BASELINE ASSESSEMENT AND IHM TRAINING FOR NASIO TRUST STAFF, MUMIAS WEST SUB COUNTY, KAKAMEGA COUNTY, KENYA

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Acknowledgements

Evidence for Development would like to thank the staff of Nasio Trust and partners who took time out of their regular project activities participate in this training and baseline study; the community of Buchirinya B village who gave their time to participate in focus group and individual household interviews and the logistics team who provided transport and catering, and ensured the all ran smoothly. This work was generously funded by The World We Want to whom Evidence for Development and The Nasio Trust extend their sincere thanks.

Contents

Background

For over 20 years, The Nasio Trust has been implementing development programmes in Mumias West Sub County, Kakamega County, Kenya. These programmes aim to improve the health, nutritional status, life skills and educational opportunities of children across the community[1]. Aware of increasing rates of poverty and growing demands on its services, Nasio has also embarked on agricultural projects to address the underlying causes of these problems. To support this work, Nasio has entered into a partnership with Evidence for Development (EfD), a UK-based NGO committed to promoting evidence-based development and building local capability to collect and analyse livelihoods data at household level.

Through the work described in this report EfD was able to train Nasio staff to collect data using the Individual Household Method (IHM). The resulting information, covering all aspects of household economy in a village where Nasio is implementing health, education and sustainable livelihoods projects, provides an analysis of current livelihoods and a basis for monitoring the impact of Nasio's work across the community. This information will allow Nasio to design its support in ways that best fit the needs of individual households, with the objective of achieving a sustainable, long term impact on poverty, alongside its work with children in extreme need.

Executive Summary

Analysis of household data in this whole village survey showed very low levels of 'disposable income'[2]. Approximately 16% of households in this survey of the population had insufficient income to meet their basic food energy requirement and the incomes of a further 5%, whilst

[1] A summary of support provided by The Nasio Trust is provided in Appendix V

[2] This refers to cash remaining after households had met basic kcal needs at levels recommended by the World Health Organisation (WMO, 1985). See Appendix I, Glossary for definition of technical terms used in this report

meeting basic food energy needs, were below the locally defined level 'standard of living' threshold and were therefore unable to purchase a full basket of essential non-food essential such as soap, clothes and primary school costs[3]. Around 25% of households are headed by women including elderly grandmothers, reflecting the continuing impact of HIV/AIDS.

Land holdings are small (mainly 0.5 acre or less) and crop yields are low. This means that households are highly dependent on the market to purchase staple foods. Only one household in the survey was able to meet its food energy needs from its own production and very few households were able to raise cash by selling crops on the market.

Around 25% of households own cattle (mainly a single dairy cow) but milk yields are low and cattle rustling is a serious problem, resulting in households bringing cattle inside the homestead overnight, with consequent problems for human health. Most households also keep chickens, with a small number selling eggs locally.

Households are primarily dependent on employment as their main source of income. The range of employment opportunities is limited to agricultural labour, with some off- farm casual work including factory and construction work, petty trade and other forms of self-employment eg charcoal burning. A small minority of households have access to more regular salaried work including security guards, teaching and government employment. There is just one household where the household head is a 'businessman'. This suggests an absence of opportunities for entrepreneurship. However, there are potential areas for investment (eg processing agricultural products) if the right business opportunity is identified and supporting infrastructure introduced. Nasio's initiative in producing and processing spirulina could suggest a way forward.

It should be noted that farmers in this village have very little external support from extension or other services: they survive on their own and in this area of rainfed agriculture rely on climatic conditions, which have become increasingly unpredictable. However, looking to the future, there is scope to build on Nasio's existing work to improve agricultural yields and

[3] See Appendix II for a full list of Standard of Living items identified in the survey village and their costs

therefore household income. This could include (i) working with Kakamega county's own agricultural research station to introduce improved crop varieties and (ii) improving soil quality low or no cost practices e.g. use of organic fertiliser. Nasio will also be consulting with experts at the University or Reading for advice on how best to prepare for future climatic conditions.

Methodology

The Individual Household Method (IHM) was selected for this survey, as it provides detailed information relevant to Nasio's work to understand the circumstances of individual families and design its interventions to best meet their needs.

About the IHM approach

The IHM is a method for measuring household income, developed by Evidence for Development[4]. In common with other household budget surveys, the IHM involves the collection of household income data. However, the IHM differs from other approaches in the following ways:

(i) The method of data collection. This involves a semi-structured interview, rather than a standard questionnaire format. It allows interviewers to engage in a direct and meaningful way with interviewees, to ask for clarification and to probe more deeply when answers are seen incomplete.

(ii) A recognition that in most rural areas in the global South, household food security is based on a combination of food produced by the household and retained for consumption, as well as income from the sale of agricultural products, local employment, remittances from kin who are working away from their communities and from wild foods. The IHM takes account of this by recording the kcal value of food the household produces and retains for its own use as well as cash income

[4] For further information on IHM methodology see Petty C, et al (2022) Adaptation Planning: An Integrated Approach to Understanding Vulnerability in the Lake Victoria Basin. *Front. Clim. 3:782534. doi: 10.3389/fclim.2021.782534;*
See also the Evidence for Development website (www.efd.org/)

from employment. This allows the survey team to assess levels of 'Disposable income' i.e. the cash that remains to a household when it has met its kcal needs from a combination of own production and market purchase .

(iii) The use of specialised software. This allows data checking and analysis to be carried out in the field and reduces the risk of errors in data collection, allowing errors to be identified and corrected.

The IHM Survey Process

The household survey involved the following steps:

1. Livelihood zoning.

At the start of the Study, a Livelihood Zoning exercise was carried out with the staff of Nasio Trust. The aim was to identify the variability in economic activities across the Mumias West sub-county, and locate the survey village in its wider context. Three distinct livelihood zones were identified, based on their dominant characteristics: the Maize Industrial Livelihood Zone; the Maize, Sweet Potato and Cattle Livelihood zone; and the Maize Livelihood Zone. Appendix III includes a map and details of the 3 zones

2. Contextual interviews and village mapping in the selected survey village

Before individual household interviews were carried out in the survey village, focus group discussions were held with men and women from across the community to establish key facts on agricultural activities, employment opportunities, crop yields and local market prices etc. The purpose of these focus groups was to allow interviewers to ask informed questions when seeking clarification in the course of subsequent individual household interviews.

A village map was also drawn at this stage, and every household named and numbered. This ensured that no household was left out in the survey. It also allowed the team to quickly locate the households they had been allocated to interview

3. Individual household interviews

Individual household interviews were carried out in teams consisting of two interviewers and supervised by the trainer who mentored the staff conducting interviews. Once it was observed that a team had understood the 'structured interview' process, were following ethical guidelines in introducing the survey to interviewees and were conducting good interviews they proceeded on their own from the following day. Each team was allocated two households to interview per day.

4. Data upload and analysis

At the end of each day, information recorded in the village on household interview forms was checked and uploaded into the OIHM (software) database. Where the information required clarification or appeared to be incomplete, the household was re-visited.

Selection of the survey site.

The survey site, Buchirinya B village, was selected in discussion with Nasio Trust staff. This is just one of many villages across Mumias West sub-county where The Nasio Trust is implementing projects and was selected as it is typical of other villages where Nasio works. As it is neither significantly richer or poorer than other sites, the results of this baseline assessment will be relevant across Nasio's project area.

The study village

Buchirinya B village, is in Musanda ward, one of four wards in Mumias West sub-county. (The other wards are Mumias central, Mumias North and Etenje). Musanda has a population of approximately 111,862 (Kenya National Bureau of Statistics, 2019), and covers an area of 165.3 square km. It is located in the 'Maize' Livelihood Zone.

The main crops grown in this zone include maize, beans, sweet potato and cassava. The main livestock kept include cattle, goats, chicken and sheep. The main sources of employment include agricultural labour, petty trade and small informal businesses. Markets are held in Musanda and Ibinda towns.

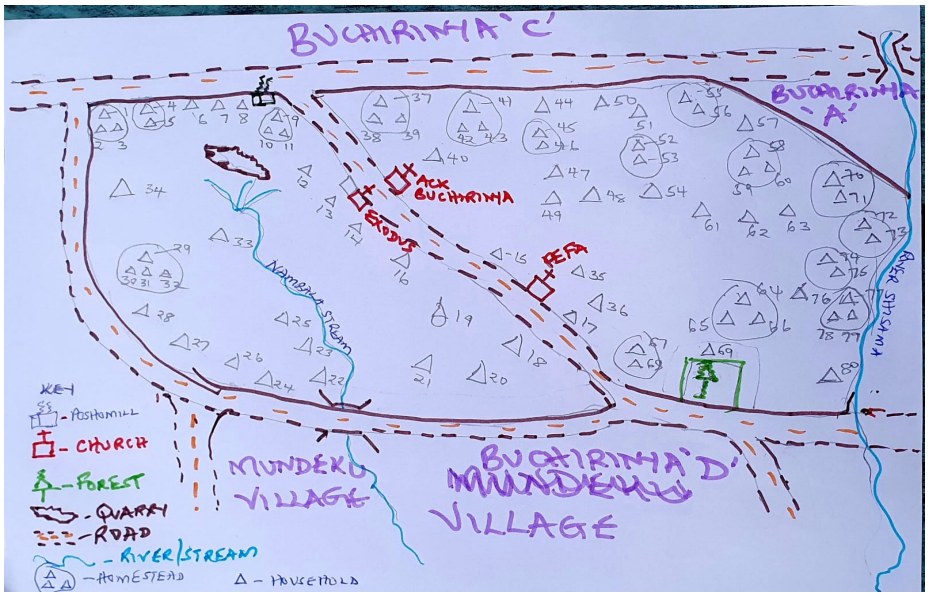
Community members described the main challenges they face as: a poor road network, cattle rustling, general insecurity and drought.

Steps in the assessment

At the start of the assessment, a village map was developed. 84 households were identified and are shown on the map (Fig 1). For the purpose of this survey a household was defined as those people resident in the house in Buchirinya B village and usually sharing meals during the reference year, 2023.

A total of 66 of these households were interviewed and are included in the analysis. 9 households were not available for the interview, one household did not consent to be interviewed while one household head was too sick to participate. The remaining households recorded on the map were living away from the village.

Fig 1 Buchirinya B village



Survey Findings

The following sections provide a quantitative analysis of the main sources of income recorded in the individual household interviews. As such, the information can be used in future to model the impact of changes, including those associated with climate change (e.g. reduced yields due to changes in rainfall patterns) as well as monitor actual changes as they occur year by year. This could assist Nasio in the design of its programmes in both the long and short term.

Data is shown in a series of charts, which are derived from the EfD's software (OIHM).

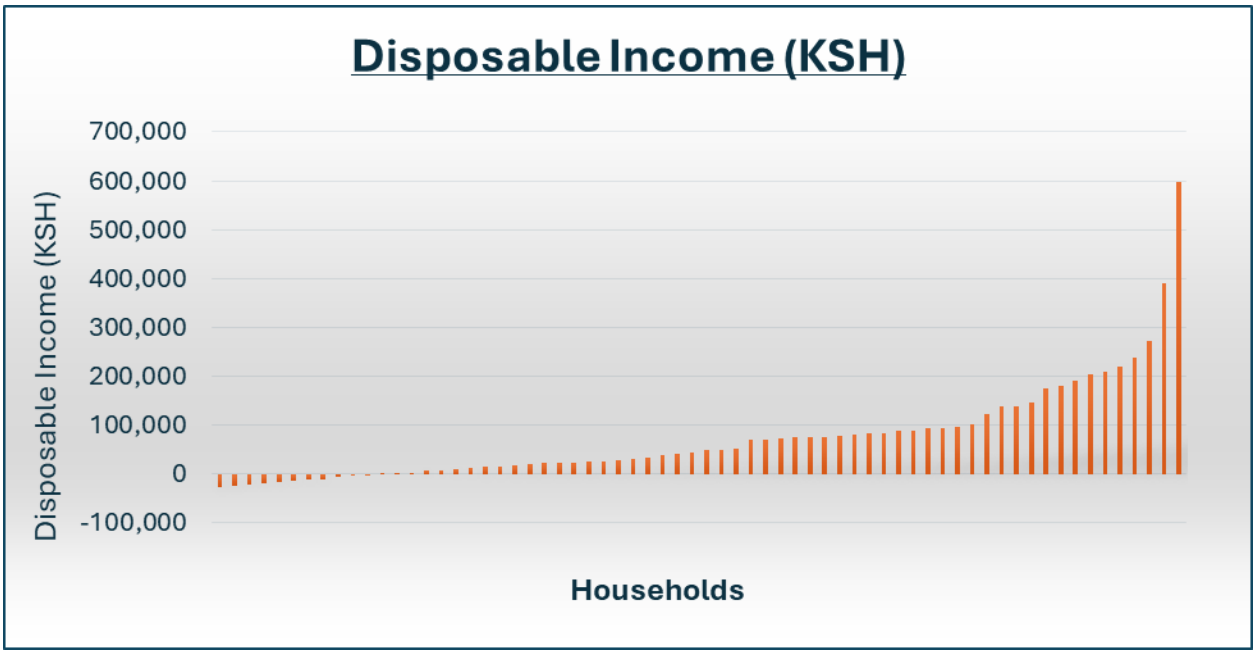
Charts include

- Distribution of Disposable Income and Disposable income after Standard of Living costs
- Distribution of Disposable income showing female and male-headed households
- Main sources of Food Income
- Main sources of Cash Income
- Landholdings
- Livestock holdings

The data section is followed by an analysis of Nasio support currently provided to households across the community, under the broad headings of Health, Education and Agriculture. Households in the Summary Table (Table 1) are arranged in order of Disposable Income[5].

Disposable Income (DI)

Chart 1 Distribution of Disposable Income



This chart shows the distribution of Disposable Income (DI) across the community. Each bar in represents an individual household. Households are displayed in this chart and in subsequent charts, in order of DI. The household with the lowest level of DI is represented

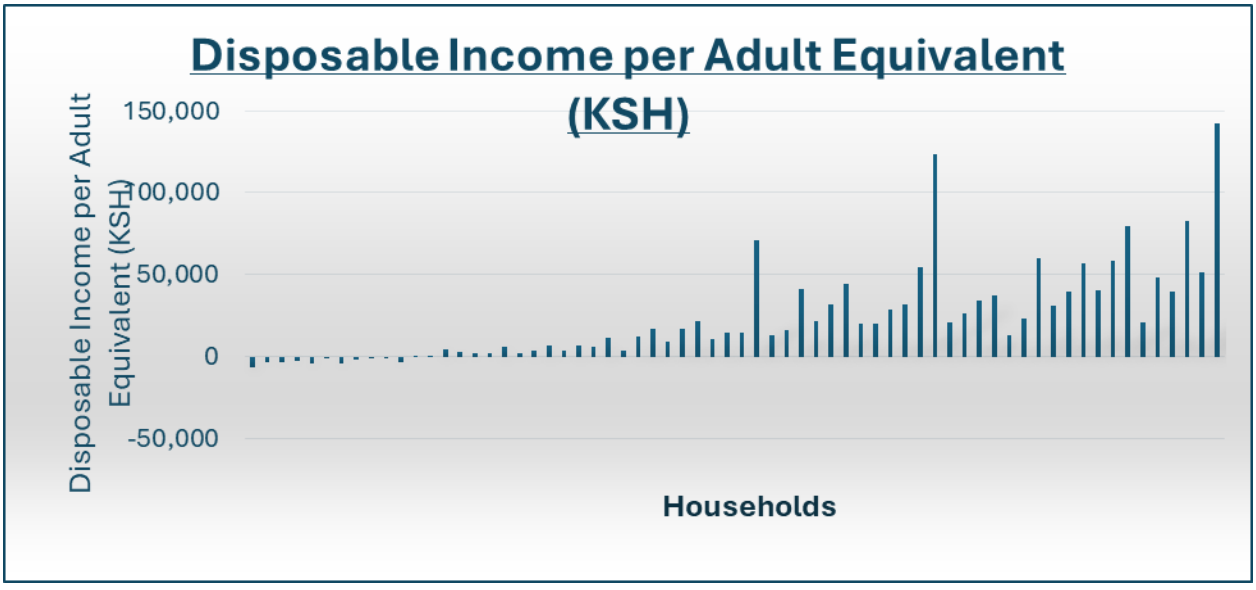
[5] Survey participants were assured of anonymity in any publications, so names are excluded from documents that may be circulated more widely. Names and household numbers are available to Nasio project staff as needed.

by a bar on the extreme left, and the highest level of DI by a bar on the extreme right. As previously noted, DI measures the cash remaining to each household after it has met its food energy requirements to WHO (1985) standards. Those households with income too low to meet this standard are shown below the x axis. The deficits are not great and range between 7kg and 0.6kg. However this indicates a level of absolute poverty and insecurity.

In this community 11 households (just over 16%) fall into the absolutely poor category. Of the remaining households, a majority could be described as 'Poor' and have a DI of significantly less-than 400,000 KSh/year. This is equivalent to less than $300 and well below the World Bank poverty threshold of $2.15/day.

As household size varies significantly we have also analysed income per 'adult equivalent' i.e. based on the age and sex of household members (see Glossary for details).

Chart 2 Disposable income per Adult Equivalent

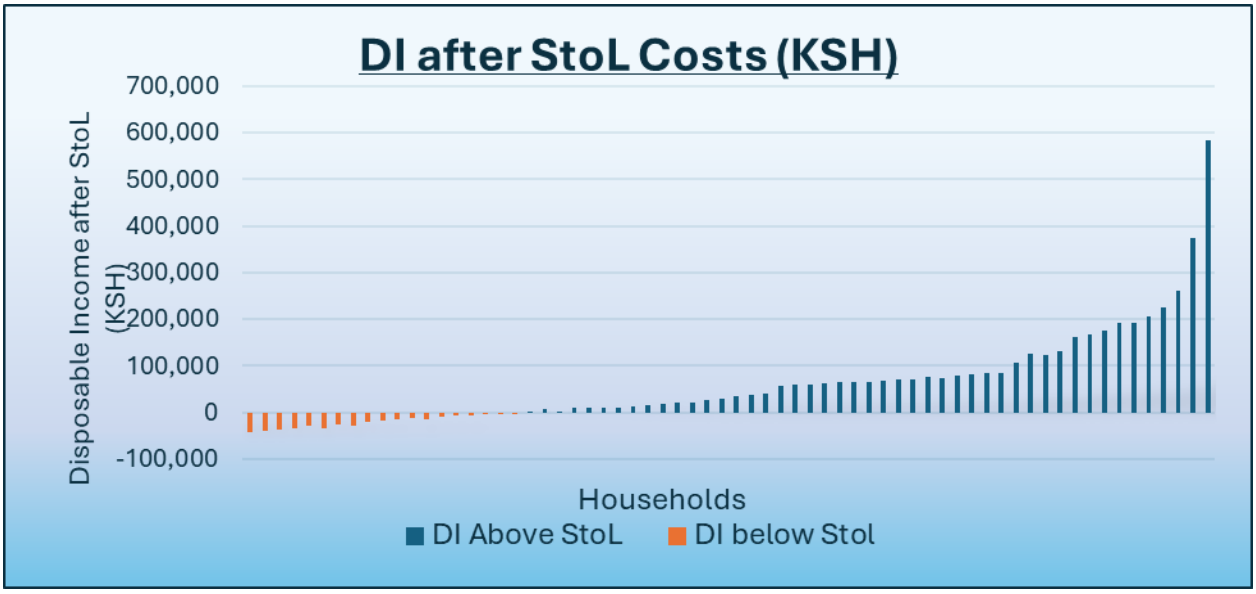


The 'jagged' distribution reflects the fact that larger households have less disposable income 'per adult equivalent' than smaller households although their overall income may be higher.

Standard of living threshold

In addition to analysing absolute 'food poverty', we also look at the income required to meet a basic standard of living threshold. A full list of the items considered to be necessary of 'social inclusion' was identified at the start of the survey by a focus group made up of local women and men. This list together with the costs of items is shown in Appendix II

Chart 3 shows DI remaining after standard of living costs (StoL) have been deducted.



This shows that a total of 16 households (nearly 25% of the population) were unable to meet the locally identified basic standard of living threshold. These households are all extremely poor.

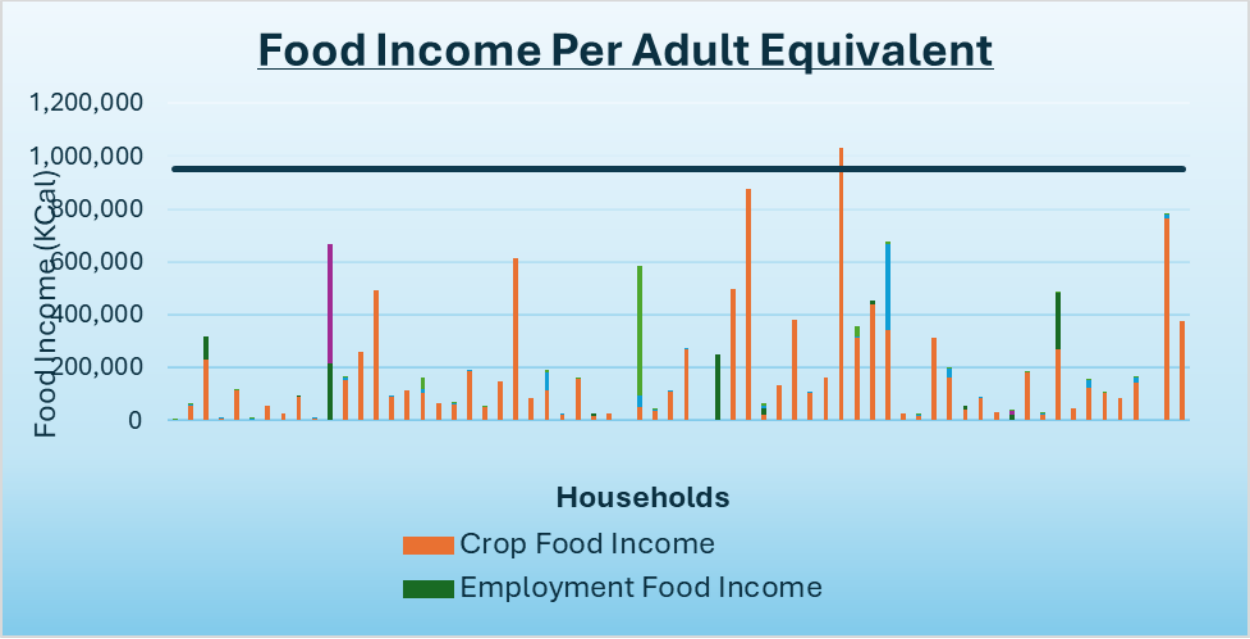
Sources of Food Income

Chart 4 shows sources of food income. This is food that is available to the household either through their own production, through gifts from kin, or through payment for work in food, and is measured in kcals. Data in Chart 4 is presented 'per adult equivalent[6]'. This gives a clear indication of the level of market dependence in the community. The dark horizontal, line at around 100,000 kcals indicates the food energy requirement for an adult. Only one household in the study village met their food energy needs solely from their own production. This reflects both the small size of landholdings, and the very low yields that were reported.

[6] See Glossary, Appendix I for the method of calculating the 'adult equivalent'

The outlier household has a larger than average plot of land (1 acre) has only 4 household members, and makes a significant investment in fertilizer and seeds.

Chart 4 Sources of Food Income

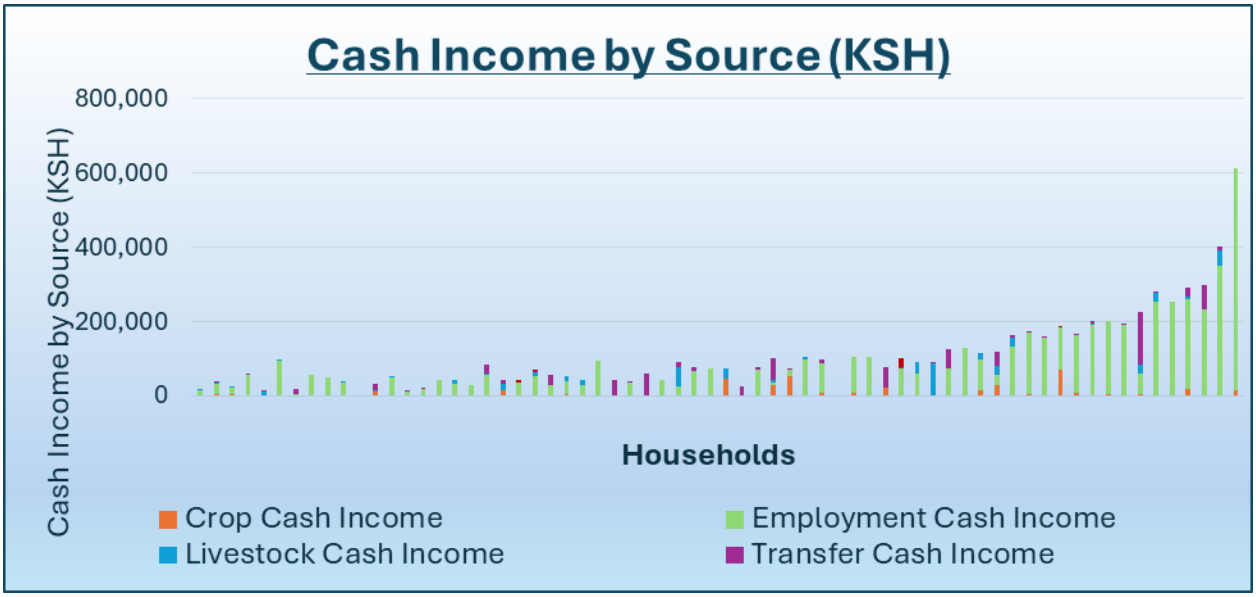


Sources of Cash Income

Sources of Cash Income are shown in Chart 5. Most cash income in this community is derived from employment and is mostly in the form of casual agricultural day labour, paid at a rate of 200 KSh/day. This would purchase around 5 kg of maize-sufficient to feed a larger household, but leaving very little for other needs. Other sources of employment income include petty trade, casual off-farm work in construction and factories, and a small number of households with salaried work or work as security guards.

Cash income is also derived from the sale of crops, the sale of livestock and livestock products and cash from kin. Income from crop sales is extremely low and concentrated in the upper half of the income distribution. Similarly, income from livestock and livestock products is limited. It is notable that over half of all households receives some cash support from relatives. This varies from very small amounts (2,000KSh-3,000KSh) to over 50,000KSh.

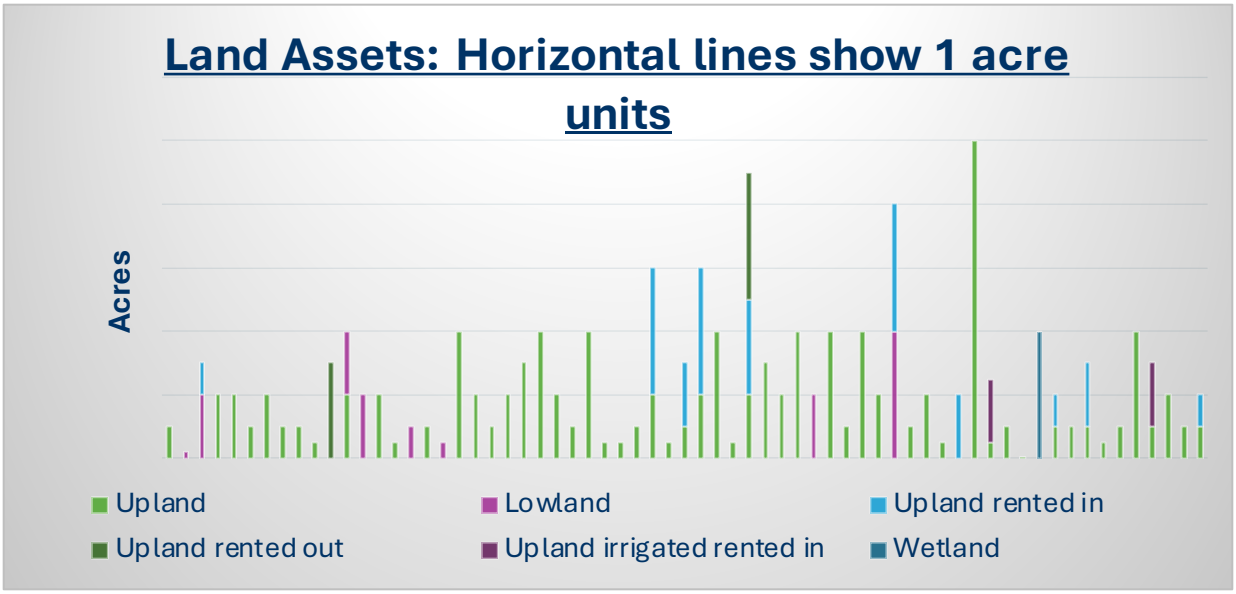
Chart 5 Sources of Cash Income



Land holdings

Land holdings are small with most plots measuring 0.5 acres or less. Soils are generally poor, lacking organic fertilser, and crop yields are low. Few vegetables are produced although some households do have access to wetland. The most commonly grown vegetable is kale which can be dried and preserved. Poor roads and lack of transport is a constraint on profitable vegetable production.

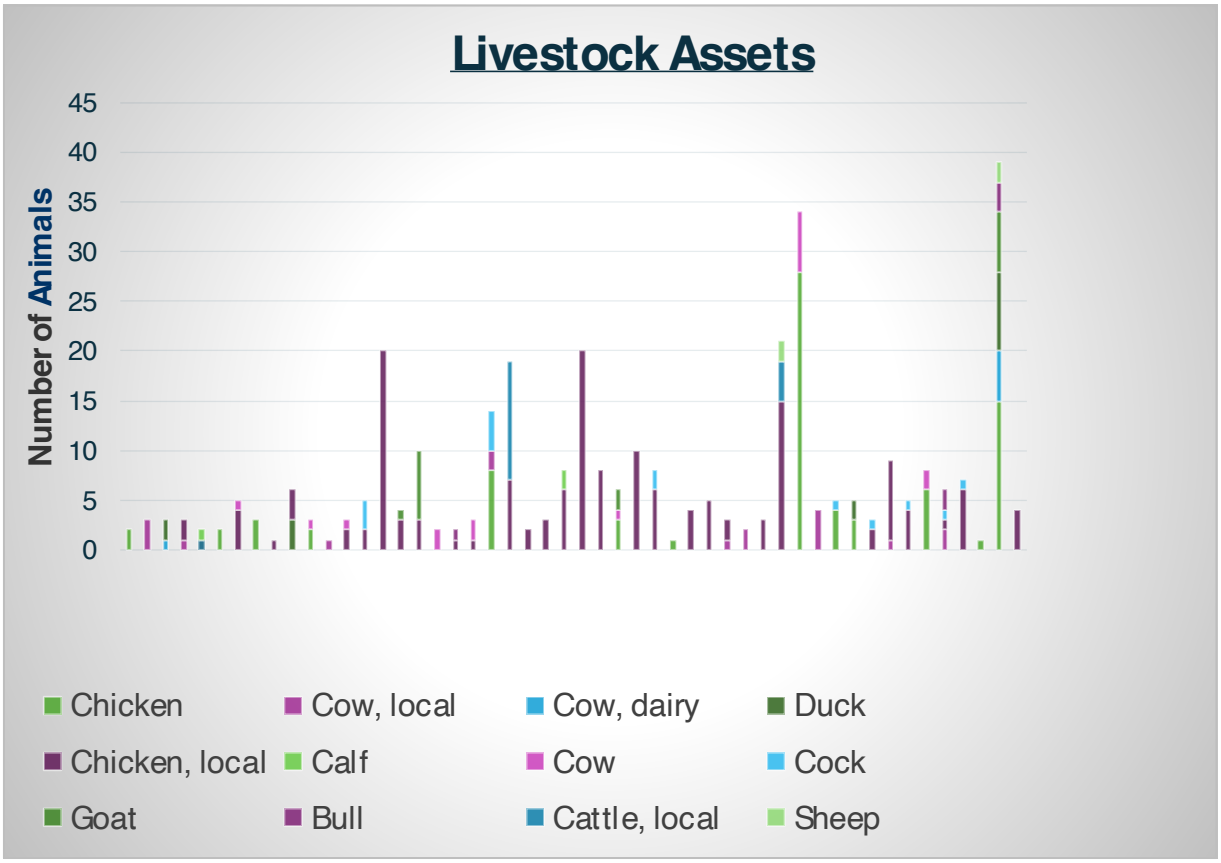
Chart 6 Land Assets



Livestock Assets

The main livestock kept by this community include chickens dairy cows, with smaller numbers of sheet and goats. Although this area is suitable for cattle rearing, numbers have reduced in recent years due to rustling and associated violence. In response to this, many households are now bring their livestock inside their homes overnight, which in turn has resulted in an observed increase in the incidence of infections such as jiggers. As the Cash Income chart shows, earnings from the sale of livestock and livestock products is low and made up largely of sales of small quantities of milk and eggs. The reduction in the number of cattle has had a wider impact, contributing to the lack of organic fertiliser and low crop yields.

Chart 7 Livestock Assets



Support from Nasio Trust projects

In this final analytical section, we have included information provided by The Nasio Trust team on households receiving assistance through its Health, Education and/or Agriculture projects. Households have been organised in order of disposable income, with the poorest households appearing first. This preliminary overview does not provide additional information on the type of assistance received. However, the listing may be useful for future project monitoring purposes.

We looked in more detail at the characteristics of households in the lowest income quartile, households from the middle of the distribution and those in the highest income quartile. The

aim was to explore whether there were any distinguishing factors associated with income bracket.

In general, households in the poorest quartile tended to have large families and small landholdings. Typically most of their income came from casual agricultural labour. There were some exceptions-for example small elderly-headed households that received most of their cash income in the form of gifts/remittances from kin.

The middle of the distribution included the most heterogeneous set of households in terms of household size, land holdings and employment. This included petty trade, factory work and agricultural labour.

The top end of the distribution included households with multiple income sources. These households typically had a number of adults working outside the household. The top end of the income distribution included households with salaried employees and more highly skilled artisans working in construction as well as income from agricultural work, crop sales, factory work and petty trade.

Table 1 shows that The Nasio Trust is helping households with children across the income distribution. 22 households received assistance through its work in the health sector. A further 7 households received help through the education sector, and 9 households received assistance in agriculture. At this point, we do not have data on the type of agricultural assistance. However, it would be possible to add this information to the data base and track any changes in household production that are associated with this.

In Table 1, all households are listed in order of Disposable income, starting with the poorest household. Female headed households are marked in purple in Column A. Households highlighted in yellow in Column B have received help from Nasio in the Health sector. In Column C households receiving help in the education sector are highlighted in Blue, and in Column D households receiving help in Agriculture sector are highlighted in green.

Column A	Column B	Column C	Column D
Household Number	Health	Education	Agriculture
46	y	n	n
21	n	n	n
44	y	n	y
29	n	n	n
74	n	n	n
1	y	n	n
9	n	n	n
26	y	y	y
61	n	n	n
78	y	y	n
68	n	n	n
25	n	n	n
28	n	n	n
50	n	n	y
79	y	n	y
71	y	y	n
17	n	n	
11	n	n	n
8	n	n	n
33	n	n	y
6	y	n	n
82	y	n	n
57	n	n	n
16	n	n	n
37	n	n	n
77	n	n	n
64	y	y	y
7	n	n	n
31	n	n	n
36	n	n	n
117			
65	y	n	y
56	n	n	n
35	n	n	n
67	n	n	n
53			
18	n	n	n
15	n	n	n
22	n	n	n
14	y	y	n
27	n	y	n
73	n	n	n
75	n	n	n
48	n	n	n

13	n	n	y
70	n	n	n
45	n	n	n
23	y	n	n
38	y	n	n
822	n	n	n
34	y	n	n
4	n	n	n
63	y	n	n
39	y	n	n
80	n	n	n
84	n	n	n
5	y	n	n
47	n	n	y
2	n	n	n
52	y	n	n
58	n	n	n
10	n	n	n
41	n	n	n
32	y	n	n
24	y	y	n
54	y	n	n
Total	22	7	9

Around 25% of households are currently headed by women. Whilst female households are found across the income distribution, the majority are among the poorer households in the lower half of the income distribution. The proportion of female headed household is high compared with other countries, including those in Africa. However the figure is broadly in line with the average for rural communities in Kenya (and lower than the average figure for Kenya's urban communities).

Concluding remarks

This baseline report is intended to assist The Nasio Trust in its work to address the underlying causes of poor health and limited opportunities for children and their families in Mumias West sub-county, Kenya. It provides a reference point against which changes both at the household level and across the community can be monitored. The 'whole village' approach offers a broad perspective on the problems facing the community and should assist the potential design of future programmes. For example, Nasio currently targets its assistance to households with children. However, household demography changes constantly, and poverty is not only experienced by households with children. If Nasio is considering projects aimed at improving soil fertility and crop yields, it might therefore wish to consider extending these projects across the whole community. Experience shows that 'lead farmers' can play an important role in introducing new practices that are rapidly adopted by all if they are shown to be successful. We hope that this report provides a starting point for these discussions. Given the fact that members of the Mumias West Subcounty re mainly farmers, it may be useful for Nasio Trust to consider the following livelihood interventions;

***Adoption of improved crop varieties*:** The current varieties of sweet potato and cassava being grown are low yielding. It may be prudent to consider sourcing high yielding varieties from KALRO Kakamega.

Livestock improvement program: A number of the households keep local chicken. The program may consider supporting the beneficiaries with improved breeds of chicken that mature early and are more productive. This is likely to lift most households from poverty. This is particularly appropriate given the small parcels of land held by households.

Appendix I

Glossary of terms used in IHM analysis

- Household **food energy requirement**: The sum of the food requirement of each individual in the household, according to their sex and age[7] and time present in the household during the study period.

- The **staple diet** (and price per kcal of the staple diet): The staple diet consists of the foods that form the basis of the local diet purchased by poor households after their own food production (and/or rations, in the case of refugee households) has run out. This is identified in consultation with local key informants.

- **Disposable Income** After taking account of food energy already derived from the household's consumption own-produced food, the price per kcal of the staple diet is used to calculate the cost of purchasing the remaining calories needed to make up the household's total annual household food energy requirements.

  Equation 1: Disposable income

  $$\text{Disposable income} = \text{Sum of all household cash income} - ((\text{Household food energy requirement } [kcal] - \text{Sum of all household food income } [kcal]) \times \text{Price per kcal of staple diet})$$

- **Cash income**: All cash income from all sources (i.e. crop sales, sale of livestock and livestock products, employment/self-employment, cash transfers, and the sale of wild foods).

- **Food income**: All sources of income as food consumed (e.g. from crops, livestock products, payment in kind, food gifts and transfers and wild foods). Recorded in kilocalories (kcal).

- **Disposable income**: The cash remaining to each household after it has met its total food energy needs, based on WHO reference standards[8]. This can be a negative value, if the household is unable to meet its full food energy needs with its available income.

- **Adult equivalents**: Disposable incomes and other figures can be standardised to take account of variation in household size by dividing them by the number of 'adult equivalents' in each household. The number of adult equivalents is calculated as the total household energy requirement divided by the energy requirement of a young adult (2,600 kcal per day)[9]. The standard IHM income distribution chart shows 'disposable income per adult equivalent' (DI/AE).

[7] Food energy requirements derived from 1985 WHO reference standards: 'Energy and protein requirements', *Report of a Joint FAO/WHO/UNU Expert Consultation* (1985), World Health Organization Technical Report Series 724. Available online at http://www.fao.org/docrep/003/aa040e/aa040e00.HTM

[8] Food energy requirements derived from 1985 WHO reference standards (see above).

[9] Food energy requirements derived from 1985 WHO reference standards (ibid).

- **The food poverty line:** Households that cannot access their basic food energy requirements[10] – either through own production, transfers, food purchase using cash income, or a combination of these – are described as being 'below the food poverty line'. Data for these households appears below the *x* axis (as negative *y* axis values) on the disposable income charts. The income deficit shown on the chart is equivalent to the cost of purchasing the quantity of food required to meet reference food energy standards, based on the cost of the cheapest staple(s) that form the local staple diet, established with key informants.

Appendix II

Standard of Living threshold

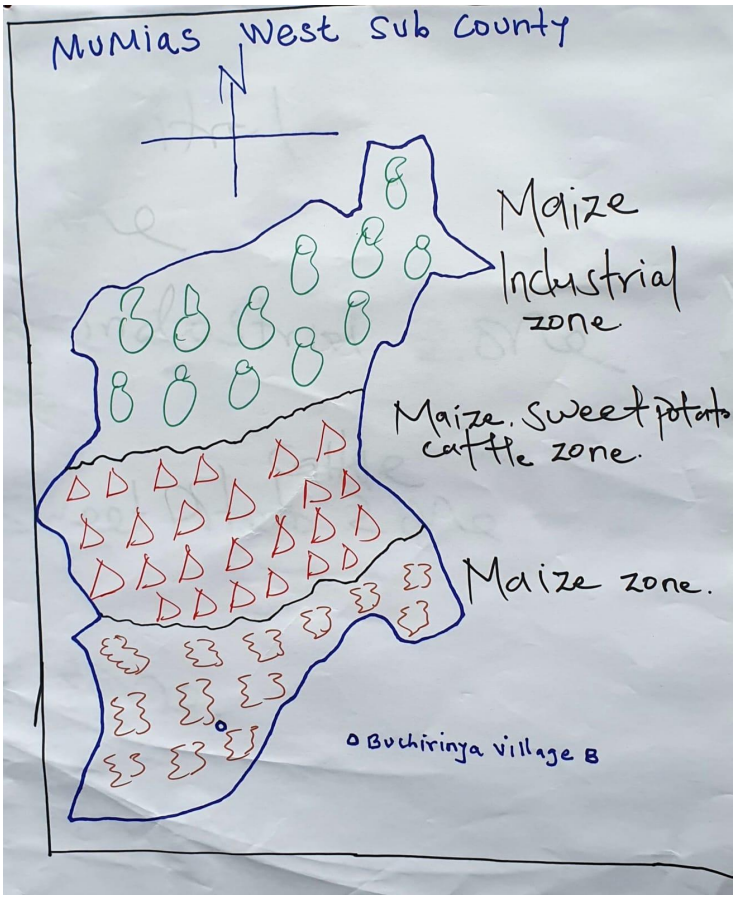
Goods and services required to meet minimum standard of living at Buchirinya B village[11]

Item	Cost (Kshs)	Applicable to
Clothes – man	400	Adult male aged over 15 years
Clothes – women	500	Adult female aged over 15 years
Clothes – child	1000	Child aged 4 to 14 years
Primary school costs	9000	Child aged 6 – 14 years
Soap	2600	The household
Matches	120	The household
Kerosene/paraffin	3640	The household
Salt	240	The household
cooking oil	2080	The household
sugar	2080	The household
Primary school costs	1400	The household

[10] Food energy requirements derived from 1985 WHO reference standards (ibid).
[11] Note: These items were common to most households.

Appendix III

Livelihood Zones of Mumias West Sub county



Three distinct agro-ecological economic areas were identified by a locally convened focus group at the start of the assessment:

Maize Industrial Livelihood Zone

The main economic activities carried out in this zone include agriculture, trading, service industries e.g. Boda Boda and petty trade. The main crops grown include maize, sugarcane, beans, sweet potatoes, yams, vegetables (Kales, local vegetables) and groundnuts. The main livestock kept chicken, cattle, goats, sheep, pigs, rabbit, ducks, fish pond.

Maize Sweet Potato Cattle Livelihood Zone.

The main economic activity in this zone is agriculture. Main crops grown and sold include maize, sweet potatoes, kales and pumpkin leaves. Animals kept include cows, sheep, goats and sheep. Quarrying activity takes place in the Bukaya rock area. This is an important trading centre for the sub county, with a weekly market that takes place in Buhuru market where cows, goats, sheep and chicken are sold. The main type of employment include Boda Boda and matatu transport services, but the majority of people engage in casual jobs, including agricultural day labour alongside their own farming.There are few employment opportunities in social amenities such as hospital and schools.

It's a rocky zone with Bukaya being the main rock and a tourist attraction where locals and tourists visit for adventure. The zone is majorly upland with a few lowland areas.

The main Challenges within this zone include; poor infrastructure like impassable roads, cattle rustling, insecurity, availability of small loose rocks in the farms which interferes with the soil fertility, drought in some season, unemployment rate is high.

Maize Zone

The main crops grown in this zone include maize, beans, sweet potato and cassava. The main livestock kept include cattle, goats, chicken and sheep. The main sources of employment include agricultural labour, petty trade and small informal businesses. Markets are held in Musanda and Ibinda towns. Community members described the main challenges they face as: a poor road network, cattle rustling, general insecurity and drought.

Appendix IV

List of trainees / interviewers

Name	Organization
Chrisostom Were	Nasio Trust
Sharon Angaya Lutta	Nasio Trust
Wicklife Orero	Pamoja CBO
Eunice Juma	Nasio Trust
Ellie Modesta	Tofauti
Naiserian Lesaigor	Amuka Foundation

Anne Adhiambo	Nasio Trust
Benajmin M. Oundo	Nasio Trust
Grace Kayalo	Nasio Trust
Nickson Wafula	Nasio Trust

Appendix V

Note on support provided by The Nasio Trust

The Nasio Trust supports over 300 vulnerable children in Mumias West sub county, through education, psychosocial monitoring, and healthcare. Nasio Trust currently runs two purpose-built Early Childhood Development Centres. Nasio supports local, small-scale farmers through provision of free inputs and training.

The Nasio Trust's Peer Education Programme has trained 466 peer mentors in Sexual and Reproductive Health to empower young people in life skills. The programme is also working towards improving the financial independence of young people through training in fish pond management and agriculture We are also improving capacity among young people through Young Farmers Clubs. We believe that sustainable livelihoods are the surest way out of poverty. Improving the skills of communities we support and providing them with initial capital to start businesses is key to economically empowering them.