changes in food security. Changes in these variables are likely to have significant effects on food security within the livelihood zone.

Item	Key Parameter – Quantity	Key Parameter – Price
Livestock production	<ul style="list-style-type: none"> • Camels milk production • Camel sales • Cattle sales • Shoat sales 	<ul style="list-style-type: none"> • Camel prices • Cattle prices • Shoat prices
Other food and cash income	<ul style="list-style-type: none"> • Charcoal/firewood sales • Handicraft sales • Construction labor • Herding labor • Labor migration • Petty trade 	<ul style="list-style-type: none"> • Charcoal/firewood prices • Handicraft prices • Construction labor wage rates • Herding labor wage rates • Labor migration remittances • Petty trade income

In addition to the above key parameters related to food and cash income, it is important to monitor changes in the price of the main staple foods (especially maize grain/flour).

Development Priorities

The longer-term development priorities suggested below were highlighted by the community leader and wealth group interviewees themselves. All of these suggestions require further detailed feasibility studies.

Market infrastructure and general market function. There is very little market infrastructure and few regular markets in the Central Pastoral Livelihood Zone. Relatively few traders are active in the rural areas, and competition between traders is therefore limited outside of the main towns. Taken together, these factors combine to reduce the prices that pastoralists receive for the items they sell (livestock, mats, baskets, charcoal etc) and increase the prices of items they buy (both food and non-food items). Lack of demand for pastoral products and low producer prices

result in low pastoral incomes and limited demand by pastoralists for both food and non-food goods and services, which again tends to depress local market activity. The construction of animal sale yards was mentioned as a priority.

Livestock interventions. Livestock constitute the mainstay of local livelihoods, although this has been declining over the last decade. It is still important to continue and to improve support to this sector, especially in relation to veterinary drugs and services to address the chronic problem of livestock disease. Water is another vital sector to support. Hand-dug wells provide an important source of water for both the livestock and human population for much of the year; these do not provide a reliable source of supply and a number of areas in the livelihood zone suffer chronic problems of water shortage. Supplementary feeds and restocking were also mentioned as priorities.

Diversified livelihood interventions. Two-thirds of the population own very few livestock and are primarily dependent upon casual labor and self-employment activities including charcoal and handicraft sales. These self-employment activities would benefit from the improved access to markets and improved market function discussed above. There are also opportunities to improve income from items such as baskets and mats, for example through the development of higher quality, higher value products that better match consumer demand, or through training to improve skills, or through the provision of loans or grants to promote small business development. Households in many locations have requested support for farming (seeds, tools, training, irrigation), although the viability of interventions in this sector would have to be carefully assessed.

Health, water and education: Improved health facilities, access to clean water for human consumption, and increased numbers of classrooms were mentioned as priorities across all wealth groups.

3.2.3 Turkwel Riverine Agro-Pastoral Livelihood Zone

Turkana Livelihood Baseline Profile

Turkwel Riverine Agro Pastoral Livelihood Zone

July 2021⁵

Summary: The Turkwel Riverine Agro-Pastoral Livelihood Zone is located along the Turkwel River, where irrigation schemes have been developed in what is otherwise a semi-arid to arid area. It includes villages in Turkana South and Loima Sub-Counties of Turkana County. It is an agro-pastoral livelihood zone, where households both grow crops and rear livestock, in addition to pursuing other income generating activities like charcoal production, handicrafts, brewing, petty trade, casual labor and building material sales. The population is made up of former pastoralists who previously only engaged in opportunistic farming. The main crops grown are sorghum, maize, green grams, cowpeas, vegetables, watermelon, pumpkins and butternut. The main types of livestock kept are goats and sheep, although some households also

⁵ Field work for the current profile was undertaken in June 2021. The information presented refers to June 2019 – May 2020, an average year for food security by local standards. Provided there are no fundamental and rapid shifts in the economy, the information in this profile is expected to remain valid for at least five years (i.e. until at least 2026). All prices referred to in the document are for the reference year.

keep cattle and poultry and a few households keep donkeys and camels. Market access in this livelihood zone is fairly good compared to other parts of Turkana County, due to the proximity of the main road that runs from Kitale to Lodwar and the proximity of market centers. Own crop production and market purchases are the main food sources across all four wealth groups, supplemented by livestock production and school feeding. Longer-term program implications relate to improved agriculture and livestock production; market access; health, water and education; access to credit. This profile contains additional information about children's role in the household economy based on separate interviews with child workers.

Zone Description

This baseline profile is an update of a previous profile that was written in 2016, which was itself an update of a profile that was written in 2012. The text, wealth breakdown, and all information on household food and income sources and expenditure patterns have been updated based on HEA baseline fieldwork that was conducted in June 2021. This profile contains additional information about children's role in the household economy based on separate interviews with child workers in 8 villages.

The livelihood zone (TAP in the map) is located along the Turkwel River, where irrigation schemes have been developed in what is otherwise a semi-arid to arid area. It includes villages in Turkana South and Loima Sub-Counties. It is an agro-pastoral livelihood zone, where households both grow crops and rear livestock, in addition to pursuing other income generating activities like charcoal production, handicrafts, brewing, petty trade, casual labor and building material sales. The population is made up of former pastoralists who previously only engaged in opportunistic farming.

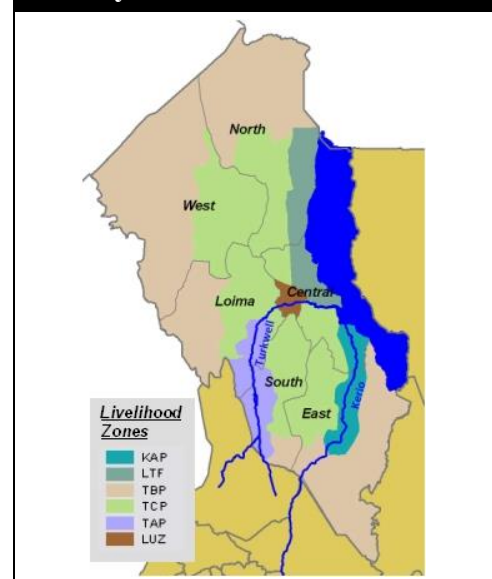
The Turkwel River, and hence the livelihood zone, runs from the border with West Pokot to the southwest through Lodwar town and on to Lake Turkana. Originally a seasonal river, it now draws water from the Turkwel Gorge Dam and flows throughout the year. The south of the zone borders a national reserve and has more trees and bushes than areas further north.

Because this zone is dependent on both man-made irrigation schemes and the geography of the Turkwel River and its banks, there are varied production levels from village to village. Another source of variation is market access: villages that have relatively easy access to Kainuk, Lokichar, Kalemng'orok, Turkwel and Lodwar are geared towards vegetable production for the market, while other villages are less so.

The rainy seasons run from April to May and from October to November and average rainfall per year is 150-250 mm. The 'long' rains in April-May are more important than the 'short' rains in October-November for crop production in this zone, although production twice a year is possible in some villages. As elsewhere in Turkana County, rainfall is unreliable and erratic. Without

HOUSEHOLD ECONOMY ANALYSIS BASELINE FOR THREE LIVELIHOOD ZONES IN TURKANA COUNTY, KENYA, OCTOBER 2021

Livelihood Zones of Turkana County



irrigation, the zone is very marginal for crop production; with irrigation, it is moderately productive in relation to other areas of Turkana County but is still a food deficit area in the sense that production does not exceed food needs. Crop production relies on both rainfall and irrigation from the Turkwel River. The level of the river is key to the success or failure of a given season and depends on rainfall in the catchment area in West Pokot and beyond.

The soils within the irrigation schemes are sandy loam and cultivation is mostly done by hand, although there is mechanisation in some irrigation schemes such as Moruese. Land areas cultivated are small, up to a maximum of about two acres per household, although most households cultivate much less than this. Land preparation (including the desilting of irrigation canals) is the activity that requires the most labor. Both men and women are engaged in crop production activities (including land preparation, weeding and harvesting). The main crops grown are sorghum, maize, green grams, cowpeas, vegetables, watermelon, pumpkins and butternut. The main pests are caterpillars, grasshoppers, fall armyworm, stalk borers, birds and aphids. Chemical fertilizers are not used and indeed are not recommended because of the saline soils and extreme temperatures. The main constraint to increased production is the difficulty of maintaining the irrigation canals and getting water from the river to distant fields. Households do not spend much money on seeds and tools because these are often provided freely by the Turkana County Department of Agriculture.

The main types of livestock kept are goats and sheep, although some households also keep cattle and poultry and a few households keep donkeys and camels. Livestock are fed by free grazing and on crop residues. There is no purchase of feed or water for livestock. During the rainy seasons, the main sources of water for livestock are seasonal pools away from the main household base (in places like Kalemng'orok, Kakong'u, Lokichar and Naweregai). In the dry season, livestock are kept near to the Turkwel River or, in bad years, in distant insecure areas like Kotaruk. Men and boys migrate with the herd rather than whole households. Goats, sheep and cattle are milked, usually by women and girls. The common diseases affecting livestock include CCPP, CBPP, worms, mange, orf, pox, PPR, and diarrhoeal disease. Households treat their livestock with local medicines collected free from the bush or with veterinary drugs purchased from paravets or local traders. Livestock vaccination campaigns are periodically organized by the Ministry of Livestock Department of Veterinary Services, sometimes in partnership with NGOs.

Other economic activities for households in this livelihood zone include charcoal production, firewood collection and sale, building materials collection and sale (poles, thatch, etc), brewing, handicrafts and petty trade. Most of these income sources are more common in the dry season, but are possible all year. Women are more involved with charcoal production, agricultural labor and brewing, while men are more involved with the sale of building materials. Approximately half of very poor and poor female-headed households received cash transfers from government safety net schemes.

Water sources for humans include shallow wells, boreholes and the Turkwel River. Humans and livestock generally share the same water sources. There is no payment for water in this livelihood zone, apart from a small borehole maintenance fee in some villages. Sanitation facilities varied by wealth group, with better off households using pit latrines and poorer households using the bush. Health care is obtained from public dispensaries. There is no electricity in the livelihood zone. Poorer households use torches with batteries or firewood for lighting. Better off households use torches, solar panels or D-lights. Firewood and charcoal are

universally used for cooking. Most households have at least one mobile phone. There are few sources of credit or saving schemes. Organisations working in the area include National Drought Management Authority (NDMA), National Irrigation Board (NIB), WFP, FAO, Diocese of Lodwar, World Vision, Red Cross, KARIMO, Child Fund.

Conflict in the form of livestock raiding has traditionally been a widespread problem in the south of this livelihood zone in the area bordering West Pokot and near to Uganda. However, peace efforts in 2015-16 between the Turkana, Pokot and Karamojong have led to a recent reduction in this problem. Apart from raiding, there are border disputes with the Pokots over grazing land, farmland and water. The impacts of conflict include loss of livestock and limitations on access to markets, roads and farmland.

The typical age at which boys/men get married decreases from 20-30 years for very poor households to 18-25 for better off households. For girls/women, the typical age of marriage is 18 years across all wealth groups. A typical dowry ranges from about 30 goats/sheep for a very poor household to 3 camels, 8 cattle and around 100 goats/sheep for a better off household. The cost of the ceremony also increases with wealth, from up to 90-120,000 KSh for the very poor to 300-500,000 KSh for the better off. Polygamy is common for middle and better off households.

Markets

Market access in this livelihood zone is fairly good compared to other parts of Turkana County, due to the proximity of the main road that runs from Kitale to Lodwar and the proximity of market centers like Kainuk, Lokichar, Kalemng'orok, Turkwel and Lodwar. In relation to other parts of Kenya, however, market access is poor due to the remote location of all livelihood zones in Turkana County and the poor state of the road infrastructure. The zone is accessed by dirt roads and informal tracks, which are generally accessible for most of the year, if at slow speed and with potential vehicle damage. Only when there is an unusually large amount of rainfall do some roads and rivers (Kalemng'orok and Kospir) become completely impassable.

The main crops sold are maize, sorghum, pulses (cowpeas and green grams), watermelon and vegetables. The market for these crops is internal to Turkana County and there are no exports outside the county. Maize and sorghum from the main irrigation schemes are purchased in July and August by the County Government for use in relief programs throughout the county. Maize and sorghum outside the main irrigation scheme are sold locally to traders and other buyers. Vegetables are sold locally.

Goats and sheep are the main types of livestock sold. The trade route is from the village to urban centers within Turkana (such as Lodwar, Kalemng'orok, Lokichar, Kainuk, Katilu, Kalemnyang, and Turkwel) and then on to large downcountry cities like Nairobi, Eldoret and Chwele. Cattle are usually sold in the larger livestock markets in Lodwar, Kakuma or Lokichar and some cattle are exported to other parts of Kenya (primarily Nairobi). Very poor and poor households tend to sell livestock locally to middlemen for lower prices, while middle and better off households sell in the main county markets at higher prices.

The main staple foods consumed in the livelihood zone are maize (grain/flour) and beans. These sell for roughly the same price per kilo throughout the livelihood zone. Maize and beans are

Crops are planted at the start of each rainy season, with land preparation activities occurring during the months before this. The sorghum that is planted during the long rains season can be harvested more than once per year, in the form of ratoon crops, usually in September and November if water is available.





Milk production peaks during the rainy seasons, but is available from cattle throughout the year for the small proportion of households that keep large animals. Livestock sales can occur at any time, but are mostly after the rainy seasons when body condition has improved and animals can fetch good prices. Sales in January and August are particularly to enable households to pay school fees.

Pre-harvest agricultural activities are the most important type of casual labor, but self-employment activities occur throughout the year. Brewing peaks in the post-harvest and festival period, while petty trade peaks during the hunger seasons.

The main festivals are Edonga (celebrated with traditional dances when the moon appears, especially after the harvest period) and Tobong'ure Lore (celebrated annually every August).

Human diseases are worst during the rainy seasons and almost overlap with the hunger/lean seasons.

Wealth Breakdown

		Wealth Groups Characteristics					
		HH size	Wives	% FHH	Land area cultivated (acres)	Livestock holdings	Other
Very poor		7-9 (8)	1	40-55%	0.5 - 1	0 cattle, 5-15 goats, 2-8 sheep	1 mobile phone
Poor		7-9 (8)	1	25-35%	0.75 - 1.25	0 cattle, 15-30 goats, 5-10 sheep	1 mobile phone
Middle		9-15 (12)	2	10-15%	1.5 - 2	2-8 cattle, 30-60 goats, 10-20 sheep	0-1 motorcycle, 2-3 mobile phones
Better off		10-15 (13)	2	5-10%	1-3	10-15 cattle, 60-100 goats, 20-30 sheep	1 motorcycle, 2-4 mobile phones
0% 10% 20% 30% 40% 50%							
% of households							

The main determinant of wealth in this zone is livestock ownership. Livestock holdings increase with wealth. Ownership of cattle is largely restricted to the middle and better off wealth groups and camel ownership is not common. Households from all wealth groups own goats and sheep.

Ownership of small livestock (goats and sheep) has increased compared to the previous baselines conducted in 2012 and 2016, while ownership of large livestock (cattle and camels) has decreased. When total livestock holdings are converted into TLU or Tropical Livestock Units (a common method for comparing holdings of different types of livestock), holdings per person (household holdings divided by household size) have decreased compared to 2016, but are very similar to the levels found in 2012.

Household size increases with wealth, as does the typical number of wives per man. A household in this zone is the larger unit of a man and his wives and children (rather than an individual wife and her children) because resources are shared amongst the members of the wider unit. The small table to the right illustrates that the percentage of households in each wealth group is different from the percentage of population in each wealth group (because of differing household sizes).

	Wealth Breakdown	
	% of HHs	% of pop ⁿ
Very	25-40	20-35
Poor	40-50	30-40
Middle	10-20	15-25
Better	5-10	10-15

Although irrigation scheme land is allocated equally, some households rent in/out land, while others cultivate rainfed land. The result is that land area cultivated increases with wealth. All wealth groups grow the same types of crops. Compared to the previous baselines conducted in 2012 and 2016, land areas cultivated have increased for all wealth groups.

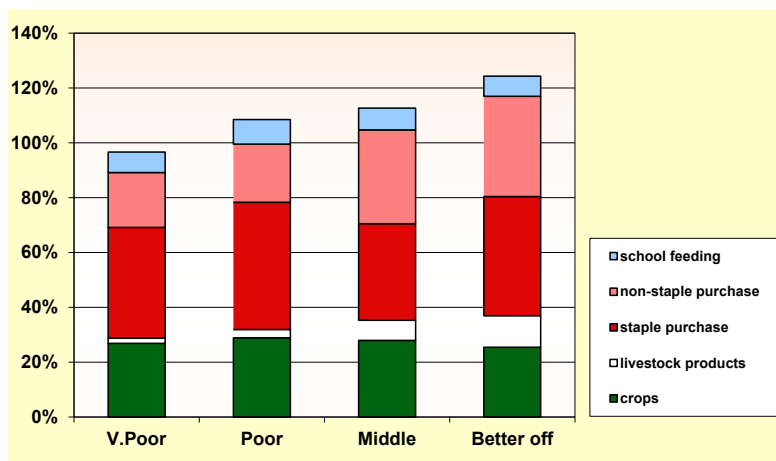
Sources of Food for the Reference Year (2019-2020)

The graph below presents the sources of food for households in different wealth groups in the livelihood zone for the period June 2019 – May 2020. June represents the start of the consumption year since it is when the main long rains green maize and sorghum harvests begin and the hunger season ends.

The proportion of food obtained from own crop production (in dark green) is quite similar across the wealth groups. Sorghum and maize provide the bulk of produced kilocalories, while green grams and cowpea leaves make a very small contribution.

The contribution of livestock products (milk and meat from own livestock) increases with wealth, while that of school feeding is similar across the wealth groups.

Market purchases are an important source of food across all wealth groups. The main items purchased are maize (grain/flour), beans, rice, vegetable oil, and sugar. Small quantities of sorghum, wheat flour, and pasta are also purchased.



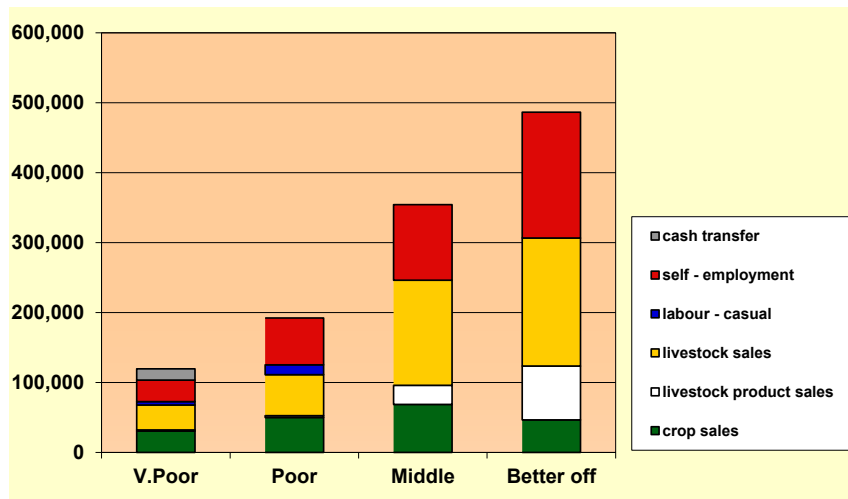
In the graph, food access is expressed as a percentage of minimum food requirements, taken as an average food energy intake of 2100 kcals per person per day.

Payment in kind (payment for labor in food rather than in cash) was a small food source in 2016, but was not common in the recent fieldwork.

Compared to the previous baselines conducted in 2012 and 2016, the contribution of livestock products has decreased across all wealth groups, reflecting the decrease in holdings of large animals. Purchased food has increased to compensate for this. Although land areas cultivated

have increased, the contribution of own crop production to food needs hasn't changed much. Most of the change in relation to cultivation is in crop sales rather than consumption (see below).

Sources of Cash for the Reference Year (2019-2020)



The graph provides a breakdown of total annual cash income in Kenyan shillings according to income source.

	Very poor	Poor	Middle	Better off
Annual income (KSh)	110-130,000	140-240,000	250-450,000	400-600,000

The graph presents income sources by wealth group for the reference year June 2019 – May 2020. Income from livestock and livestock product sales increases steadily with wealth and is very important for middle and better off households.

Income from crop production is much more important in this baseline than in previous baselines, making up approximately 25% of total cash income for very poor and poor households, about 20% for middle household and 10% for better off households.

Households sold a portion of all crops that they produced.

All wealth groups obtained a large part of their income from self-employment in the reference year. This category of income includes firewood and charcoal sales, building material sales, handicrafts, brewing and petty trade.

Income from cash transfers (mainly HSNP, the Hunger Safety Net Program) is an income source for very poor households. Not all households in this wealth group received HSNP or other cash transfers in the reference year, but approximately half did and that is what is illustrated in the graphic above.

Compared to the previous baselines conducted in 2012 and 2016, cash income levels are higher in the 2019-20 reference year across all wealth groups (both per household and per person), exceeding the increase in general inflation.

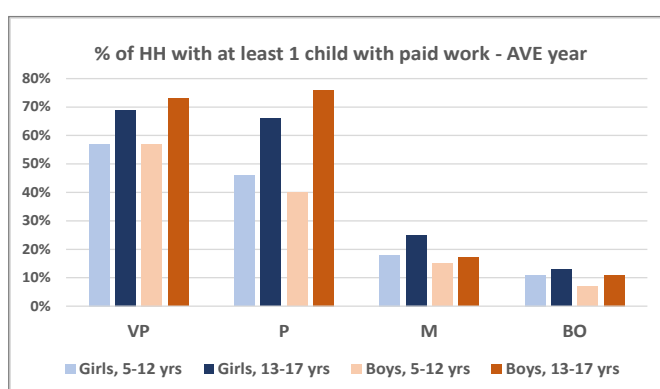
Division of labor by gender		
Women and girls	Men and boys	Both / all
Threshing crops	Herding livestock	Land preparation
Milking livestock	Livestock sales	Planting crops
Milk sales	Care of sick livestock	Weeding crops
Building houses/shelters	Construction labor	Harvesting crops
Fencing		Crop sales

Firewood collection and sale		Watering livestock
Handicrafts		Charcoal production and sale
Brewing and petty trade		
Collecting water and firewood for domestic use		
Cooking meals and feeding children		
Washing clothes and utensils		

Children's income and child workers

In the Turkwel Riverine Agropastoral zone, children with paid work are primarily from very poor and

poor households. Amongst sample villages, about 65-75% of households in the lower wealth



groups reported that at least one youth 13-17 years old had paid work in the reference year (see graph left). Amongst the younger age group (girls and boys 5-12 years old), the incidence ranged from 40% (poor households) to 57% (very poor). Some children and youth from middle or better off households do undertake paid work but the incidence is relatively low. On average, 19% of middle households and 11% of better off households reported having at least 1 child with paid work in the reference

year.

Children 5-12 years	
VP/P	
Girls	Boys
sell doum palm leaves	fetch water
domestic	harvesting
firewood sales	firewood sales
Youth 13-17 years	
VP/P	
Girls	Boys
sell vegetables	fetch water
laundry	firewood sales
fetch water	agriculture
dishwasher in hotel	

Children do a range of work depending on their age and sex. Younger children typically sell firewood or grass, work for local farmers (boys) or sell *doum palm* leaves (girls). Older girls typically do domestic work such as laundry, washing dishes or fetching water as well as selling farm vegetables, charcoal and mud for house repair. Boys are more likely to do agricultural work, sell firewood/charcoal, construct mud houses and fetch water.

Children who work typically get their first paid job around the age of **10 years**. During the year, peak months for working are April-July. During these months, child workers on average work about 10 hours per day for 6 days per week. Earnings range from KSH 30-100/day for younger workers (5-12 years) and KSH 100-300/day for older workers (13-17 years). Girls' earnings were slightly higher than boys and average daily earnings for the older youth overall was KSH 170/day. Boys with on-farm jobs reported being paid sometimes in food.

September through to February/March are the months when children earn less income from paid work. During these months, children work the same amount of time, but their daily earnings are lower, averaging only KSH 35/day for the younger workers and KSH 100-125/day for the older workers.

Reasons for working	Hazards of paid work	Hazards of paid work
VP/P	VP/P	VP/P
Girls & Boys	Girls	Boys
HH needs income (poverty)	Accidents/illhealth	Miss school or drop out of school
orphan	Miss school or drop out of school	Accidents/illhealth
Self-reliance / earn own money	sexual assault / harassment	sexual assault / harassment
	abuse / mean boss	abuse / mean boss
	early pregnancies	theft of goods, income
	exposure to dangerous animals	stress
	kidnapping	

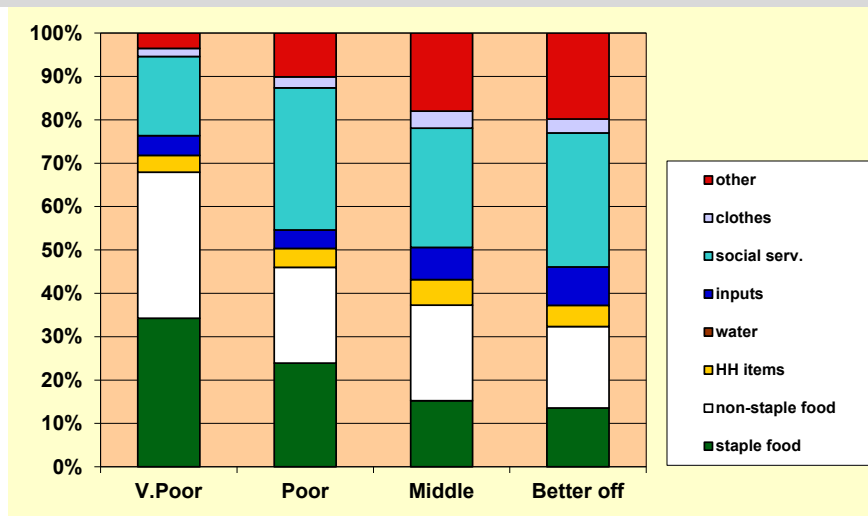
The main reason why children seek work is to contribute to household income. Poverty and a lack of cash for essential needs is the chief incentive to find paid work. This economic push is highest for orphaned children who need to rely on their own resources. Some youth also work to become more self-reliant. For those children whose earnings go toward meeting the family’s needs, it is their mother who usually decides how the cash is spent.

The benefits of working are offset by certain hazards. Chief amongst these is having to miss school or drop out of school to work. Becoming ill or having an accident is another hazard that was reported by girls in 3 out of the 4 sample villages. Less widespread hazards include suffering abuse from a boss and sexual harassment (see table at left).

Expenditure Patterns for the Reference Year (2019-2020)

The graph presents expenditure patterns for the reference year June 2019 – May 2020. While total expenditure increases with wealth, the expenditure breakdown by percent in this graph demonstrates how much expenditure is spent on different categories.

The proportion of expenditure on staple food (which is mostly maize in dark green in the graph) decreases with wealth from 30-40% of annual expenditure for the very poor to 10-20% for the middle and better off.



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

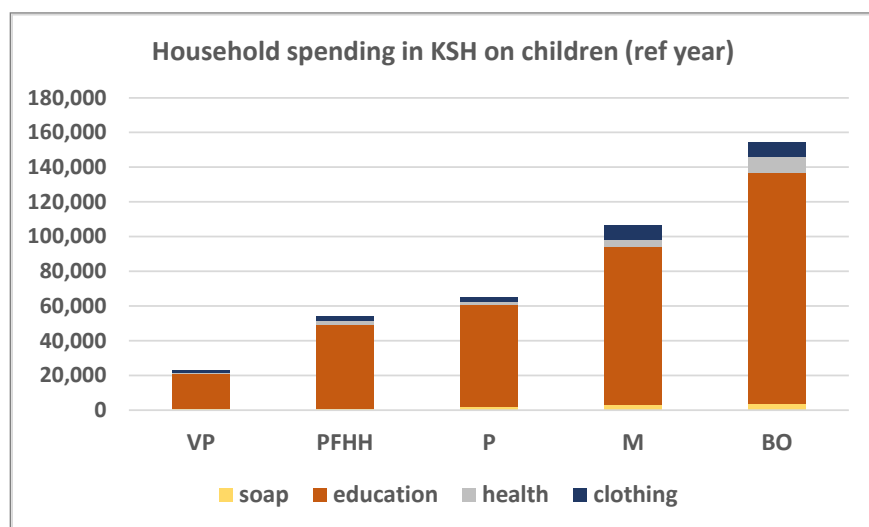
Combining staple and non-staple food, very poor households spend about two-thirds of their income on food, while the better off spend just over 30%.

The main household items purchased (in yellow) are tea, salt, soap, grinding and utensils (including jerrycans) and, although absolute spending increases, these are a fairly similar percent of total expenditure across the wealth groups. Water is not purchased in this livelihood zone. ‘Social services’ (in aqua blue) includes school and medical expenses. Primary school is usually free and school expenses include uniform and exam fees. ‘Other’ items (in red) include expenditure on tobacco, alcohol, transport, phone credit, festivals, house repairs and social obligations.

The proportion of income spent on inputs increases with wealth. This included expenditure on inputs for crop and livestock production, including labor hire by middle and better off households.

Compared to the baselines conducted in 2012 and 2016, the proportion of expenditure on social services (which is mainly education) has increased significantly, while that on household items and clothing has decreased.

Household expenditures and spending on children’s basic needs



How much households spend on children’s basic needs depends on the number of children in the household and available income. Poor female headed households have the highest dependency ratio. Typically, in a household of 7 people, 5 are children and only 2 are adults. By contrast, in other wealth groups, about 40-50% of the household are adults and


thus potential income earners.

Notwithstanding differences in the dependency ratio, the general trend is that spending on

HH expenditures on children	number of children/HH				
	VP	PFHH	P	M	BO
soap	750	1,143	1,700	3,383	3,446
water	0	0	0	0	0
education	20,500	48,000	59,000	90,650	133,300
health	650	2,143	2,000	3,967	9,046
clothing	1,125	2,643	2,400	8,108	8,400

children’s basic needs rises with wealth. Upper wealth groups have a larger household and more children, but even per capita spending shows the same trend. The major expense for all wealth

groups is education (see graph, left). The number of children attending primary school is similar across all wealth groups (i.e., 3-4 children). However, in poorer households, fewer children go to



secondary school. Amongst the lower wealth groups typically 0.5-1 child attends secondary school. Amongst the upper wealth groups, the number of secondary school students per household is 2-2.5. As a result, middle and better off households spend 4.5 and 6.5 times more money on education than very poor households respectively. And compared to the poor, middle households spent about 275% more than poor female headed households on education in the reference year.

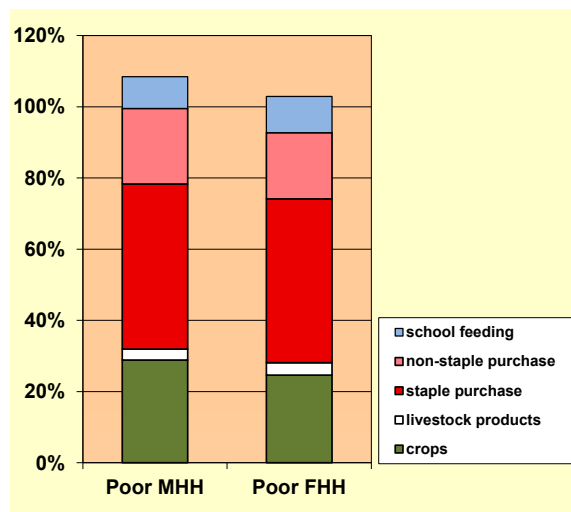
Female-headed households

Female-headed households are found in each of the wealth groups, as shown in the wealth breakdown table above. During field work, in-depth interviews were conducted with female-headed households from the poor wealth group. This is a group that faces similar constraints and characteristics as male-headed households in the same wealth group, but may be further disadvantaged by a lack of productive intra-household labor and, potentially, constraints on certain types of asset ownership, productive work, or income generating activities.

The graph below on the left illustrates that poor female-headed households and poor male-headed households share a similar pattern of food access. Most food for this wealth group is purchased or grown from crop production, with small contributions from own livestock products (milk/meat) and school feeding. Total food needs met (of 2100 kcals per person per day) are above 100% for both groups, but slightly lower for the female-headed households. They may have lower needs (depending on household composition).

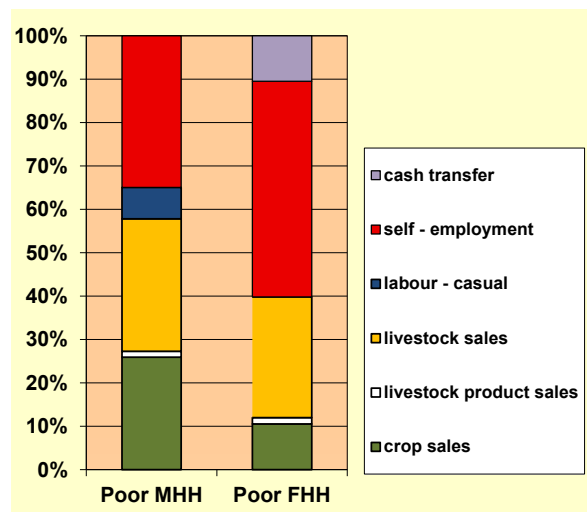
Cash income shows a different pattern between male- and female-headed households in the poor wealth group. Poor female-headed households obtain more income from self-employment and from safety nets. They have less income from crop sales, reflecting a smaller land area cultivated (an average of 0.5 acre compared to 1 acre for poor male-headed households). Their absolute cash income levels are 20% lower than male-headed households in the same wealth group at a household level, and about 10% lower per person (with female-headed households having a slightly smaller household size of 7 people rather than 8 people). Expenditure patterns (not shown) are almost exactly the same.

Sources of food: poor female headed households vs poor male-headed households



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.

Sources of cash: poor female headed households vs poor male-headed households



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

Hazards

As with other livelihood zones in Turkana County, the Turkwel Riverine Livelihood Zone is vulnerable to drought and to outbreaks of livestock diseases. Drought results in reduced pasture, browse and water availability for livestock, while livestock disease outbreaks can directly kill livestock or limit their productivity. These hazards have contributed to the existence of this livelihood zone, which is populated by former pastoralists, most of whom no longer have viable herd sizes for pure nomadic pastoralism. Irrigated crop production is less affected by drought, but water levels in the Turkwel River are dependent on sufficient rainfall in the catchment area feeding into the river.

Unlike most other livelihood zones in the county, this livelihood zone is also vulnerable to floods and to crop diseases and pests. Floods not only destroy crops in the season in which they occur, they also damage irrigation systems over the longer term, necessitating time-consuming repairs. Crop diseases and pests are a chronic hazard that reduce yields every year, with periodic outbreaks of more severe infestations. Wild animals are another hazard for crop production and problems with warthogs and monkeys were reported.

Response Strategies

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

Switching of expenditure – Reducing expenditure on expensive foods (sugar, meat, and oil), clothes, transport, and non-essentials (like alcohol and tobacco), in order to purchase more food, is a commonly used coping strategy pursued by all wealth groups.

Increased bush product collection and sale – The sale of firewood, charcoal and construction materials is intensified in bad years, along with production and sale of handicrafts.

Increased wild food consumption – During bad years, household members spend more time collecting and processing wild foods. Some households also substitute commonly purchased non-staple items for natural bush items. For example, instead of purchasing tea leaves, some households collect and use wild leaves as a tea substitute.

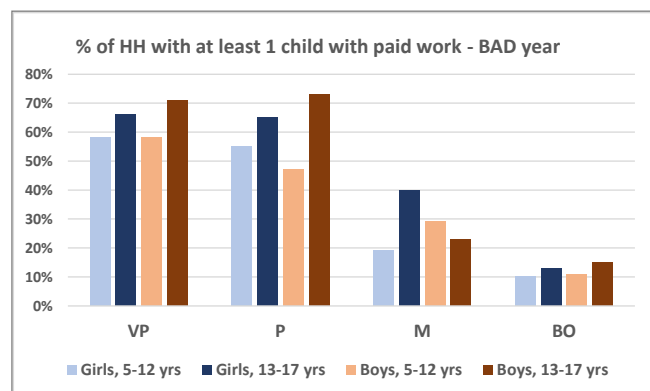
Labor migration – Members of very poor, poor and, to some extent, middle households travel to urban areas, both within and outside Turkana, to look for casual work.

Increased livestock sales – Households from all wealth groups sell additional livestock to cover basic food and non-food expenses in bad years. However, the extent to which this strategy can be pursued without damaging future livelihoods is quite limited. Middle and better off households are in a better position to exploit this strategy.

Livestock migration – Migrating with livestock to distant locations in search of pasture and water is a common strategy in bad years. Most household members remain in a settlement where assistance is provided (or expected), while male adults and youths migrate with the livestock. Households with very few animals generally group their animals together with other households

Increased reliance on crops and farming – The diversification of livelihoods into agriculture has been a mid- to long-term strategy to cope with the damage that successive years of drought and livestock disease have inflicted on livestock herds.

Coping – effect of bad years on children



Bad year impacts on BASIC NEEDS	
VP/P	
Girls & Boys	
miss meals / eat less food per meal	
lack school fees (leave school)	
join school for school feeding	
sick (can't afford health care)	
migrate due to pastoralism	
can't afford clothes	

Bad years mean hunger and having **less food** at home. Either children eat less food at each meal, or they miss meals completely. Amongst the child workers, girls in all the sample villages ranked less food/fewer meals as the number one impact of a bad year in terms of their basic needs. Another major impact of bad years is having to drop out of school to work. Conversely, children in some villages reported joining school to benefit from school lunches. Bad years also mean becoming ill more frequently due to lack of money for medication or having to take on riskier work. Boys reported having to migrate away with the herds in a bad year and girls reported lacking money to buy clothes and other personal items.

One way for families to cope with a bad year is for children to take on paid work and contribute to household income. Amongst very poor and poor households, the percentage of households with at least one child with paid work was already relatively high (about 72% of households in

the case of older boys) and this incidence did not change much in a bad year. The real difference was amongst middle households. For these households, on average across age groups, the percentage of households reporting at least one child with paid work rose from 19% in the reference year to 28% in a bad year.

Bad year WORK strategies (children's responses)		Bad year impacts on children's work			
VP/P		Mild/ lean season	Moderate bad year	Severe bad year	
Girls & Boys					
work more hours per day		22%	7%	7%	
take riskier work		8%	14%	7%	
drop out of school to work		62%	21%	29%	
do two or more jobs; work more months		8%	36%	29%	
migrate away to work			14%		
beg			8%	29%	
		<i>total</i>	100%	100%	100%
<i>% of the responses to the question - adult key informants</i>					

Coping with income stress in a bad year effects children's work in a number of ways. Work intensifies from September-February (i.e, the lean season) when children reported having to work longer hours each day and/or work more months in the year or take on additional work. This strategy typically means dropping out of school to work more. Children also reported taking on riskier work during a bad year, such as mining, crossing flowing rivers, or cutting poles for sale in insecure areas. Other effects include taking work that is physically harder, such as weeding farms, bird scaring and constructing mud houses. Although not very common, a few children said that to cope with a bad year they would beg for money or food. Adults reported that children will resort to thieving or selling drugs to earn extra cash. Girls are affected due to early marriage and pregnancy although this situation is not particularly worse in a bad year.

Key Parameters for Monitoring

The key parameters listed in the table below are things that make a substantial contribution to household food and income sources in the Turkwel Riverine Livelihood Zone. These things 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 maize prices.

Item	Key Parameter – Quantity	Key Parameter – Price
Crops	<ul style="list-style-type: none"> Maize – long and short rains Sorghum – long and short rains Cowpeas – long rains Watermelon – long and short rains Vegetables 	<ul style="list-style-type: none"> Maize – long rains Sorghum – long rains Watermelon – long and short rains Vegetables
Livestock	<ul style="list-style-type: none"> Cow milk Goat milk Cattle herd sizes 	<ul style="list-style-type: none"> Cow milk Goat milk Cattle

	<ul style="list-style-type: none"> • Goat herd sizes • Sheep per sizes 	<ul style="list-style-type: none"> • Goats • Sheep
Other food and cash income	<ul style="list-style-type: none"> • Firewood/charcoal • Petty trade • Construction labor • Self-employment (handicrafts, brewing) • HSNP 	<ul style="list-style-type: none"> • Firewood/charcoal • Petty trade • Construction labor • Self-employment (handicrafts, brewing) • HSNP

Development Priorities

The longer-term program implications suggested below were highlighted by the community leader and wealth group interviewees themselves. All of these suggestions require further detailed feasibility studies.

Agricultural production: Opportunities exist to extend and improve irrigated crop production. The irrigation schemes are periodically flooded and get full of silt. Communities request assistance to expand and improve the irrigation schemes, perhaps through shallow wells or boreholes in addition to river water and with the support of generators and pumps. They also request increased access to tractors and management of prosopis to expand areas under cultivation. Fencing to protect fields from livestock was also mentioned as a priority. In terms of crop production itself, there were several requests for assistance with pest control, seed selection techniques, and training in crop husbandry.

Livestock production: Livestock diseases are a chronic problem in this livelihood zone and continued efforts to improve access to veterinary drugs, vaccination and technical services are important. Requests were also made to upgrade livestock breeds and to improve access to fodder crops. Both restocking and destocking are priorities, depending on the type of year.

Marketing: Although this livelihood zone has better access to markets than some other parts of Turkana County, opportunities for marketing crop production, livestock, livestock products and handicrafts and for purchasing agricultural inputs (seeds, tools, livestock drugs) are still relatively limited except in the villages closest to large towns. There are no weekly markets where farmers, livestock keepers and traders can regularly meet and exchange goods.

Health, water and education: Improved health facilities (buildings, drug supply and staffing), access to clean water for human consumption, and increased numbers of classrooms and assistance with school fees were mentioned as priorities across all wealth groups.

Access to credit: There are group savings and loan (or merry-go-round) schemes in some villages, but there is interest in increased access to credit across all wealth groups.

3.2.4 Lake Turkana Fishing Livelihood Zone

Turkana Livelihood Baseline Profile

Lake Turkana Fishing Livelihood Zone

July 2021⁶

Summary: The Lake Turkana Fishing Livelihood Zone stretches the length of Lake Turkana, but covers only a thin area from the shoreline to little over two kilometres inland. Fishing is the main economic activity of the zone, despite the population's pastoral background. The amount of income derived from this activity depends on household access to fishing equipment, the most important set of productive assets. Households also obtain income from livestock (especially goats and sheep), bush product sales (firewood and charcoal), construction labor, handicraft sales and petty trade. Households in this zone purchase most of their food because their own production is limited to fish and a small amount of milk and meat. These food sources are supplemented by school feeding, which is food consumed by children at school. Longer-term program implications relate to improved fishing and processing; road infrastructure and marketing for fish and handicrafts; livestock production; water and sanitation; access to credit; health and education; conflict resolution. This profile contains additional information about children's role in the household economy based on separate interviews with child workers.

Zone Description

This baseline profile is an update of a previous profile that was written in 2016, which was itself an update of a profile that was written in 2012. The text, wealth breakdown, and all information on household food and income sources and expenditure patterns have been updated based on HEA baseline fieldwork that was conducted in May 2021. This profile contains additional information about children's role in the household economy based on separate interviews with child workers in 8 villages.

The Lake Turkana Fishing Livelihood Zone (coded LTF on the map) stretches the length of Lake Turkana, but covers only a thin area from the shoreline to little over two kilometres inland. Most villages are situated away from the shores, as water levels fluctuate considerably and residents have been discouraged to settle by the water by government officials in order to preserve the shores. The assessment was conducted along the western shores of the lake only, including eight villages from Nariokotome in the north, to Lobolo south of Kalokol. In those villages where fishermen and herders live alongside each other, the analysis focused on the population engaged in fishing.

⁶ Field work for the current profile was undertaken in May 2021. The information presented refers to April 2019 – March 2020, an average year for food security by local standards. Provided there are no fundamental and rapid shifts in the economy, the information in this profile is expected to remain valid for at least five years (i.e. until at least 2026). All prices referred to in the document are for the reference year.

The livelihood zone borders Ethiopia to the north, at the mouth of the River Omo, which is the main fresh water supply into the lake and the area where the best fishing grounds are found. To the west of the zone lies a porous border with the Turkana pastoral livelihood zones. Various seasonal streams from inland Turkana flow into the lake, the largest of which are the Kerio and Turkwel rivers. Turkwel is a permanent source of water due to the hydroelectric dam upstream, which controls the amount of water flowing into the lake.

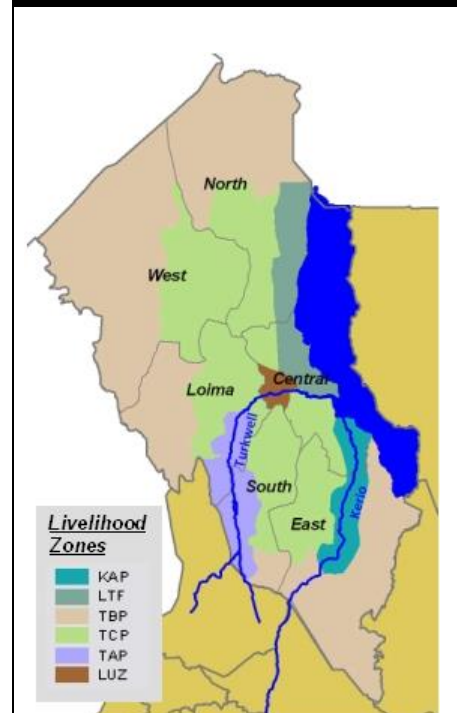
The landscape is arid and vegetation is limited. Acacias, doum palm trees and other small trees speckle the landscape, shrubs and grasses cover the ground, which turn a vibrant green with the touch of rain. The zone's topography is mostly plain lands. The characteristics of the soil change considerably around the Ferguson Gulf, where the ground is mostly sand and doum palms are the most common type of vegetation.

Fishing is the main economic activity of the zone, despite the population's pastoral background. The amount of income derived from this activity depends on household access to fishing equipment, the most important set of productive assets. Households also obtain income from livestock, bush product sales (firewood and charcoal), construction labor, handicraft sales and petty trade.

The colonial government tried to promote fishing around the Ferguson Gulf in the 1930s as a measure to reduce food insecurity in the area. This policy was revived in the early 1970s by NORAD's (Norwegian Agency for Development Cooperation) efforts to encourage the settlement of fishermen around Kalokol, where a fish processing and freezing plant was built. The plant was shut at the end of the 80s, due to the unstable supply of fish for a large-scale market-oriented scheme⁷. It has remained shut since. While these projects may not have achieved the desired outcomes, the areas around Kalokol and the Ferguson Gulf stand out for their relatively high levels of income derived from the sales of fish. The fish species that are most exploited commercially are Tilapia (*Kokine*), Nile Perch (*Iji*), Labeo horie (*Chubule*), Cat fish (*Kopito*), *Distichodus niloticus* (*Golo*), *Alestes baremose* (*Juse*) and *Citharinus* (*Gech*).⁸

Since 2016, demand for fresh and preserved fish has increased, both within Kenya and in neighbouring countries, especially for salted, sun-dried fish in the Democratic Republic of Congo (DRC) and prices are considered good. There are active Beach Management Units (BMU) at every fish landing site and organized group fishing is carried out throughout the week. The Department of Fisheries, WFP and local NGO SAPCONE have supported fishing efforts through the provision of fishing gear to BMUs to support members in accessing deep waters and increasing the fish harvest. BMU membership is generally 11-20 members and comprise youths,

Livelihood Zones of Turkana



⁷ For an evaluation of this initiative see NORAD (1985), Report on the Lake Turkana Fisheries Development Project. Evaluation Report No. 5.85

⁸ <https://www.turkana.go.ke/index.php/ministry-of-pastoral-economies-fisheries/departments-of-fisheries/>

women and men, boat owners, net menders, fishers, traders and transporters. This system has led to decreased household-level ownership of fishing equipment in 2021 compared to 2016, while shared ownership has increased. Members pay fees into the BMUs to access their equipment and services.

Goats and sheep are the main livestock types kept in the zone. They graze near homesteads and can be fed with wild foods (doum palm fruits) when pasture and browse are scarce.

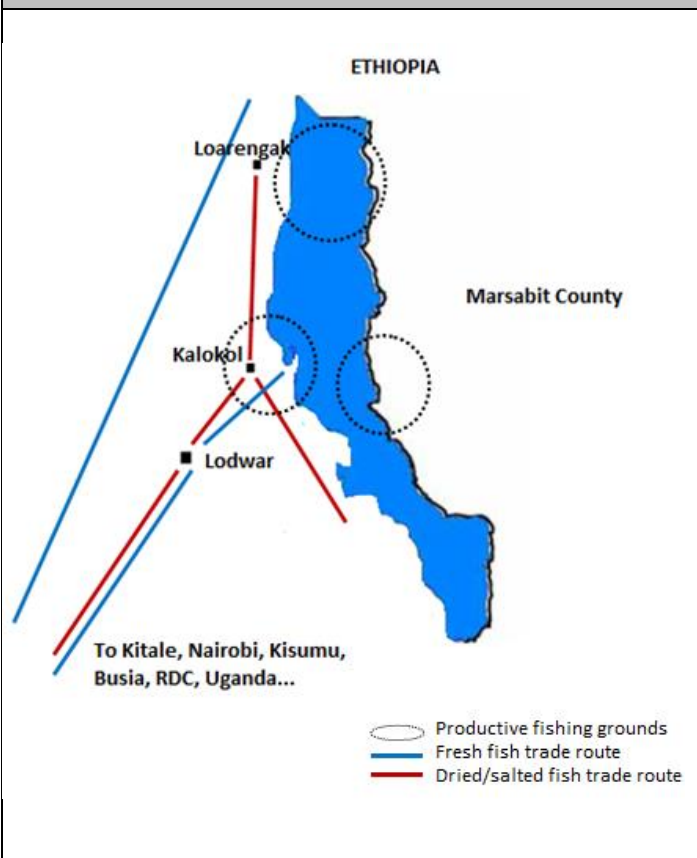
In terms of services, water for human consumption is generally collected from Lake Turkana. A few better off households reported purchasing water from vendors, but this was not common. Water for washing and laundry, and for livestock, also comes from the lake. There is no charge for water, but water quality is not always high. Sanitation facilities are not common, with most households from all wealth groups using the bush rather than latrines. Health care is obtained from local dispensaries. There is no electricity in the livelihood zone. Poorer households use torches with batteries or firewood for lighting. Better off households use torches, solar panels or D-lights. Firewood and charcoal are universally used for cooking. Most households have at least one mobile phone.

The typical age at which boys/men get married decreases from 25-30 years for very poor households to 18-22 for better off households. For girls/women, the typical age of marriage is 15 years across all wealth groups. A typical dowry ranges from about 25 goats/sheep for a very poor household to 3 camels plus 175-200 goats/sheep for a better off household. The cost of the ceremony also increases with wealth, from up to 40-60,000 KSh for the very poor to 250-300,000 KSh for the better off. Polygamy is common for some middle and most better off households.

Markets

Infrastructure in Turkana is poor. There is one single tarmac road in this livelihood zone, which links Kalokol to Lodwar, but it is in poor state of repair. It is currently under improvement by the county government to light bitumen status, but the rehabilitation process is slow since its commencement in 2019. Access to villages north and south of Kalokol is via sand and dirt tracks. During the (uncertain) rainy season the dry riverbeds can suddenly flood, blocking access for a number of hours. However, at the same time, these dirt tracks provide some sort of marketplace for firewood and charcoal. Sacks are placed along the sides of the tracks for trucks and passers-by to purchase.

Market flows for fish products



The market for fish is the economic heart of this livelihood zone. Differences in access to markets and to fishing grounds have resulted in a degree of specialization along the lake (see market flow diagram). Fish is sold fresh, dried, salted, fried and smoked; the choice of method of preservation depends mainly on the distance to the market. There are two important trade routes for fresh fish, one from the Ferguson Gulf and the other from Todonyang. Refrigerated lorries transport the fish to Nairobi. Salted, dried and smoked fish is sold outside of these two areas. Households with small quantities of catch sell to local traders, who package the fish into bales to sell in Kalokol. The trade route from Kalokol continues to Kitale and beyond, reaching as far as the DRC. There is an additional market for fried fish; however, the processing takes place outside the livelihood zone. Fresh fish from the lake is fried in Kalokol and Lodwar and sold outside Turkana.

The labor market in the zone is very limited. Very poor households rely on the sale of labor for cash,

but employment opportunities are very localized and restricted to a small number of services: collecting water and wood, collecting building materials (sand, gravel, boulders), construction and preparing and transporting fish. Local demand from wealthier households for firewood and charcoal and local building materials (*makuti* thatched roofs and poles), as well as demand from the small towns in the zone, provides an additional source of income for poor households.

With regard to access to food supplies, most households buy food from small, family-owned stores and kiosks in their villages. Important savings are enjoyed by better off households who can afford to buy cereals in bulk from bigger market towns in the zone (Kalokol and, to a lesser extent, Lowerengak) at the same time as they sell their fish. The trade route for staple cereals follows the Kitale-Lodwar-Kalokol axis; in fact, all goods sold in the zone are traded via Lodwar. As such, local food prices are dependent on fuel prices and transport costs.

Reference Year

The information presented in this profile refers to the period April 2019 to March 2020, a slightly above average year for food security by local standards in most of the villages visited. In interviews at community level, key informants were asked to rank the seasons over the last five years, with '1' indicating a poor season and '5' indicating an excellent season for household food security. The average ranking for both the rainy seasons in the reference year was in between 3 and 3.5.

Generally average rains were received in the county in this period, which led to good water availability from shallow wells, rivers, surface run-offs and traditional water pools. Good vegetation cover provided forage resources for livestock. Some flooding led to increased fishing

activities around the Ferguson Gulf and sale of fish increased. The month of March 2020 saw the first case of C19 confirmed in Turkana County, but restrictions and lockdowns did not take effect immediately and were not a characteristic of the reference year.

Seasonal Calendar

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Rainy seasons	long rains						short rains					
Dry seasons												
Fishing peak												
Livestock - goats/sheep												
conceptions												
births												
milk production												
Livestock migration - average year												
Livestock disease peak												
Livestock sales												
Other Income												
Firewood/charcoal sales peak												
Petty trade / brewing												
Wild food collection peak												
Stress & High Expenditure Periods												
High staple prices												
School fees												
Human diseases peak												
Lean season												

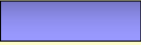

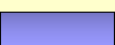

Rainfall in this livelihood zone, like in the rest of Turkana, is sparse and erratic. Ideally, rain starts between March and April and continues for two to three months. A shorter period of rain is expected in October to November. Precipitation is, to some extent, correlated with elevation, therefore rainfall decreases towards the east of Turkana district, where the lake is located.

There is no clear start to the consumption year (which commonly frames an HEA reference year), as fishing activities vary enormously across wealth groups, different areas of the lake and different years. Households with access to a boat can fish all year round. To coincide with the reference year selected for the neighbouring Turkana Central Pastoral Livelihood Zone and to avoid including the impact of Covid-19 lockdown on economic activities, the selected reference year spans from April 2019 to March 2020.

Food prices peak during the rainy seasons, which is also the time when fishing is sometimes more difficult.

Although possible throughout the year, the sale of firewood and charcoal peaks during the dry seasons. Wild food collection also peaks during this period. Handicrafts are sold throughout the year, but sales peak in the periods just before when school fees and other school expenses occur. Festivals are other expensive times of the year, with Christmas (December) and Tobongu Lore (August) the most important.

Wealth Breakdown

		Wealth Groups Characteristics				
		HH size	Number of wives	% FHH	Fishing equipment	Other livestock
Very poor		5-7 (6)	1	50-65%	0 rafts, 1 net, 0-1 lines, 2-6 hooks	0-5 goats, 0-4 sheep
Poor		6-8 (7)	1	50-60%	1 raft, 2-4 nets, 1-5 lines, 10-20 hooks	3-8 goats, 0-4 sheep
Middle		8-10 (9)	1-2	10-20%	1 boat, 1 raft, 5-10 nets, 20-25 lines, 75 -125 hooks	10-30 goats, 5-10 sheep
Better off		10-15 (12)	1-3	5-10%	1 boat, 1 raft, 35-60 lines, 200-300 hooks, 5-20 nets	10-50 goats, 5-15 sheep, 0-1 donkeys
0% 10% 20% 30% 40%						
% of households						

The most important productive assets in this livelihood zone are fishing equipment (boats, rafts, nets, hooks, lines). The quantity of all types of fishing equipment owned increases with wealth. Certain types of fish are caught with lines and hooks and households have the option of using nets or lines and hooks depending on the area of the lake in which they fish. Better off households tend to specialize in a variety of fish and fishing equipment. Lines and hooks are usually used to catch larger fish, including the prized Nile perch, while small nets are used for catching bait. Sub-surface gill nets are used to catch chubule, juse and tilapia. Thanks to having access to wooden or fibreglass boats, with or without motors, fishing is a constant source of income throughout the year for both middle and better off households. A raft is made up of 4 to 5 pieces of dry wooden palm poles joined together with rope.

Most households own the equipment that they use, but collective ownership through Beach Management Units is becoming more common. For those who hire equipment, the fee paid to hire a fishing raft is around KSh 100 per day. Hiring a wooden boat is about KSh 1500 per month and hiring a motorized boat is KSh 5000 per month or KSh 500 per day.

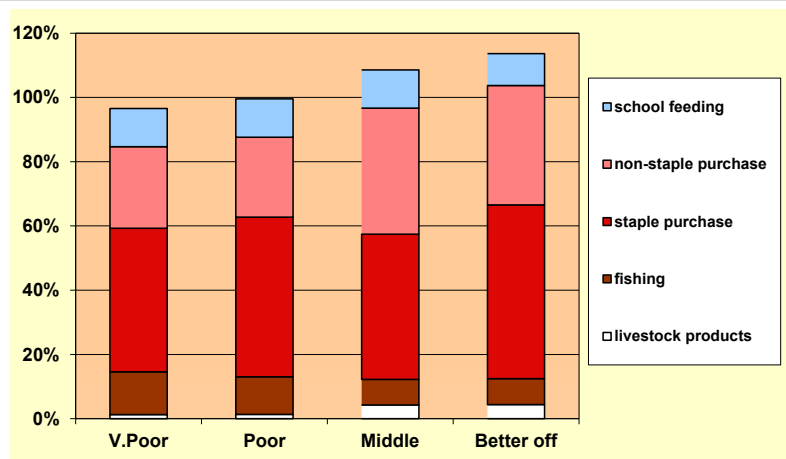
Livestock holdings are largely limited to small stock; mostly goats and a smaller number of sheep, which are kept near the homes. Cattle are not kept in this livelihood zone. Middle and better off households may own a few camels, but this is not very common.

HEA's basic unit of analysis is the household: family members who live together, pooling all income and resources to cover their needs and expenses. Only family members who permanently live in the household are considered in this analysis; married children who no longer live at home are not included in the household size, nor are those who are away at boarding school for most of the year. On the other hand, any relatives or laborers who live and eat with the family on a daily basis are included in the household size.

Typical household size increases with wealth. Although polygamy is practiced across wealth groups it is only typically middle and better off households who have more than one wife because they can afford the extra expenses of a bigger family. Middle and better off households also commonly host at least one young relative, a nephew or a niece or a younger sibling,

because of their capacity to support them. Most middle and better off households send at least one child to boarding school.

Sources of Food for the Reference Year (2019-2020)



The figure on the left presents the sources of food for households living in the Lake Turkana Fishing Livelihood Zone for the reference period of April 2019 to March 2020. Households in this zone purchase most of their food because their own production is limited to fish and a small amount of milk and meat. These food sources are supplemented by school feeding, which is food consumed by children at school. Other assistance was not common in the livelihood zone in the reference year.

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.

The types of food purchased include: maize (grain/flour), rice, wheat flour, pasta, beans, sugar, vegetable oil and meat. The variety of foods purchased increases with wealth, but most households did not purchase vegetables or fruit.

Compared with the previous baselines conducted in 2012 and 2016, food purchase remains the largest source of food for households in all wealth groups in this livelihood zone. The proportion of food obtained from livestock products is lower than in 2016 but higher than in 2012. Food aid was a food source in 2012, but not in 2016 or 2021.

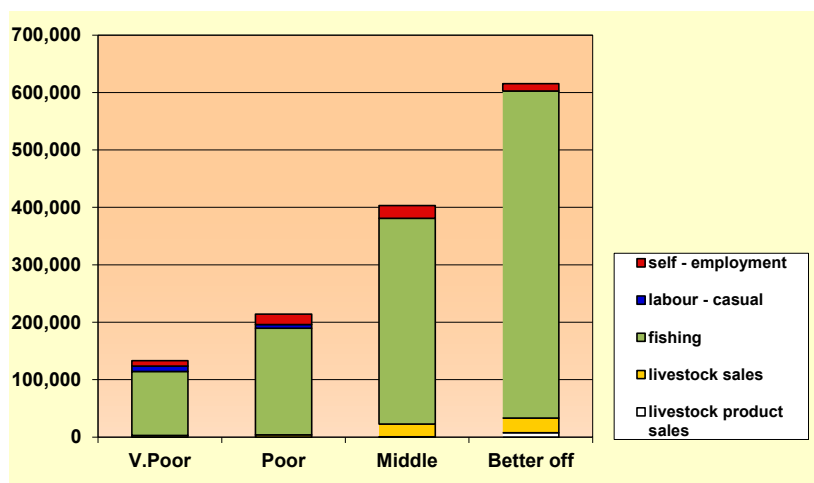
Sources of Cash for the Reference Year (2019-2020)

Fishing is the main economic activity in the zone. Having access to a raft has the potential to double the amount of catch compared to fishing from the shore; which can be doubled again if households have access to a boat. Fishing takes place every day if the weather is calm; high winds make it unsafe to paddle out to the lake. The poor sell most of their catch fresh as small quantities discourage processing and the price of fresh fish is higher. The preferred species is Tilapia, which is plentiful.

Market access determines how fish is sold. Fishermen from the northern villages, who have access to a larger number of nets and to a raft or a boat, dry or salt the fish which is not consumed at home. They gather dry fish into bales of 200kg which are sold in Kalokol or Loarengak. In general the fishing trade follows one of these four options: 1) fish is sold fresh at the village in small quantities; 2) fresh/dry fish is sold to the owner of the boat at an arranged priced; 3) dry fish is sold to traders in Kalokol and Loiyangalani (in Marsabit County); or 4) fresh fish is sold to traders in Longech which is then transported to Lodwar and further afield.

In certain areas, fishermen with boats may spend long periods of time away – from one week to a month depending on the season. They sell their catch fresh *in situ*, dry it and sell it back home, or sell it to traders with speed boats who travel out to meet them (see trade route map above). Popular fishing grounds include Todonyang, Apaluka (Ethiopia) and the Northern Island; and areas near Ileret and Loiyangalani in Marsabit County. As mentioned above, the fish market around the Ferguson Gulf has much higher volumes of trade. Refrigerated lorries collect fresh fish for transport to Nairobi. The high level of demand has changed the fishing dynamics in this area, leading to a marked labor division between fishermen, fish traders and laborers.

In addition to fishing, most very poor and poor households and some middle and better off households collect and sell bush products, which represent another important source of household income. Sales of firewood, charcoal and handicrafts (baskets, mats and thatched roofs handmade from doum palm leaves) are included in the graphic here as self-employment. All are female income-generating activities, carried out year-round. The market for such items is based on relatively local consumer demand from wealthier households (in times when cash is available) and from the small towns in and around the zone, especially for charcoal. The price of charcoal decreases with distance to end markets.



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

Annual income per HH (KSh)	100-160,000	170-270,000	300-500,000	500-750,000
Annual income per HH (KSh)	100-160,000	170-270,000	300-500,000	500-750,000

A small number of people are employed as laborers to fetch water, collect firewood or construct buildings for better off households.

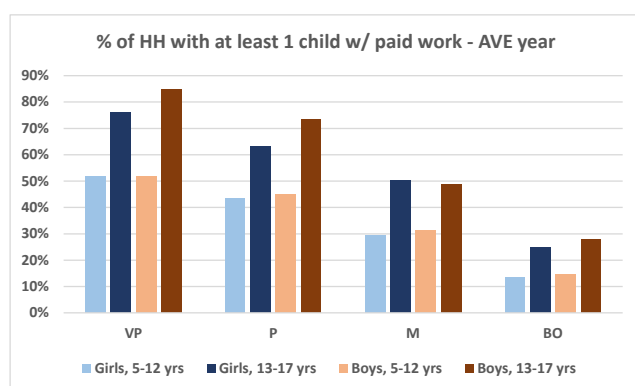
Livestock sales are minimal; households may sell one or two animals per year. Better off households can profit from higher sale prices as they have the ability to wait for favourable market opportunities and sell healthier, fatter animals (grade 1). Middle and better off households also sell small quantities of goat milk in some locations.

Compared with the previous baselines conducted in 2012 and 2016, household-level total cash income has roughly kept pace with inflation. However, the proportion of income obtained from fishing compared to other income sources has greatly increased across all wealth groups. Other income sources (self-employment, livestock and labor) were very minor in the 2019-20 reference year. This change is most marked for the very poor wealth group. In the baseline conducted in 2012, very poor households obtained 20-20% of their total cash income from fishing. In the baseline conducted in 2021, this increased to 80-90%.

Division of labor by gender

<i>Women and girls</i>	<i>Men and boys</i>
Cleaning fish	Fishing
Transporting fish to market	Net repairs
Fish preservation	Fish preservation
Milking livestock	Herding livestock
Milk sales	Livestock sales
Fencing	Construction labor
Building shelters	
Firewood collection and charcoal production	
Handicrafts, brewing, petty trade	
Collecting water and firewood for domestic use	
Cooking meals and feeding small children	
Washing clothes and utensils	

Children's income and child workers



Many households in this livelihood zone reported that at least one child in the household took on paid work in the reference year (see graph, left). On average, about 70% and 80% of the poor and very poor households respectively, had at least one older child in the home who had paid work. Differences between girls and boys were slight although overall, the number of households reporting that boys had paid work was a little higher than for girls.

Children's paid work	
VP/P	
Girls	Boys
fishing	fishing
fishing labour	fishing labour
fetch water	fetch water
nanny/babysitter	herding
sell firewood	loading/offloading
handicrafts	casual work
domestic work	
M/BO	
Girls	Boys
fishing	fishing
fishing labour	fishing labour
fetch water	fetch water
	herding

Children do a range of work depending on their age and sex. Both girls and boys earn cash from fishing, fishing labor, and fetching water for pay. Girls also sell firewood and make and sell handicrafts (mats or baskets) or get paid to babysit, clean, and do other domestic work. By contrast, boys take on loading/offloading jobs or do herding and other casual work. Children from middle and better off households undertake similar work in fishing as children from lower wealth groups although they are less likely to pick up casual work as a nanny or domestic or do loading jobs.

In the Lakeshore fishing zone, children that work on average get their first paid job around the age of 13 and 15 years old for very poor/poor and middle/better off households respectively. Children from poorer families typically work long hours: 8-12 hours per day 5-6 days per week during peak months (January-June and November-December). This compares to youth from the upper wealth groups who typically work 7 hours per day 3-4 days per week during peak months. Earnings differ too and

HOUSEHOLD ECONOMY ANALYSIS BASELINE FOR THREE LIVELIHOOD ZONES IN TURKANA COUNTY, KENYA, OCTOBER 2021

youth workers from middle/better off households earn 1.5-2 times as much as children from lower wealth groups. Earnings by the poor ranged from KSH 55-85/day for younger workers (5-12 years) and KSH 175-200/day for older workers (13-17 years). Girls' earnings were slightly higher than boys and average daily earnings across both age groups. For older youth, average daily earnings were KSH 188 and KSH 300 for very poor/poor and middle/better off youth respectively.

August, September, and October are the months when children's income earning opportunities are lowest. However, the difference is small and mainly affects older boys' daily income which in the reference year dropped from KSH 175/day to KSH 158/day between peak and low months respectively.

Reasons for working	
VP/P	
Girls	Boys
HH needs cash and food (poverty)	
Self-reliance / earn own cash	
Middle	
Girls	Boys
Self-reliance / earn own cash	
Save money	
repay debt	
HH needs income	
help pay for school expenses	
buy luxury goods (phone, motor bike)	

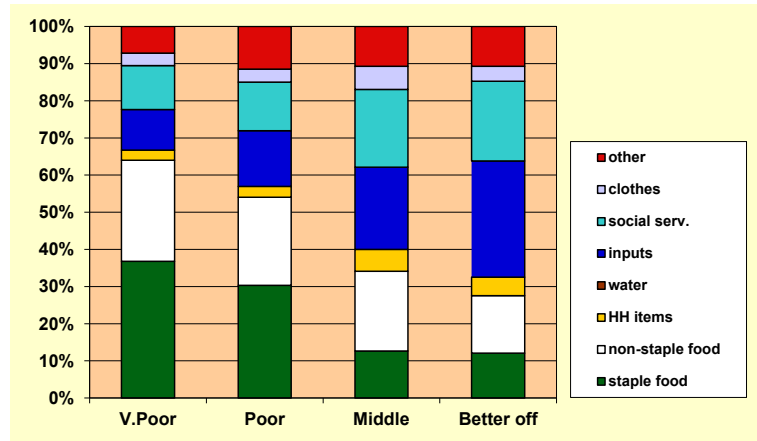
Hazards of paid work	
VP/P	
Girls	Boys
miss or drop out of school	
sexual harassment	theft of goods/income
abuse from mean boss	getting sick
getting sick	accidents
	sexual harassment
	stress
Middle	
Girls	Boys
not enough time to study	
theft of goods/income	miss/drop out of school
miss school	theft of goods/income
	taking alcohol
	stress

Most children from very poor and poor households take paid work to help their family pay for essential needs, especially food. Cash earned is usually given to their mother (girls) and father (boys) who decide how it will be spent. For some youth, especially those from middle/better off families, earning their own cash helps them become self-reliant. For the latter, paid work lets them save money toward the purchase of desired consumer goods, such as a mobile phone or motorbike.

Repaying debts and contributing money toward school are further reasons why children in this livelihood zone have paid work. These benefits of work are balanced against some of the hazards faced by children with jobs. Chief amongst these hazards is the effect of paid work on school attendance and school performance. Children from very poor and poor households with paid work may miss days at school or drop out of school altogether whereas children from middle/better off households spoke of not having enough time to study due to the demands of their work. Becoming sick due to work, or suffering an accident are other hazards as is the risk of having goods or cash stolen whilst on the job. For girls especially, sexual harassment and abuse are chief concerns. For boys, work stress (such as when fishing hooks are lost in the lake waters) may lead to taking alcohol and this was also identified as a hazard.

Expenditure Patterns for the Reference Year (2019-2020)

Food purchases were a large expense for all households in the reference year. Purchases of staple food (maize, beans, vegetable oil) represented the biggest expenditure category for very poor and poor households. Very poor households spent 60-70% of their total expenditure on food (staple and non-staple), while poor households spent 50-60%. Middle households spent 30-40% on food, while better off households spend about 25-30%.



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

Household items include tea, salt, soap, lighting (torches and batteries), cooking fuel, grinding and cooking utensils. Households did not commonly pay for water and most used lake water for drinking and all purposes. The inputs category is large and includes boat and net repairs and cleaning, new equipment, salt and BMU fees.

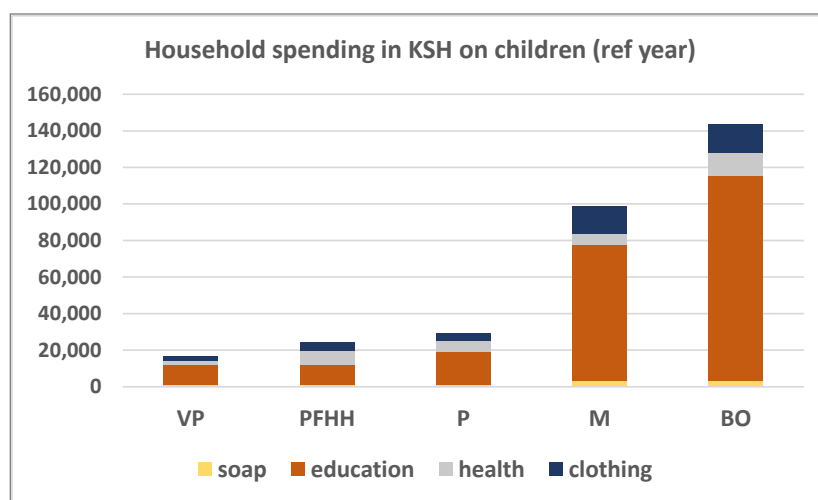
The owners of boats are responsible for the upkeep of the vessel, but if the boat was donated by an aid agency a committee is usually appointed to take care of it with contributions from the users. Additionally, a fishing license is required for all fishermen, paid to BMUs.

Households from all wealth groups send their children to primary schools. Secondary schools - scarce and distant - are necessarily boarding schools. It is mostly children from middle and better off households who go further in education. However, many children are taken out of school to help with fishing and other chores.

Medical expenses, also included under 'social services', comprise consultations and the cost of the prescribed medicines. Purchases of clothes and 'other' (including transport costs, phone credit, festivals, alcohol and tobacco) make up the remainder of the annual expenses.

Compared with the previous baselines conducted in 2012 and 2016, the proportion of expenditure on inputs, social services (education and health) and clothing has increased, while that spent on food has decreased. This pattern applies to all wealth groups.

Household expenditures and spending on children's basic needs



In the Turkana Lakeshore Fishing zone, better off households have more children but are also larger in size overall and thus the dependency ratio is similar to the poor. In general, from better off to poor, about 50-62% of household members are children under 18 years. The situation is different for poor female headed households who have a higher dependency ratio. Typically, in household of 6 people, 4-5 are children and only 1-2 household members are adults over 18 years. By contrast, in the other wealth groups, typically there are 3-5 working-age adults in the household.

	number of children/HH				
HH expenditures on children	3	4.5	4	5.5	7.5
	VP	PFHH	P	M	BO
soap	750	1,238	1,086	3,178	3,375
water	0	0	0	0	0
education	11,200	10,800	18,000	74,500	112,000
health	2,250	7,500	5,714	6,111	12,500
clothing	2,250	4,500	4,286	15,278	15,625

What effect does this have on spending on children's basic needs? Looking at per capita spending by wealth group then multiplying per capita spending by the number of children per household, allows us to compare differences in spending on children in the reference year.

The results of the analysis show that middle households spend more than 6 times as much on children's education and clothing and almost 3 times as much on health care for children compared to the very poor (see graph above). What is particularly striking is the level of education expenditure. Spending on children's schooling by middle and better off households was roughly 400-600% of the spending level by poor households. Middle and better off households typically send 2 additional children to primary school compared to the lower wealth groups. However, differences in spending can largely be traced to secondary school costs paid by middle and better off households. Unlike poor households, upper wealth groups typically send 2 children to secondary school (1 girl and 1 boy) and this leads to much higher school costs. Other differences in spending on children, such as on health care or clothing, are not as pronounced but are higher, reflecting ability of the upper wealth groups to pay for more (and better quality) essential goods and services despite having a similar dependency ratio to the poor.

Female-Headed Households

Female-headed households are found in each of the wealth groups, as shown in the wealth breakdown table above. During field work, in-depth interviews were conducted with female-headed households from the poor wealth group. This is a group that faces similar constraints and characteristics as male-headed households in the same wealth group, but may be further

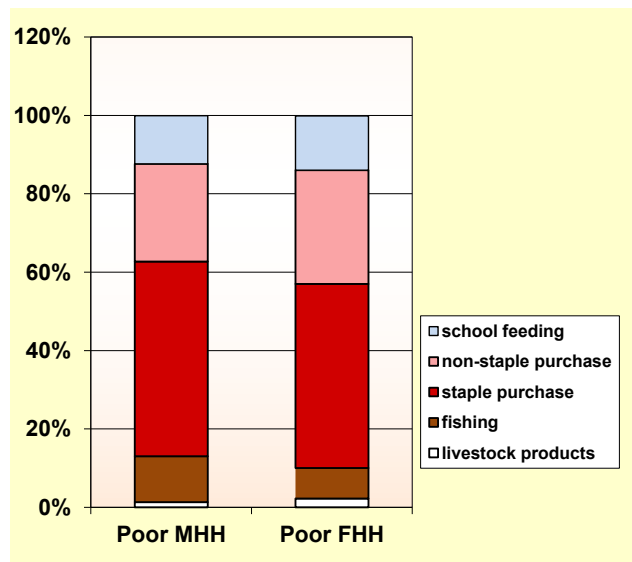
disadvantaged by a lack of productive intra-household labor and, potentially, constraints on certain types of asset ownership, productive work, or income generating activities.

The graph below on the left illustrates that poor female-headed households and poor male-headed households share a very similar pattern of food access. Most food for this wealth group is purchased, with small contributions from fishing, own livestock products (milk/meat) and school feeding. The contribution from fishing to own food is slightly higher for male-headed households, most probably for reasons explained below. Total food needs met are about 100% (of 2100 kcals per person per day) for both groups.

Cash income shows a slightly different pattern between male- and female-headed households in the poor wealth group. Poor female-headed households obtain less income from fishing. They make up for this with more income from self-employment. Their absolute cash income levels are 25-30% lower than male-headed households in the same wealth group at a household level, and about 10-20% lower per person (with female-headed households having a slightly smaller household size of 6 members rather than 7 members).

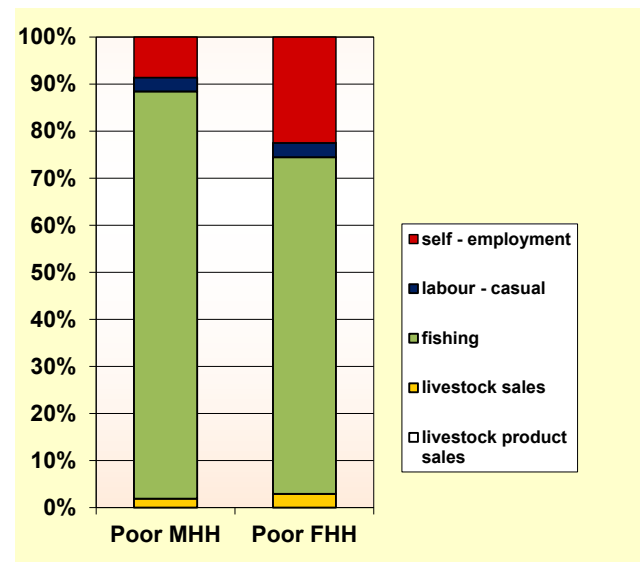
Fishing is a substantial income source for female-headed households even though women do not generally fish themselves because it is believed that the lake is not safe for women. They use male labor from the immediate family or the extended family (i.e. sons or other young adult males). In this case, the fishing equipment, nets, hooks, lines and raft are owned by the female head, but the young adult male provides that necessary labor force to access the deep areas of the lake. When this labor is not available, then the female family head hires someone to do the job. Once the catch reaches the landing site, women are involved in processing the fish before selling it to local traders.

Sources of food: poor female headed households vs poor male-headed households



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.

Sources of cash: poor female headed households vs poor male-headed households



The graph provides a breakdown of total annual cash income according to income source

Hazards

The three most common hazards which affect livelihoods in this livelihood zone every year are:

Rough weather conditions – especially high-speed winds. Adverse weather conditions make it dangerous to paddle out to the lake. Fishermen are discouraged from venturing out when the lake is rough, as the threat of boats capsizing is high.

Changes in the volume of water in the lake. Sustainable fishing is dependent on a healthy inflow of water into the lake. The management of the flow from the river Omo, upstream in Ethiopia, has a heavy impact on the lake's water levels. When the level is too low, the temperature of the water increases, changing the location of the fish. The impact of the construction of the Gibe III dam on the river Omo will no doubt have an effect on fishing stocks in Lake Turkana; however the extent of the impact continues to be a contested issue.

Irregular rainfall. While variations in rainfall do not have the same heavy impact on livelihoods in this zone as in the neighbouring pastoral or agro-pastoral zones, the effects of delays in rainfall can be a problem. Most importantly they affect the amount of local pasture available for livestock. Changes in precipitation levels outside the zone also have an effect on the flow of water into the lake. High rainfall and flooding have a positive impact on fish breeding.

Hazards which affect the zone occasionally, but which are not considered chronic hazards include:

Outbreaks of cholera. Water and sanitation infrastructure is poor and outbreaks of cholera can soon become epidemics. Some villages have reported recent cholera outbreaks in 2017, 2018 and 2019.

Livestock diseases which affect goats and sheep. The biggest threat is the *peste des petits ruminants* (PPR), also known as goat plague. This viral disease is highly contagious. Destocking programs have been operational in the zone for a number of years to reduce the impact of this hazard.

Localized conflict. Occasionally, outbursts of conflict occur over access to fishing grounds. Tensions exist between the Turkana and the Merille of Ethiopia (Dassanech tribe) and between the Turkana who live or trade in Marsabit County and the local Gabra and Borana people. Such conflict results in the loss of fishing equipment and sometimes in the loss of lives.

Response Strategies

The diversification of livelihoods away from the traditional pastoral way of life towards settled life along the lake shores and a livelihood based on fishing is evidence of a long term coping strategy employed by the Turkana people. However, substantial diversification of income and food sources along the lake has not yet been achieved and livelihoods remain at the mercy of fluctuations in fish reserves. The choice of alternative income generating activities is limited and most economic activities rely on the availability of bush products (firewood, charcoal, palm leaves), increasing the pressure on the local natural resources.

The following are the most common coping strategies employed by households to counteract income losses during poor fishing seasons.

Migration to better fishing grounds. Fishermen are constantly searching for the best fishing grounds and many migrate on a seasonal basis even in good years. This is accentuated during poor seasons. However, only those fishermen who have access to a boat are able to move to better fishing grounds when local stocks are low.

Increased bush product sales. Most households sell firewood, charcoal and handicrafts made of doum palm leaves; it is a common income generating activity throughout the year. In bad years, however, more households will engage in these activities to cover household expenses. The pressure on natural resources can soon become unsustainable, making this practice environmentally destructive.

Switching of expenditure. Households reduce the purchase of relatively expensive non-staple food (pasta, rice, meat) and non-food items in order to purchase more staple food in bad years. Expenditure on clothing, transport, beer and tobacco and celebrations are all reduced when cash is low. Nevertheless, purchases of twines for repairing nets and, if possible, new fishing gear are maintained.

Increased bush product consumption. The variety of wild foods along the lake side is limited, but they are a source of food in bad times. Doum palm fruits (locally called *engol*) are consumed fresh or pounded into flour when dried.

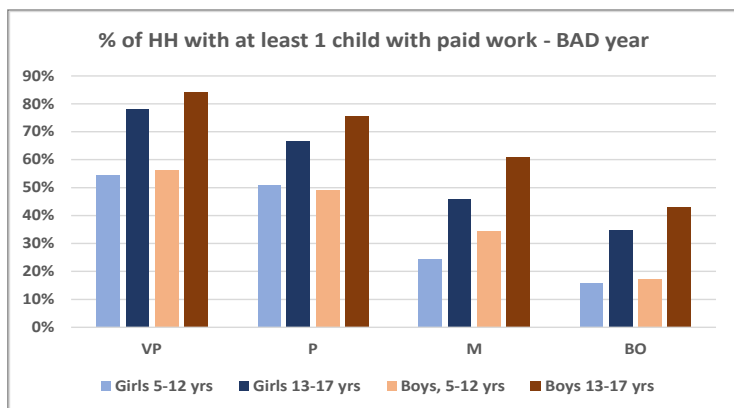
Migration outside of the zone. In bad years, young men and adults may migrate in search of employment opportunities. Destinations include Kakuma, Lodwar and Kitale where they are in search of casual and salaried employment in security, construction and transport.

Coping – effect of bad years on children

Bad years mean less household income, and this affects children's basic needs. In very poor and poor households, the primary impact is a lack of food and having to miss entire meals especially during the lean months. The second main impact of bad years is having to leave school either to find work or because school expenses become unaffordable. For children, there is also less money to buy clothes and other personal care items. In middle and better off households, the main impact of bad years on children is having less food to eat at each meal and less diversity of food.

Bad years also affect children's work. In a bad year, the number of middle and better off households reporting that at least 1 child had paid work increased significantly compared to the reference year, particularly for boys in the 13-17 years age group. The proportion of households with older boys working was 15-20% higher in a bad year compared to an average year. Thus, even for the upper wealth groups, income stress in a bad year leads to more youth looking for paid work to help their families cope.

In a bad year, the type of work taken on by children is not very different compared to an average year. Fishing, fetching water, cleaning and domestic work, selling firewood and handicrafts, loading/offloading supplies, construction, and casual work are all typical jobs undertaken by children in good years and bad. However, in a bad year, boys as well as girls sell firewood, and older girls brew alcohol for sale.



Bad year impacts on BASIC NEEDS	
VP/P	
Girls	Boys
miss meals	
drop out of school	
can't afford clothes	
Middle	
Girls	Boys
less food per meal	
less food diversity at each meal	

Bad years affect children’s working conditions too. Chief amongst these impacts is dropping out of school to work more hours or to take on additional work. This impact increases in moderate and severe bad years. Intensifying the hours/days of work and/or taking on riskier work (including begging) are also ways to cope with a bad year. Migrating away to find work is a strategy mainly identified by children from middle/better off households. Finally, in a bad year, adults noted that child workers suffer from more illness due to hunger and longer work hours, all of which makes them more susceptible to disease.

Bad year WORK strategies (children's responses)	
VP/P	
Girls	Boys
work more hours	work more hours
drop out of school	beg
take riskier work	drop out of school
beg	take riskier jobs
Middle	
Girls	Boys
migrate away for work	migrate away for work
work more hours	do two+ jobs
live/work with another family	
	work more hours
	take riskier jobs

Bad year impacts on children's work			
	Mild/ lean season	Moderate bad year	Severe bad year
migrate away	17%	8%	8%
health deterioration	25%	17%	15%
work more hours/months/jobs	25%	17%	31%
drop out of school	25%	58%	46%
take on additional and/or riskier work	8%		
<i>total</i>	100%	100%	100%

% of the responses to the question - adult key informants

Development Priorities

The longer-term development priorities suggested below were highlighted by the community leader and wealth group interviewees themselves. All of these suggestions require further detailed feasibility studies.

Support to fishing: Various suggestions were made that fall under this category: provision of modern fishing gear (nets, boats, engines); improved fish processing; and better access to fish markets. The Turkana County Fisheries Department suggests that fishing has not nearly reached the lake’s maximum sustainable yield.

Road infrastructure: The poor road infrastructure within the livelihood zone and between the zone and other parts of Turkana County and Kenya affects households in all wealth groups and

fishermen of all types and sizes. It reduces the prices of products that are exported out of the zone and increases the prices of items that are imported into the zone.

Livestock production: Restocking of goats and camels is a priority, as is better access to livestock markets and veterinary services.

Water and sanitation: Clean water, more boreholes, desilting shallow wells and improved sanitation were all mentioned as development priorities.

Access to business loans: Organizations could increase access to capital for households or groups that wish to start a business or upgrade their fishing equipment.

Health and education: Improved health facilities and provision of school fee bursaries for needy students were mentioned by key informants.

Handicrafts marketing: Improved market access for handicrafts was requested.

Conflict resolution: Fishing is made difficult and dangerous by continued conflict between Daasanach and Turkana fishermen in competition over fertile fishing grounds. Conflict resolution and peace efforts should be initiated to allow for communal use of the lake.

4.0 IMPLICATIONS FOR PROGRAMMING

The final section of each livelihood zone profile outlines ideas for longer-term programming that were generated by the community leader and wealth group interviewees themselves. These suggestions can be divided into interventions related to production (livestock, crops and/or fishing), to markets and to diversifying livelihoods. Since livestock remain the backbone of the economy of the county, and one of the few economically viable ways to exploit semi-arid lands, it is essential to continue and improve the support to this sector. Although it may no longer be possible for the entire human population to derive their livelihoods from pastoralism, it remains an important and viable option for a large portion of the population. At the same time, since large numbers of households have inadequate herd sizes to sustain their livelihoods and since the livestock population growth rate cannot keep up with the current human population growth rate, it is important that practical and sustainable alternatives are found, whether in irrigated agriculture, fishing or alternative sectors.

The suggestions below are not exhaustive and are not based on feasibility studies, but are offered by the field teams as ideas for further discussion and exploration.

Livestock interventions: Livestock constitute the mainstay of local livelihoods and provide the main source of income (food and cash taken together) for at least part of the population in the Central and Border Pastoral Livelihood Zones. It is important to continue and to improve support to this sector, especially in relation to *veterinary drugs and services* to address the chronic problem of livestock disease. *Water* is another vital sector to support. Hand-dug wells provide the main source of water for both the livestock and human population for much of the year in the pastoral livelihood zones; these do not provide a reliable source of supply and a number of areas in the livelihood zone suffer chronic problems of water shortage.

Agricultural production: Opportunities exist to extend and improve irrigated crop production in the Kerio and Turkwel Riverine Agro-Pastoral Livelihood Zones. The **irrigation schemes** are periodically flooded and get full of silt. Communities request further assistance to expand and improve the irrigation schemes, perhaps through shallow wells or boreholes in addition to river

water and with the support of generators and pumps. There are ways to improve the **utilisation of water** and an investigation into the cost-benefits of providing access to affordable drip irrigation should be encouraged. **Fencing** to protect fields from livestock was also mentioned as a priority. In terms of crop production itself, there were several requests for assistance with **pest control, seed selection techniques**, and training in **crop husbandry**.

Support to fishing: Various suggestions were made that fall under this category: improved knowledge on fishing methods and preservation; political intervention regarding the Omo River Dam; provision of modern fishing gear (nets, boats, engines); improved local fish preservation and fish processing; fishing insurance schemes; and better access to fish markets.

Roads, market infrastructure and general market function: Several livelihood zones have poor access to markets. There is very little market infrastructure and few regular markets. Farmers want to sell crops, but lack markets to do so. Relatively few traders are active in the rural areas, and competition between traders is therefore limited outside of the main towns. Taken together, all these factors combine to reduce the prices that pastoralists or farmers receive for the items they sell (livestock, crops, mats, baskets, charcoal etc) and increase the prices of items they buy (both food and non-food items). Although some steps have been taken in this regard, additional investment is required to **improve roads, market infrastructure** and **market function** generally. This will not be easy to achieve and is likely to be relatively expensive in view of the sparse population and long distances between settlements in the county.

Access to credit: There is interest in increased access to credit across all wealth groups and livelihood zones. Organizations could increase access to capital for households or groups that wish to start a business or upgrade their existing activities.


Health, water, sanitation and education: Improved health facilities, an improved water distribution network with more boreholes, improved sanitation, access to bursaries and improved schools were mentioned as priorities across all wealth groups.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The baselines presented in this report represent the starting point for Household Economy Analysis to be used in the USAID Nawiri activity. The implications for programming in the previous section relate to improved production (for crops, livestock and fishing, depending on livelihood zone), to markets (infrastructure and access), and to diversifying livelihoods (to increase income levels and improve resilience to hazards).

HEA was originally designed as a tool for early warning. Seasonal information on rainfall, crops and prices, which tends to be routinely collected by government systems, along with information on livestock and labor and self-employment opportunities, are used in conjunction with baseline data to indicate which wealth groups within a population are likely to face a deficit of how much and when. Combined with population data, the analysis allows for an estimate of the number of people that will need assistance to protect livelihoods and/or prevent extreme hunger, and the total food or cash equivalent required and of the months when it will be needed.

The HEA baselines presented in this report also offer a good starting point for measuring economic resilience as they provide a quantified summary of livelihood options disaggregated by-livelihood zone and wealth group. HEA outcome analysis measures resilience by assessing how total income after a typical hazard compares to the cost of maintaining the household's

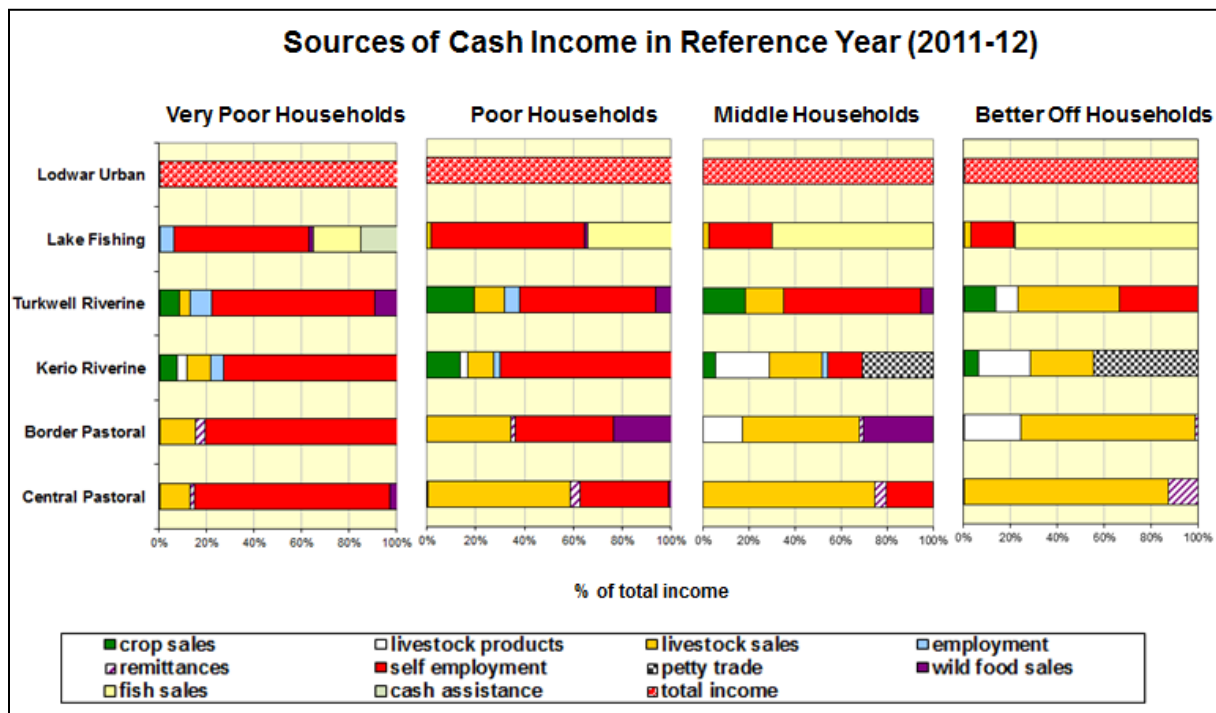
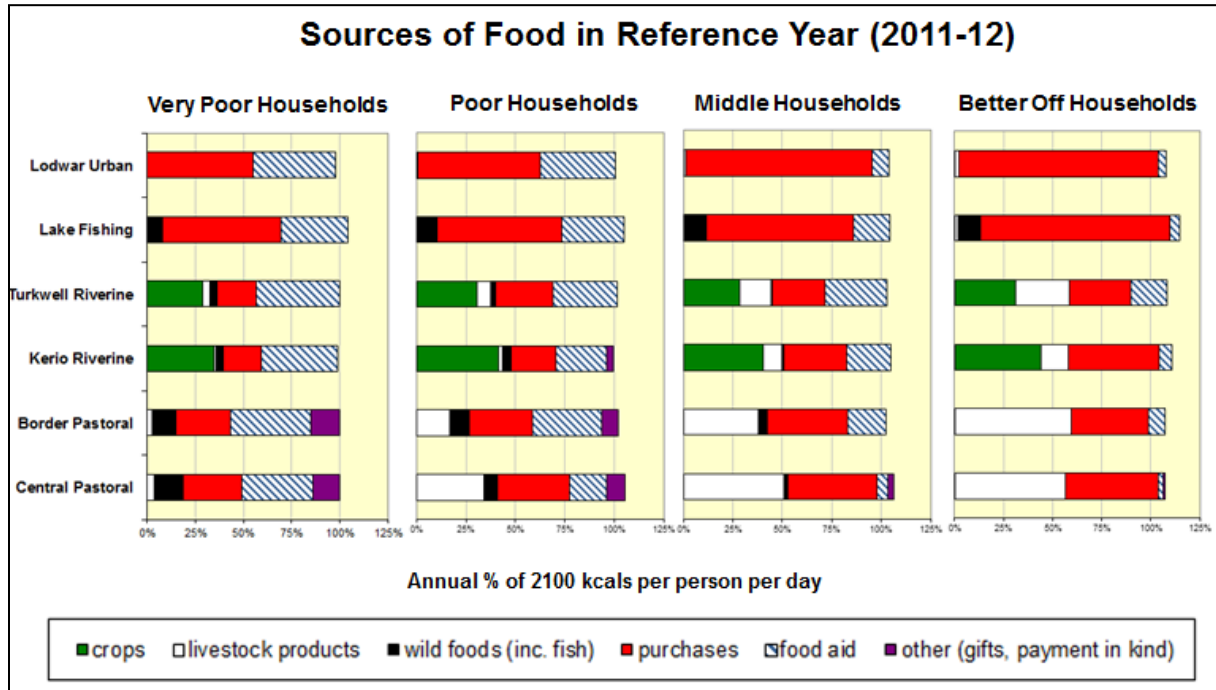


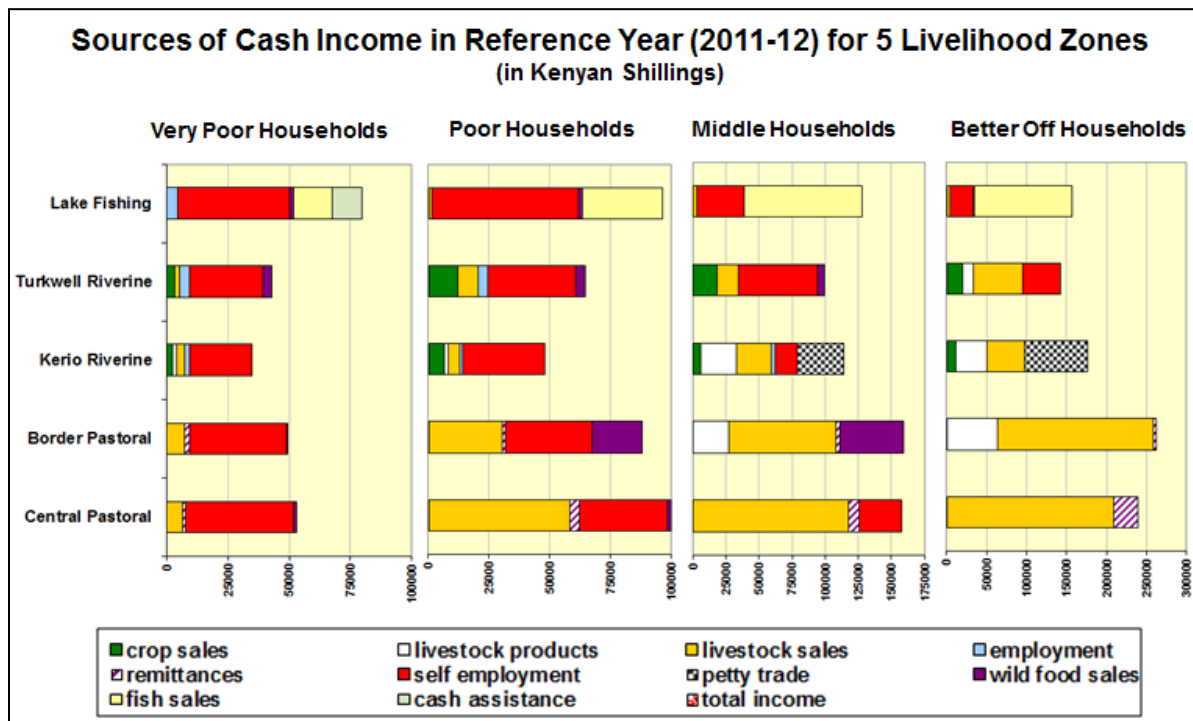
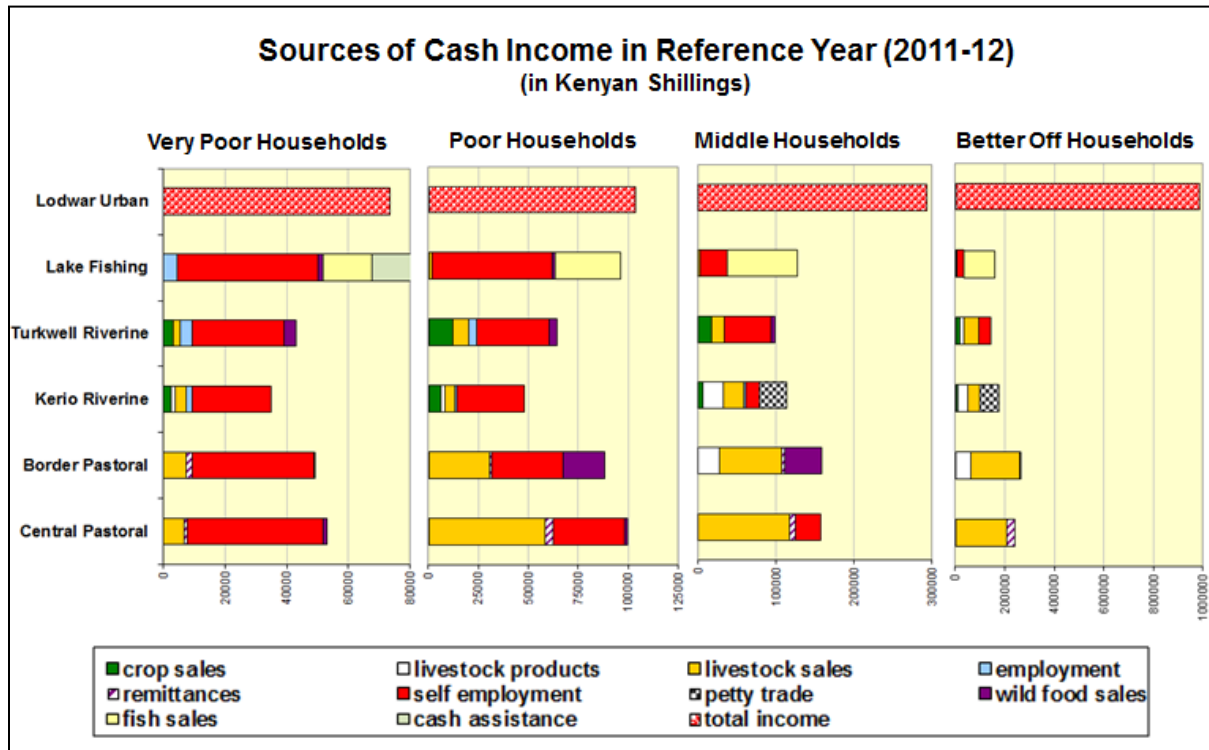
livelihood – this provides us with a “household livelihood resilience score”. It analyses whether program interventions are likely to increase or decrease household resilience by modelling the impact of a typical hazard and incorporating data on program-generated income, program costs and opportunity costs.

The HEA baselines should be seen as a starting point for future analyses. A plan will be developed by program staff to use the HEA baselines described in this report for HEA outcome analysis to 1) assess food insecurity in future seasons, 2) conduct resilience analysis of potential nutrition-sensitive livelihood opportunities for program design.

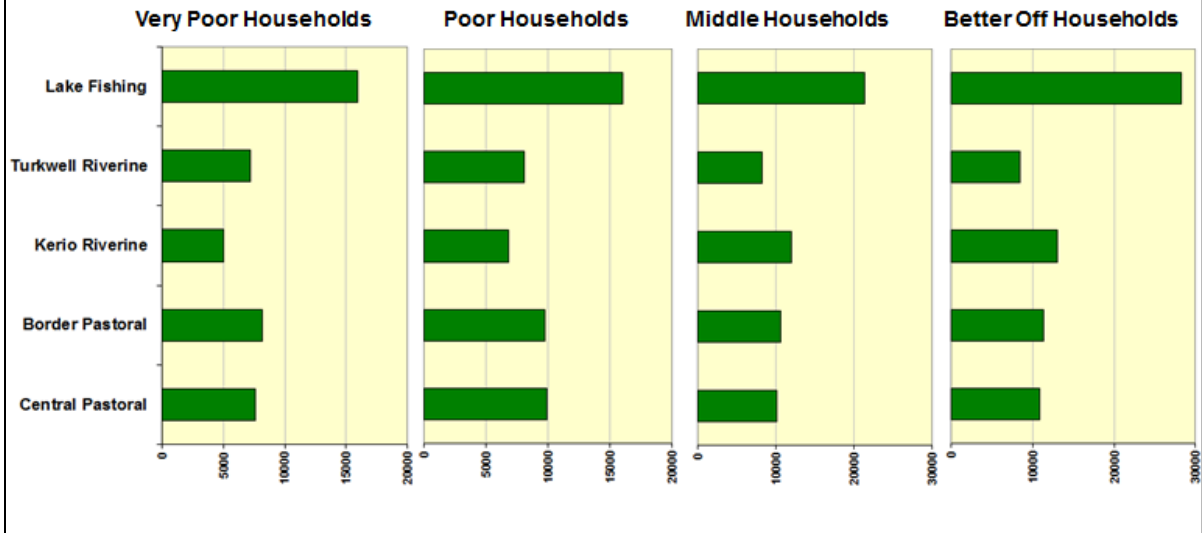
Annex 1: Graphs from 2011-12

The following graphs are from the 2012 HEA baseline report and are included here to facilitate comparisons with the graphs above for the 2019-20 reference year.

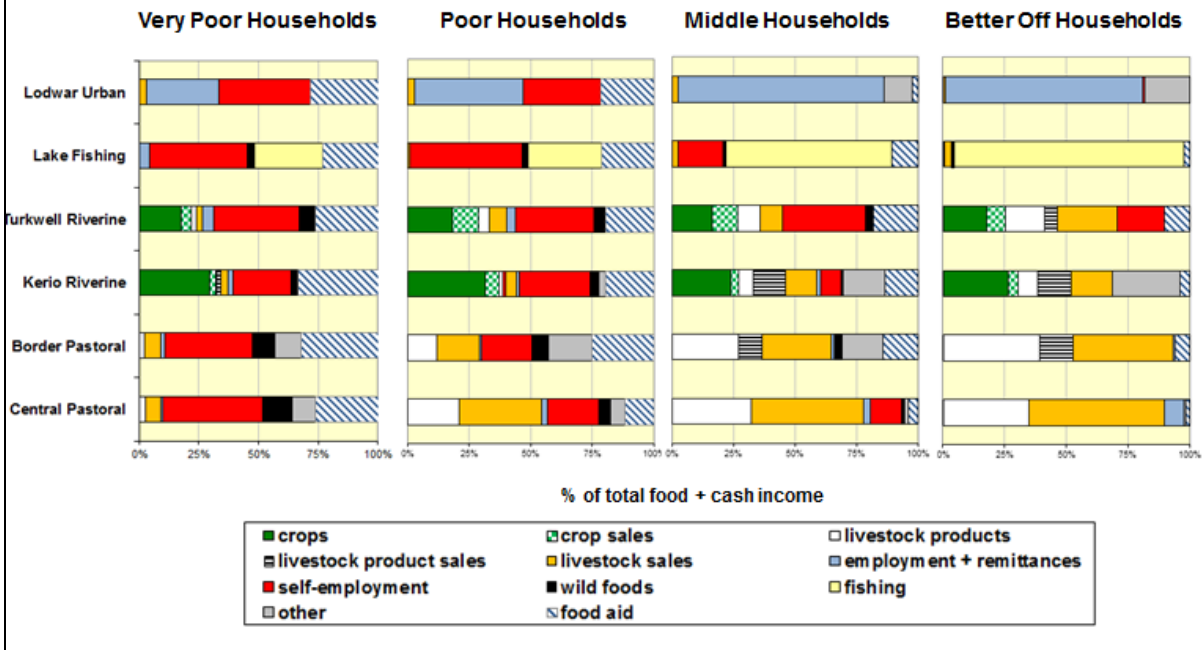




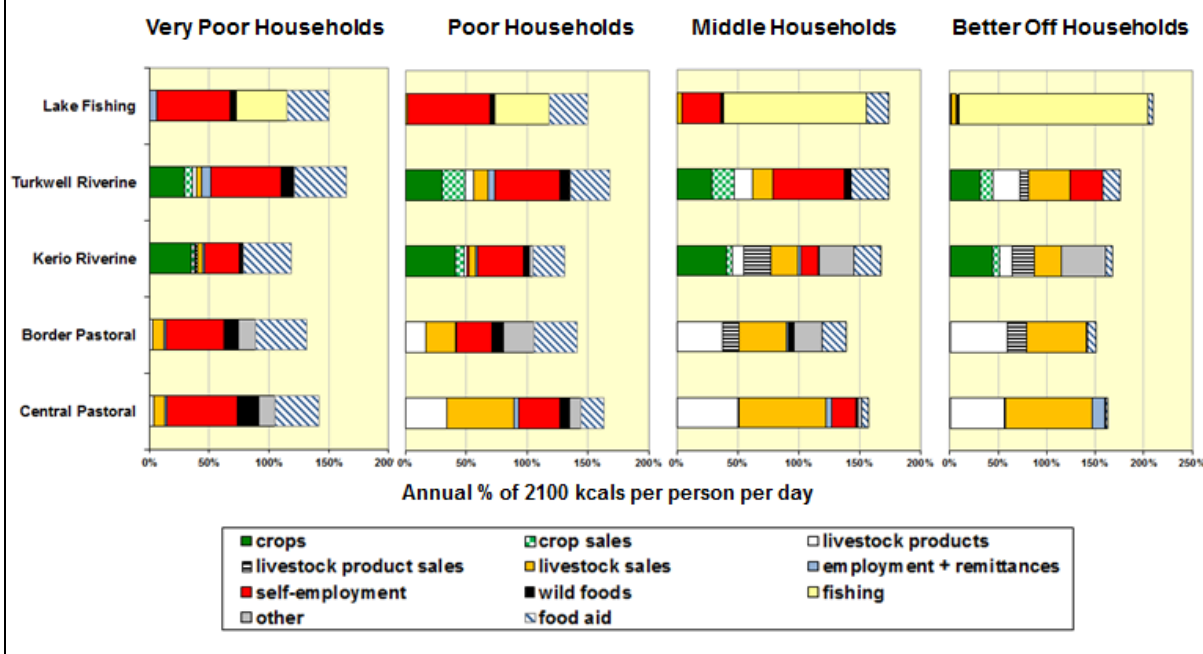
Cash Income Levels Per Person in Reference Year (2011-12) for 5 Livelihood Zones (in Kenyan Shillings)



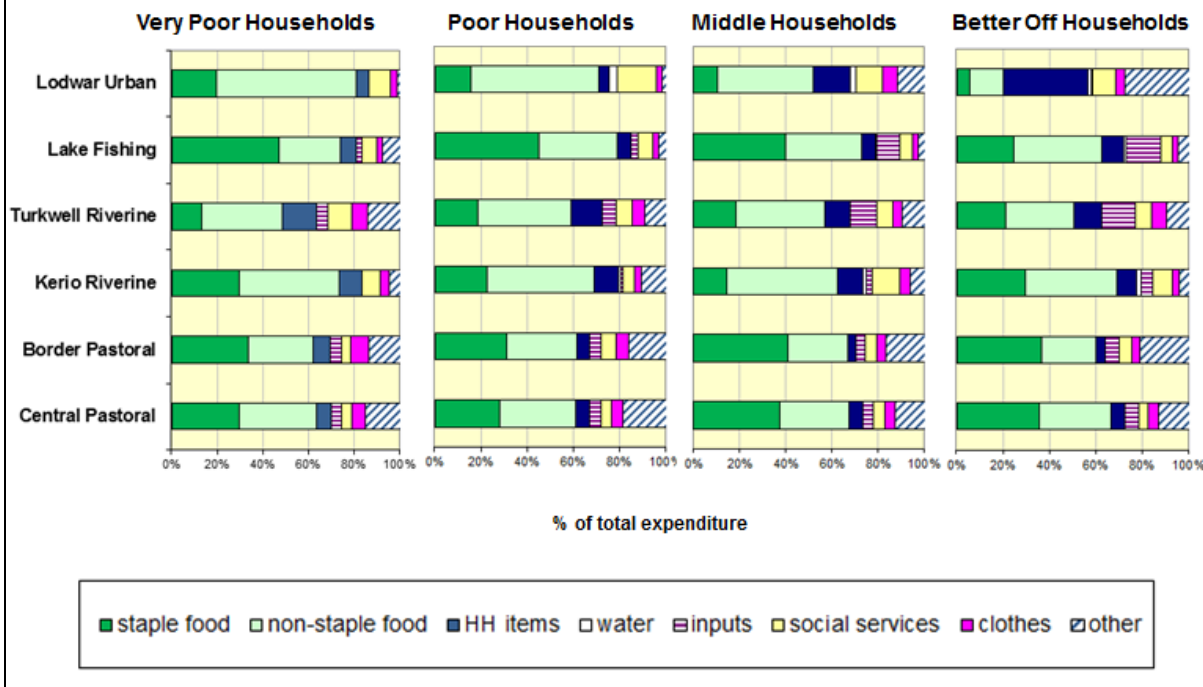
Total Income (Food + Cash) Per Person in Reference Year (2011-12)



Total Income (Food + Cash) Per Person in Reference Year for 5 Livelihood Zones

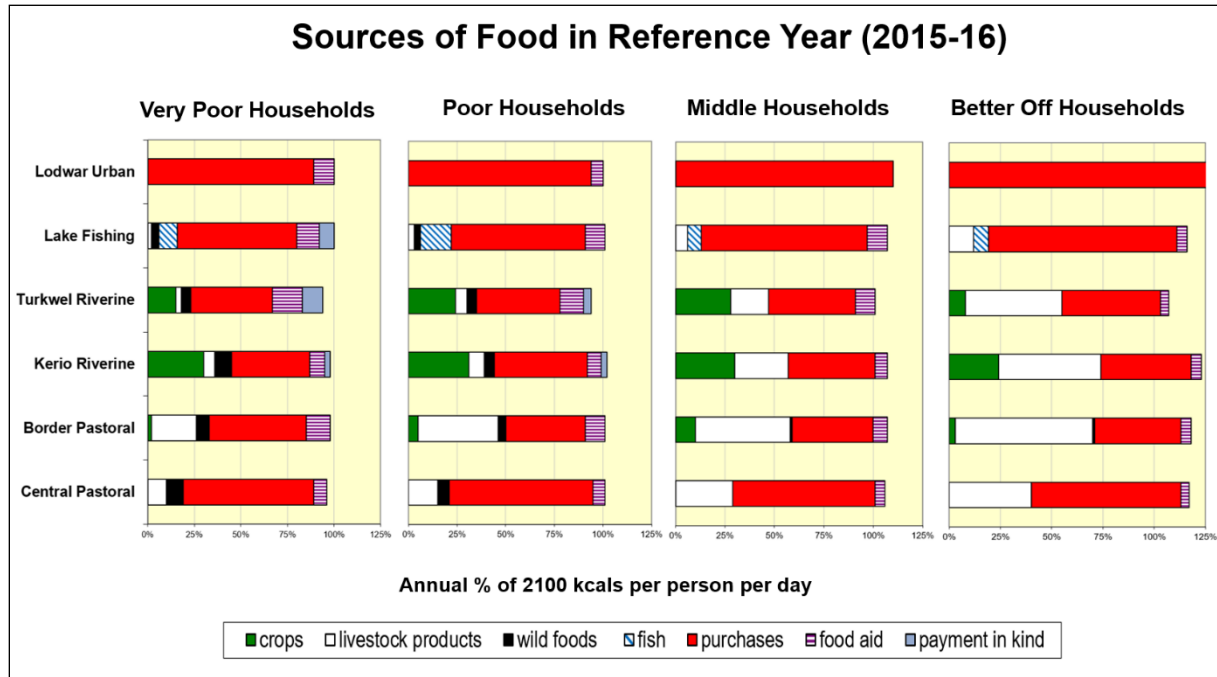


Expenditure Patterns in Reference Year (2011-12)



Annex 2: Graphs from 2015-16

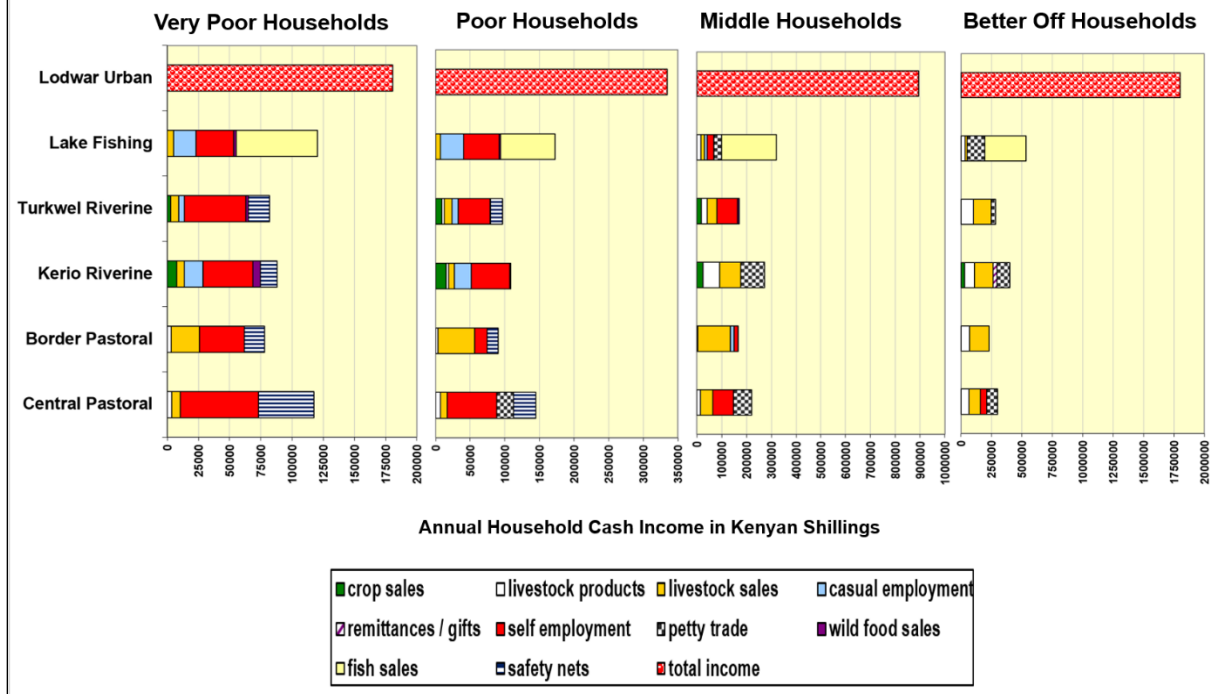
The following graphs are from the 2016 HEA baseline report and are included here to facilitate comparisons with the graphs above for the 2019-20 reference year.



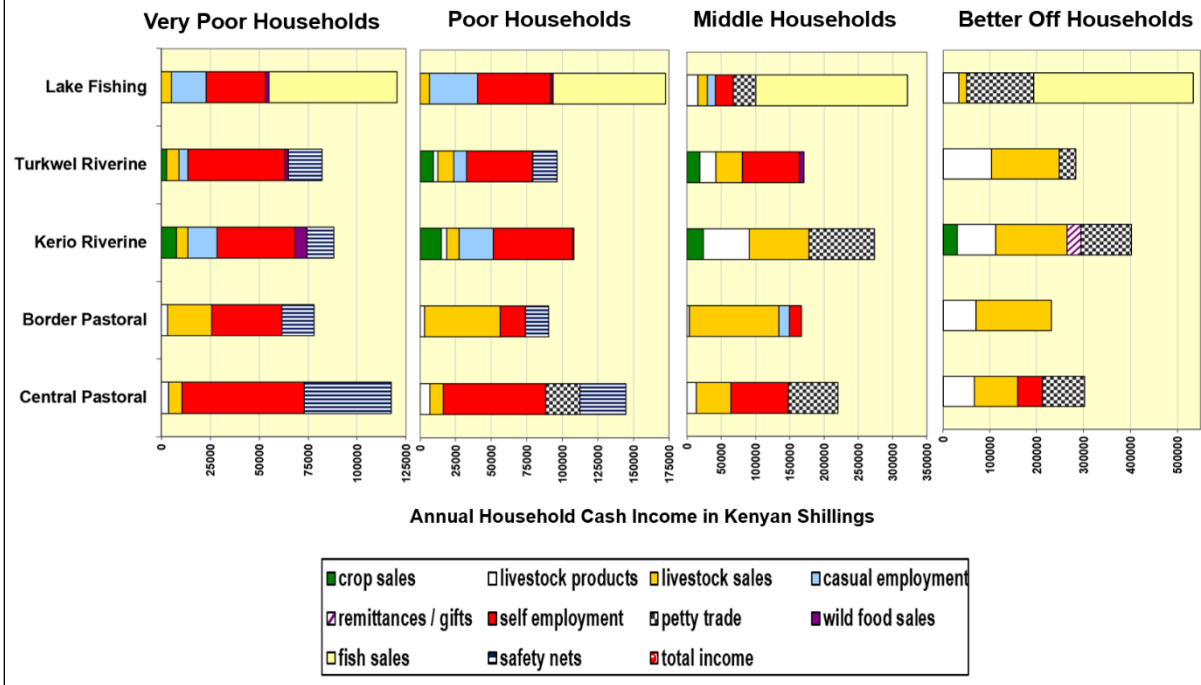
Sources of Cash Income in Reference Year (2015-16)



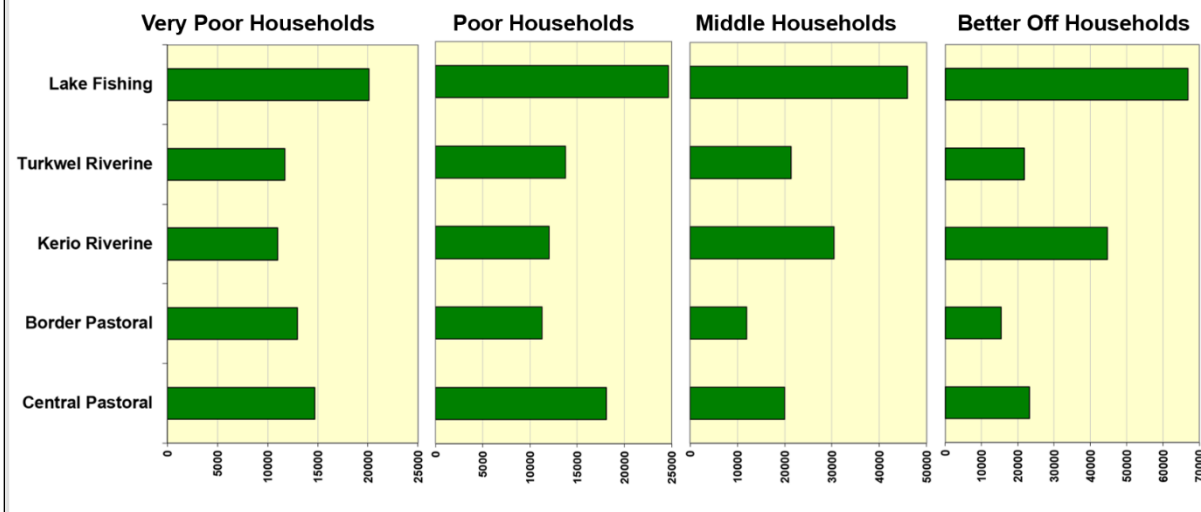
Sources of Cash Income in Reference Year (2015-16)



Sources of Cash Income in Reference Year (2015-16) for 5 Livelihood Zones



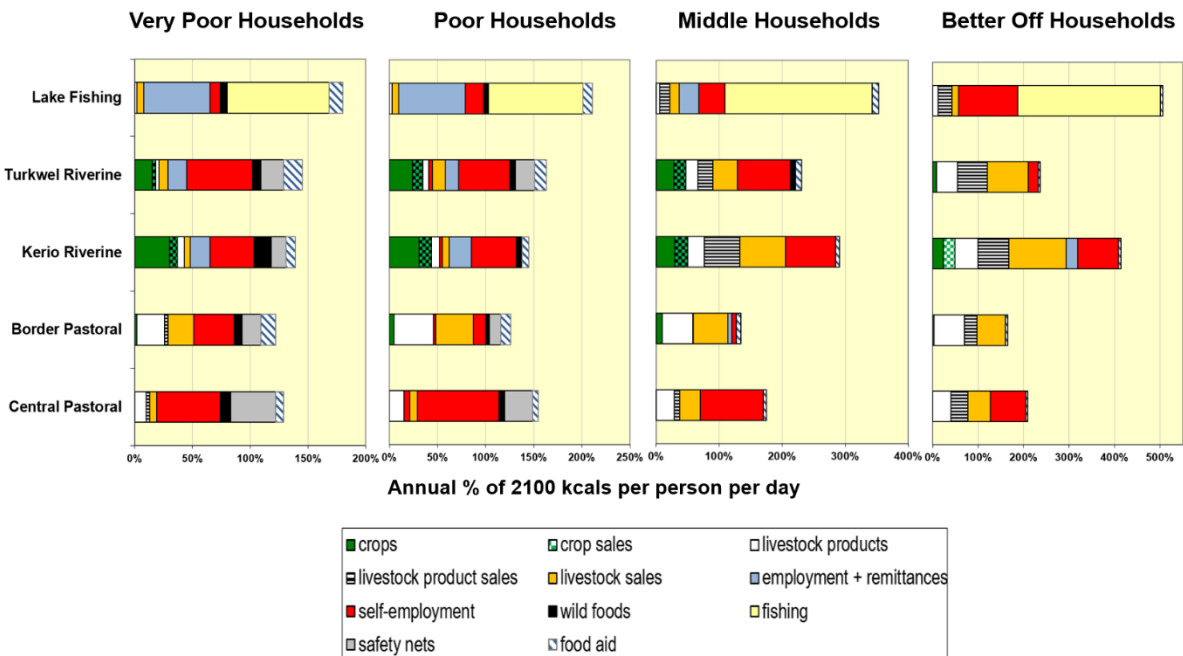
Cash Income Levels Per Person in Reference Year (2015-16) for 5 Livelihood Zones (in Kenyan Shillings)



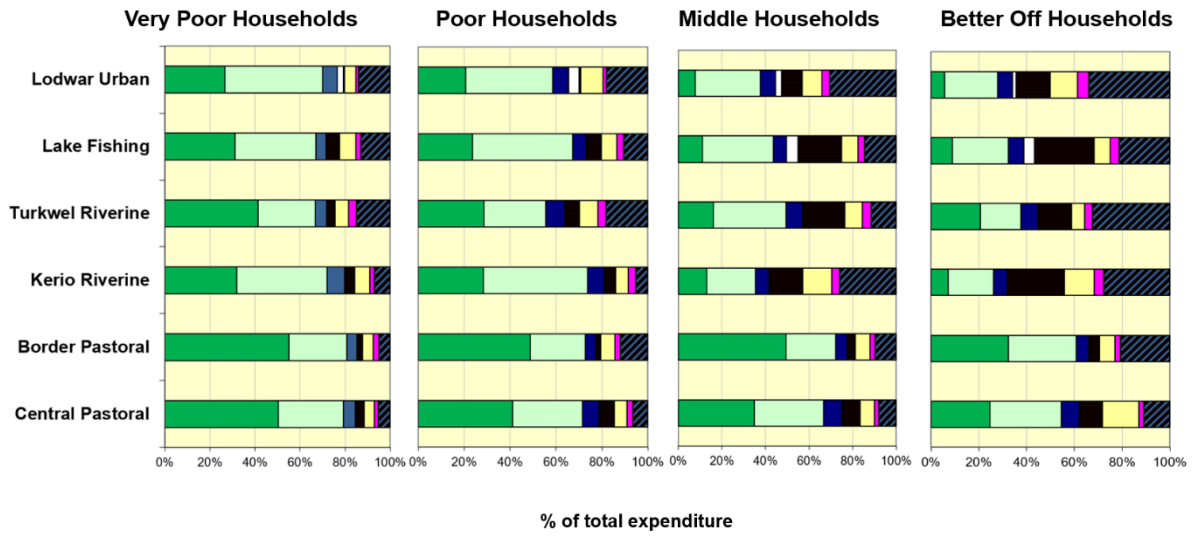
Total Income (Food + Cash) Per Person in Reference Year (2015-16)



Total Income (Food + Cash) Per Person in 2015-16 for 5 Livelihood Zones



Expenditure Patterns in Reference Year (2015-16)



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