ICPALD

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Study on the Availability and Distribution of Different Rangeland Products and Analysis of Market Opportunities for Selected Priority Products in Selected Cross-border Areas of the IGAD Region

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EXECUTIVE SUMMARY

Introduction

The IGAD Centre for Pastoral Areas and Livestock Development (ICPALD) commissioned a study to examine the *availability and distribution of different rangeland products. The study also aimed to analyse market opportunities for selected priority products in specific cross-border areas of the IGAD region. This study is part of the* Sustainable Ecosystem Management (SEM) Project, which is focused on enhancing the resilience of pastoralist and agro-pastoralist livelihoods through the sustainable management and equitable use of shared rangelands in cross-border areas of the IGAD region.

Study Design

The study was conducted in two cross-border areas (Uganda/South Sudan and Ethiopia/Sudan) at 3 selected sites (i Morungole Sub-County in Kaabong district, Uganda; Kapoeta East County, South Sudan, and Kurmuk Woreda in Benishangul-Gumuz Region, Ethiopia) where SEM Project interventions are currently being implemented. The study utilized a mixed method approach, which involved a comprehensive document review, key informant interviews with selected stakeholders, Focused group discussions, direct field observation and a rapid household questionnaire survey. Fieldwork was conducted during December 2023.

Key Findings

In the pastoral communities across the 3 cross-border sites, the reliance on rangeland products is significant. There is slight variation in the degree of dependence on specific products. The main products on which the communities depend on vary slightly, the main ones include honey, gold mining, wild fruits and vegetables, grass and shrubs for household construction and fencing (mostly for income), and, to a lesser extent, materials for crafts production, sand mining and storey quarrying. Honey (bee products) and artisanal gold mining were the only products found to have good market prospects and provide good income for households. The importance of the main non-wood rangeland products (NWRPs) to the communities' livelihoods is summarised in Table A1 below.

Table A1: Major NWRPs in Selected Cross-Border Sites and their Importance to Community Livelihoods

Main NWRP	Morungole Sub-County	Kapoeta East County	Kurmuk Woreda
Honey	A secondary livelihood source for the Ik community, who depend primarily on smallholder cultivation of maize and beans. Production is low due to poor practices. The honey value chain is under developed but it is now being supported by 2 small marketing enterprise. Processing is done local and traditional and poor quality.	High production largely from wild hives. Communities in Natinga depend heavily on honey for food and incomes, as well as in meeting socio-cultural obligations. All households produce honey.	Very low to no production although there is potential. None of the community members met was involved in honey production. Insect pests were blamed for poor production.

Gold Mining	Smallholder gold mining is a seasonal livelihood activity for most men, women and children. They mine alluvial gold in River Sake, and add very little value (essentially cleaning), pack in simple polythene bags, and sell in the market at Morungole. They earn UGX 15,000 per point but could double it to UGX 25,000-30,000 in Kaabong. Some bulk and transport to Kaabong town where they sell to agents of Kampala-based gold dealers. Artisanal gold mining is potentially a viable livelihood activity in Kaabong but the subsistence nature constrains its growth and profitability to smallholder actors.	Community members participate in seasonal gold mining on river beds during rainy seasons. The main motivation is to earn incomes to buy food. Fewer community members are involved when there is adequate food. The gold is sold to agents of traders from Kapoeta town but also in Narus town.	Nearly all households and age groups are involved in mining, and it's often a full -time activity. Earnings for artisanal gold miners range from ETB 35-160 (approximately USD 2.9) per week. They sell to local gold aggregators who are often agents of traders and dealers in Assosa and Addis Ababa. They earn small margins of approx.10 ETB per gram.
Wild Fruits & Vegetables	A range of fruits & vegetables (including wild mushrooms) are collected from the wild and consumed in Morungole. The most frequently pointed out was *Balanites aegyptiaca* which provides multiple food and nutritional values (as vegetable, fruit and spice), medicine and other services. There was a lot of community knowledge about the tree species and their fruiting seasons tend to coincide with severe periods of famine, very useful adaptive tools to pastoral livelihoods. Wild vegetables are considered inferior because people collect and eat them during extreme famine conditions.	A variety of wild fruits and vegetables are collected mainly for home consumption.	A range of vegetables and fruits are harvested from the wild. The most popular fruit is used for making juice for sale comes from *Adonsonia digitata* (locally known as *Agungulees)* tree. The tree is also preserved around homesteads. There are also *Balanites aegyptiaca (lalob)* whose fruits, leaves and bark provide food, medicine and other values.

Grass & Shrubs for Construction	Grass is gathered primarily for own household construction. However, some sell in trading centres across Kaabong. The activity is dominated by women and girls who usually transport them to major commercial centres where the market is more reliable. High quality grass is also used for beddings but has become increasingly rare as grasslands are being invaded by shrubs in addition to frequent fires.	Gathering and sale of grass for house construction and fencing constitute a major livelihood activity for especially women and girls in Kapoeta East. Grass is sold in Narus market at SSP 500 a minimum bunch of 2 (SSP 1000) and sellers earn an average of SSP 2000-3000 per day but could go for a week without any sale. This is only enough for 2-3 meals for a typical household.	Many men, women and youth are actively involved in gathering and sale of grass for house construction and for sale. There is a grass market in Dull Shitalo (Akandeyu) and Kurmuk towns. A bunch of grass is sold for 100 ETB and those dealers sell at least 3 bunches a day. There is increasing challenge of distance to obtain quality grass, as a result of which dealers now use motorcycles ad donkeys to transport grass to the market & homesteads. This has increased cost ad reduced margins.
Sand & Stones	Abundantly available but not exploited because of lack of demand.	Abundantly available but not exploited due to lack of demand	Sand mining and transport is a lucrative activity that many youth are involved. Sand is extracted from river beds, sold in Kurmuk (at ETB 16,000) from where trucks transport it to Assosa city and other towns. A 10-Truckload (Sino truck) in in Assosa sells for 32,000 ETB.

The main barriers to market development relate to the following:

- Low, inconsistent production, particularly of honey and gold.
- Poor quality of products – due to poor and unhygienic handling
- Limited capacity of private sector- Absence of capable, motivated self-driven entrepreneurs to support production and marketing
- Limited institutional capacity
- Access to knowledge and technology
- Weak Market Linkages

There are a number of prospects that can be leveraged for market development and expanding value for livelihood enhancement besides high biodiversity that is suitable for bee production. Key of these include: a supportive government policy with a number of interventions, particularly in Uganda and Ethiopia; relative peace despite latent conflict in all 3 cross-border areas; healthy productive ecosystems despite emerging threats of degradation; and prospects of strategic partnerships with external agencies working in the region.

Conclusion and Recommendations

The study makes a number of conclusions, key of which include:

1) *Most rangeland products are gathered and used as a supplementary and sometimes essential means of livelihood.* Wild fruits and vegetables tend to be considered as inferior products, often used for lack of better alternatives. There are few essential products that have obvious market potential, aside from honey and gold.
2) *Honey production is the most viable rangeland product extracted and used by communities* in the Kaabong/Kapoeta cross-border region. But its potential remains largely underutilised. The little honey produced is poorly handled, informally processed and marketed at farm gate or within community.
3) *Wild fruits and vegetables constitute a key part of livelihood strategies in rangeland communities. The most important tree species across the 3 localities is Balanites aegyptiaca* (*lalob*), which is used for food and nutrition, medicinal values, as well as shade and other socio-ecological functions. There is a tendency to conserve the wild tree species that provide these services around settlements, even in urban areas. This underscores the strong livelihood connection that communities have with nature.

The study recommends the following actions:

1) Supporting bee value chains can help increase honey production, diversify bee products and enhance access to lucrative markets. Specific activities would involve developing apiculture through training and providing modern bee hives and other toolkits to improve productivity and bee management. Capacity building for safe and hygienic extraction and processing of honey would also be included, along with support for marketing by establishing strategic market linkages.
2) Support Local authorities and communities in streamlining artisanal gold mining operations and promoting artisanal gold value addition initiatives.
3) Support the communities in harvesting and productive utilization of water resources.
4) Strengthen institutional capacity of the public sector to effectively facilitate productive and sustainable use of range resources.
5) Support communities to adopt low-cost alternatives construction to reduce the pressure of deforestation and vegetation depletion.
6) Integrate functional literacy training in all planned interventions to strengthen multi-dimensional resilience of communities.

ACRONYMS AND ABBREVIATIONS

ASALs	Arid and Semi-Arid Lands
AU	African Union
DADO	Dynamic Agro-pastoral Development Organisation
EAC	East African Community
ETB	Ethiopian Birr
EU	European Union
FAO	Food and Agricultural Organisation (of the United Nations)
ICPAC	IGAD Climate Prediction and Application Centre
ICPALD	IGAD Centre for Pastoral Areas and Livestock Development
IGAD	Intergovernmental Authority on Development
ILO	International Labour Organisation
KDF	Karamoja Development Forum
LULCC	Land Use/Land Cover Changes
NBI	Nile Basin Initiative
NWRP	Non-Wood Rangeland Products
SEM	Sustainable Ecosystem Management
SGBV	Sexual and Gender-based Violence
SIDA	Swedish International Development Agency
SSP	South Sudanese Pound
TLUs	Tropical Livestock Units
ToRs	Terms of Reference
UBOS	Uganda Bureau of Statistics
UIA	Uganda Investment Authority
UNDP	United Nations Development Program
UNOCHA	United Nations Office for Humanitarian Affairs
USAID	United States Agency for International Development

1

INTRODUCTION

1.0 INTRODUCTION

1.1 General Overview

This report presents the findings of a study commissioned by the IGAD Centre for Pastoral Areas and Livestock Development (ICPALD) in September 2023. The study focuses on the *availability and distribution of different rangeland products and analysis of market opportunities for selected priority products in specific cross-border areas of the IGAD region.*
The assignment was carried out in the framework of the Sustainable Ecosystem Management (SEM) Project, which aims goal is to enhance the resilience of pastoralist and agro-pastoralist livelihoods through sustainable management and equitable use of shared rangelands in cross-border areas of the IGAD region.

The study was conducted in two cross-border locations (Uganda/South Sudan and Ethiopia/Sudan) in 3 selected sites, namely Morungole Sub-County in Kaabong district, Kapoeta East-South Sudan, and Kurmuk Woreda in Benishangul-Gumuz State, Ethiopia, where SEM Project interventions are being implemented.

SEM project is a three-year (2023- 2025) intervention of ICPALD that is being implemented in two cross-border areas, with financial support from the Swedish International Development Agency (SIDA). The project is being implemented through collaboration with relevant government ministries, civil society organizations, and local communities.
The primary aim is to accelerate sustainable economic and social development for the poor and marginalized, especially women and youth. The project has 5 objectives; 1) building knowledge and understanding about the status of shared rangeland resources; 2) enhancing feed and fodder availability; 3) diversifying livelihoods; 4) supporting research that informs sustainable rangeland ecosystem and pastoral resilience; and 5) improving governance of transhumance routes and wildlife corridors in cross-border areas.

The study directly contributes to the achievement of SEM objectives 1, 3 and 4, specifically on livelihood diversification and knowledge building for sustainable rangeland ecosystem management, and facilitates the realisation of all 5 objectives.

1.2 Background and Context

1.2.1 General Background

ICPALD is a Specialized Institution of IGAD with the mandate to “promote and facilitate sustainable and equitable drylands and livestock development in the IGAD region.” As a technical arm of IGAD, inter-governmental collaboration and coordination of multiple interests, ideas and innovations and programs and activities. As such, ICPALD strives to execute its mandate by providing a platform for regional cooperation and coordination in dryland pastoralism, and livestock development. A key area of its activities is enhancing dryland pastoralism and livestock development. One of its key activities is enhancing dryland production and sustainable pastoralism through various interventions, including the promotion of value-added alternative livelihood products from non-wood rangeland products (NWRP) and artisanal

minerals production areas. ICPALD supports diversification from livestock-based livelihoods as a pathway to adapt to the effects of climate change and create sustainable livelihoods that positively impacts food and economic security, especially in rural pastoral populations. This is driven by the increasing multiple pressures faced by rural pastoralist and agro-pastoralist communities, as well as the changing livelihood modalities and strategies. ICPALD believes that regional cooperation, collaborative work and coordination of actions will be effective if they are based on evidence and proper diagnosis of risks and vulnerabilities that communities face. This is especially true for issues related to sustainable access to shared resources, as well as opportunities to build inclusive and resilient livelihoods.

1.2.2 Policy and Institutional Context

The intervention is designed to address issues related to shared rangelands and associated resources. The policies and institutional instruments for Sustainable Ecosystem Management (SEM) in this assignment relate to inter-governmental protocols, particularly those of IGAD. They also relate to the core national policies and legislation (particularly the countries that share common borders and rangeland ecosystems, such as Sudan/Ethiopia and South Sudan/ Uganda).

Since the creation of Intergovernmental Authority on Development (IGAD) in 1994 to supersede the Intergovernmental Authority on Drought and Development (IGADD) which was founded in 1986, there have been several initiatives at recognising the cross-border rights, interests, threats and livelihood strategies, especially by pastoral communities. The inter-governmental platforms have helped craft some policy instruments and protocols that recognise and facilitate movement of pastoral communities and their livestock as part of adaptive measures in rangeland-based livelihoods, particularly in Arid and Semi-Arid lands (ASALS). Such protocols include the transhumance protocol and several others on trans-boundary animal disease control, Informal cross-border trade, conflict early warning mechanisms and Integrated Early Warning System. Despite the increasing move for individual countries to tightening border control by individual countries due to global terrorism and internal security threats, these agreements and protocols have raised awareness and interest at national and intergovernmental levels about the plight of pastoral communities and other communities living in these rangelands. They provide enabling policy and institutional support mechanisms for sustainable livelihoods. It is, however, worth noting that most protocols have centred on livestock and few appear to address non-livestock based livelihood strategies such as mining, ecotourism and other non-wood rangeland products.

Rettburg et al (2017) predicts that by 2030, traditional pastoralism in Eastern Africa will experience intra-rural transformation from mobile pastoralism towards settled forms of agro-pastoralism, and that there will be increased numbers of destitute pastoralists and unemployed youth searching for employment opportunities in small and medium towns within the ASAL regions. This envisaged scenario appears to have already unfolded, even before reaching 2030, spurred by evolving Government policies related to land reform, urbanisation, infrastructure expansion, mineral/ oil exploration, livestock commercialisation, as well as tourism development alongside social investments by development partners. This is certainly the case in Ethiopia (Benishangul-Gumuz) and Uganda (Kaabong), where the Government

and partners are heavily investing in irrigation and road construction, prompting a need to rethinking sustainable rangeland management and venturing into alternative livelihood sources based on rangeland resources.

This presents opportunity for public policy to empower pastoral communities to explore alternative livelihood opportunities such as NWRPs. The main risks may arise from the fact that rangeland resources, including pastures, dryland forests, and biodiversity) are deteriorating, with the situation exacerbated by changing institutional context characterised by insecure land rights, weakened customary institutions and limited capacity of relevant state Agencies. Policy, legal and regulatory measures that govern the management of rangeland ecosystems (including community lands, forests, Wildlife conservation, plant protection and water resources), livestock development, mining, tourism and trade, cultural preservation, youth and women empowerment, as well as governance (including local government, community development, migration and cross-border security) have an impact on the access to, extent of value addition to, and benefits derived from these resources by different stakeholders. It is important to determine how the traditional rights of local artisanal miners and other users of rangeland resources are respected or limited in the policy and institutional framework that attracts external large-scale investors. Moreover, the increasing focus on biodiversity conservation and wildlife tourism has led to changes in land use policies and laws that may restrict access to some shared rangelands which were previously considered as common grazing lands. Changes in institutional systems governing a resource should be taken into account when promoting specific NWRPs, as this may impose significant constraints.
In general, institutional mechanisms and structures within ASALs that facilitate production/extraction, processing/value addition to, and trade in NWRPs have and continue to evolve, especially with population growth and socio-demographic structure, climate change and economic transformation. Livelihood strategies also transform in response to these changes because they affect availability and access to resources, technologies and markets.

1.2.3 Overview of Rangelands and Sustainable Livelihoods in ASALs

Rangelands constitute nearly half (48%) of sub-Sahara Africa's land or 62% if woodlands are included (Liniger & Studer, 2019). They contribute to Africa's diverse ecosystems, providing a rich range of resources, including soils, water, vegetation and genetic diversity. These ecosystems support food and nutrition security as well as diverse forms of livelihoods. Over 55% of Africa's livestock are sustained by rangelands. This is a major source of income for approximately 268 million pastoralists and agro-pastoralists, many of them residing in some of the most vulnerable areas (Liniger & Studer, 2019). A big proportion of these rangelands and the human and livestock populations that they sustain are in the IGAD region. The IGAD region accounts for 17.3% of Africa's land mass (70% of which is ASALs), a quarter (26%) of Africa's population, 44.5% of its cows and 38.6% of small ruminant livestock (IGAD, 2020)[1]. Thus, sustainable management of these rangelands and resources therein is critical especially for job creation, livelihoods, growth and socioeconomic transformation in rural areas.

1 Towards an IGAD Transhumance Protocol. Legal, Policy and Institutional Frameworks on Pastoral Areas and Cross-border Transhumance in the IGAD Region. June 2020. IGAD and the European Union.

It is particularly important in enhancing resilience of pastoral and agro-pastoral communities to climate change and to ensuring peace, security, stability and prevention of natural resource-related conflict.

Pastoralism is one of the most productive and sustainable use in most of rangelands especially in the IGAD region. Livestock mobility, a key strategy used by pastoralists and agro-pastoralists especially in cross border areas of Kaabong, Kapoeta, and Benishangul-Gumuz, rely on a complex set of socio-ecological knowledge and masterly of safe, reliable transhumance routes and reciprocal/interdependent resource sharing arrangements. In recent decades, however, traditional pastoral livestock production systems have come under increasing pressure due to climate change, growing populations and changing Government policies. These have triggered new challenges for instance inter-community conflict, violence and instability. This has and continues to impact negatively on livestock-based livelihood approaches.

Lind *et al* (2020) described the emerging dynamics in livestock-based livelihoods as challenging. It identified four dynamics that define the challenge:

1) Per capita livestock holdings have declined over a long period and continue to diminish across most of Eastern Africa's ASALs. Livestock holdings per capita now fall short of subsistence requirements for a large proportion of pastoralist populations, and many are dropping out. In Karamoja region, for example, livestock holdings declined from around 2.7 Tropical Livestock Units (TLUs)/person in 1959 to 1.3 TLUs/person in 2002, with nearly 70% of the livestock being owned by 30% of the wealthiest agro-pastoral and pastoral population (Mercy Corps, 2018). More than half (57%) of the households in Karamoja fell below the livestock threshold of 3.3 TLUs per capita (equivalent to 4.7 cattle or 33 goats per capita) required for each household's food and nutrition security (Catley & Ayele, 2018). They fell into abject poverty as they owned too few livestock to meet their needs.
2) Commercialisation of the livestock sector and the export trade in live animals and carcasses has significantly grown, particularly in Ethiopia, but levels of poverty and vulnerability are worsening (Lind, et al, 2020). This implies that the livelihood transformation process associated with the large investments should be reviewed to ensure full inclusion of and optimal benefits to local pastoral communities.
3) The mobility of people with herds has greatly decreased, yet, the concomitant sedentarization has been marked by the dispersion of households, with members migrating to towns, urban centres and beyond for work, social assistance and education; and
4) Perennial uncertainty in both climate and disease necessitates flexibility and adaptability, yet, rangelands are fragmenting as an increasing proportion of the land area (and particularly key grazing areas) are being enclosed for state (conservation) and private use (e.g. crop production, mineral prospecting), which limits passage and livestock movements.

According to USAID (2016), livelihood diversification in Eastern African drylands has been pursued for over half a century but became more pronounced since the severe droughts of 1979-80 and 1984 when the region was hit by severe droughts. Extreme weather events like prolonged droughts, heat waves and flash floods have become more frequent and severe

due to climate change. There are other factors that are driving and shaping current livelihood diversification. They include increased growth and complexity of commercial livestock markets, emergence and expansion of regional and local urban centres within ASALs, and increased incidences of conflict.

Achiba (2018) noted that livelihood diversification in ASALs is pursued mainly to better manage risks and improve welfare. Other objectives include meeting nutritional needs. Recent studies (e.g. Musyoka and Onjala, 2023) identifies positive correlation between resilience to shocks and livelihood diversification among households in ASALs of Kenya. The International Livestock Research Institute (ILRI) (2016) viewed livelihood diversification as a strategy for resilience arguing that it strengthens the capacity of households to deal with shocks and stresses. Musyoka & Onjala (2023) pointed out risk management as the external stimuli that push households to diversify their livelihood support systems. In this respect, ILRI (2016) identified three types of livelihood diversification that can help manage risk or increase income:

1) Concurrent diversification – which involves engaging in more than one livelihood activity at the same time; 2) temporal diversification, where households and/or individuals diversify activities across time (typical where products and services follow seasonality), and 3) Spatial diversification which involves engaging in livelihood activities that are located in different geographical areas.

USAID (2016) identified three sets of variables that influence pastoralists' decisions in livelihood diversification: (1) conditional variables (e.g., rangeland availability, population density, per capita livestock holdings, climate, and other meta factors); (2) opportunity variables (human capital/ knowledge and/ or skill, distance to markets and towns, and related factors); and (3) local response variables (gender, wealth, and age).

Security is also paramount especially in relation to gender. A study by Mercy Corps in Northern Karamoja found that women had been unable work in the fields, collect wood, or gather wild fruits due to severe insecurity outside their village where the risk of sexual and gender-based violence (SGBV) was considered high (USAID, 2016). On the other hand, men experienced both physical assault and robbery while carrying their goods to markets (Howe et al. 2015). Hence insecurity can be a constraining factor in pursuing diversified livelihoods through NWRPs. All these factors appear to be at play across the entire IGAD region, and influence decisions on the range resources that they diversify livelihoods with.

In all these circumstances, it is important to understand what influences households' diversification of livelihood support systems, how important are the different livelihood components and how sustainable they are.

The interactions among factors that influence the decision process for individuals and households in ASALs to diversify livelihoods are structured in a pastoral livelihood diversification framework (Achiba, 2018).

1.2.4 Nexus Between Non-Wood Rangeland Products and Sustainable Livelihoods

In the changing socio-economic and ecological settings, livelihood diversification based on exploitation of non-wood range resources, is important for sustainable rangeland-based livelihoods, especially in the cross-border areas of ASALs.

Non-Wood rangeland Products (NWRP) are defined, in the context of this assignment and the SEM Project, to consist of goods of biological origin other than wood, derived from trees/forests and other wooded lands in the rangelands. They include plants and plant materials used for food, fuel, storage and fodder, medicine, cottage and wrapping materials, biochemical, among others that have perceived economic or consumption value sufficient to encourage their collection and removal from the rangelands. Of great value in the IGAD region and of particular interest to the SEM project, are all materials that support alternative or complementary livelihoods including food, ethno-medicinal and ethno-veterinary purposes. It covers natural products from any plant forms (grass, herbs, shrub, tree such as wild fruits, spices, gums, resins, aloe vera and essential oils) and products from land (minerals obtained by artisanal miners, etc) and insect and insect products (honey, wax, silk).

Rangelands refer to types of land within Arid and Semi-Arid Lands (ASALs). They are dominated by natural or semi-natural vegetation suitable for extensive livestock production and wildlife conservation. However, they are too fragile and less suitable for arable farming due to climatic limitations such as scarce and unreliable rainfall, high evapo-transpiration, and poor soils. In the context of this assignment, the definition of NWRPs is extended to include small artisanal mining taking place in rangelands.

NWRPs are critical to the sustainability of range-based livelihoods and economies as they provide essential food and nutrition, medicine, fodder, wild fruits, minerals, etc., which creating employment and income to rural populations as well as urban consumers.

NWRPs provide a safer diversification option for pastoral communities as they are familiar with the environment and they are likely to encounter relatively fewer challenges compared to options that take them out of their localities and sectoral domains. Familiarity with the environment enables them to know which fruits are in season, where and areas that are likely to be edible plants, honey or minerals. The shared rangeland resources across the borders are well understood by the pastoral communities, local actors, local administration and service providers, as they have depended on them for a long time. The wide array of rangeland resources which vary in space and time means there can be a reliable supply of products across borders, and the co-existence of pastoralist communities may mean less conflicts.

Gender is a key principle of social differentiation that influences pastoral diversification strategies. In Ethiopia and Somalia, women have tended to dominate milk value chains, and in Karamoja, women are actively involved in artisanal mining and micro-processing of gold. It is important to analyse how gender influences the decisions of individuals and households as to which rangeland products to collect or sell as a welfare risk mitigation measure or livelihood strategy. For some products, particularly those with relatively long value chains and significant differences in market rewards, such as honey. It is critical to establish whether there are tendencies for men and women to be inclined towards certain products (e.g. wild

fruits as opposed to resins) or parts of product value chains (for instance honey packaging or marketing as opposed to harvesting or bee keeping). This helps to understand if and to what extent livelihood diversification opportunities or constraints are gender-related.

Sustainability Issues: The commercialization of Non-Wood Forest Range Products (NWRPs) has the potential to significantly contribute to the resilience and sustainability of range-based livelihoods. However, their commercialization may have far reaching negative implications on pastoral livelihoods and ecosystems. Some plant species endemic to the area may become extinct if not wisely exploited. This issue is important to address as most harvests of NWRPs come from wild sources, and increased extraction will likely strain the available stocks. Therefore, it is necessary to establish mechanisms to ensure the optimal utilisation of NWRPs consistent with sustainable management principles for rangeland ecosystems. Furthermore, it is important to consider the changing land use/land cover and declining productivity of most rangelands due to climate change and degradation induced by population activities. Kihiu and Mensah (2016) identified land use/land cover changes (LULCC) as a major driver of rangeland degradation in ASALs. These changes in land use and cover are often linked to the loss of natural vegetation and biodiversity, which are essential for both pastoral and non-pastoral livelihoods. *Lack of access to infrastructure* undermines exploration and productive exploitation of resources such as mining, apiculture and fruit processing. This leads to informal activities that create little value for local communities.

In a nutshell and, as ICPAC (2020) argued, efficient and multiple use of rangeland resources is crucial for strengthening the resilience of communities in ASALs by enhancing the adaptive capacity of pastoral and agro-pastoral communities to the impacts of climatic and non-climatic drivers of change through livelihood diversification. However, there is need to constantly highlight the concerns for efficiency and wise use, as livelihood diversification can also impose pressures on the fragile natural resource base.

1.3 Objectives of the Assignment

The study objective is to identify and map the distribution of different non-wood rangeland products in the target areas. It will also analyse the contribution of selected priority products to household livelihoods. IGAD/ICPALD anticipated that the study findings and recommendations will help facilitate trade in wild and domesticated rangelands products such as fiber, gum and resins, fruits, honey, medicinal and food plants and minerals, among others, which can be exploited as alternative sources of livelihood. The Theory of Change suggests that identifying and addressing constraints and potential opportunities in the exploitation and engagement of different rangeland products for trade will promote sustainable production, use and income generating activities for pastoralists, dropouts (e.g. those who lose livestock or opt to change livelihood strategies), youths, women and the elderly. As a result, increased trade and improved livelihoods of communities will spur other rangeland ecosystem services and related economic activities such as ecotourism. Nonetheless, given the many negative impacts of successful ventures in extractives, there must be precautions especially the potential drawbacks for social systems (e.g. exclusion and conflict) and ecological (depletion of flora, fauna and associated ecosystem services) arising from increased demand not sustainably responded to by supply systems.

To realise these objectives, the consultant was required to carry out 9 specific tasks, as follows:

1) Draft brief inception report covering literature review on dryland livelihoods, presentation of understanding of the assignment and methodology (including data collection tools); tentative timeline and deliverable including an outline of the draft final study report.
2) Conduct desk review of existing documents including, policy, practice, strategy and similar studies on production, value addition and marketing of products from arid and semi-arid lands (ASAL) in the IGAD region;
3) Conduct field visit to target cross border areas to conduct questionnaire survey, resource mapping, discussion with key institutions and stakeholders involved in exploitation of various rangeland products, rank them in prioritized manner;
4) Identify and prioritize important rangeland products in the project site including broader distribution map, estimated quantity where applicable;
5) Undertake household livelihood analysis for the selected project area to understand the socio-economic contribution of alternative livelihood resources such as non-wood rangeland products and artisanal mining and livestock in cross border areas of Ethiopia-Sudan and South Sudan-Uganda;
6) Conduct market analysis for selected major products to identify current and potential market outlets including profitability/suitability;
7) Identify any challenges including social, ecological and economic factors that limit maximum exploitation of the identified rangeland products and markets and make clear recommendations of how to improve;
8) Present the draft report for validation and further input at stakeholders' workshop that will be organized by ICPALD;
9) Prepare a regional policy brief based on the study results.

1.4 Methodology

The study used a mixed method approach owing to the nature of the study that required a combination of both socioeconomic and biophysical data and aimed to resolve issues of ecological and socioeconomic nature. The Methodology for this study involved a combination of various techniques, approaches and processes:

1.4.1 Comprehensive Review of Documents

A comprehensive literature review was undertaken to:

a) Understand the current status and trends in rangeland products that are important for the livelihoods and cross-border economy in the 2 project sites;
b) Identify the main actors and the NWRPs that are critical to various socioeconomic groups of people (including women, youth, pastoralists, agro-pastoralists, peri-urban dwellers, other vulnerable populations e.g. refugees and IDPs, as well as landless individuals).
c) Highlight sources/production zones, methods of processing, transportation and marketing channels, as well as to establish the extent to which livelihoods reliance on these products. The review of previous studies, particularly peer-reviewed articles on the subject matter enabled the consultant to appreciate the issues, challenges and

opportunities related to NWRPs. The knowledge helped in developing a more suitable approach for the study, and formulate practical recommendations."

1.4.2 Primary Data Collection Techniques and Tools:

Primary data was collected directly through field visits and interaction with target communities, leaders, change agents and local development facilitators. A combination of primary data collection techniques was deployed such as Key informant interviews (KIIs), Focused group discussions (FGDs), household questionnaire survey, transect walks and direct field observations.

Two FGDs were organised for Morungole communities, one FGD in Natinga (Kapoeta East County) one FGD in each of Akandeyu and Kurmuk Woredas in Assosa Zone, Benishangul-Gumuz region. Participants in all FGDs were mixed when it came to gender but Morungole was dominated by men, women Natinga, Kurmuk, Akandeyu saw more women than men while Akandeyu had a good representation of youth. Use of multiple data collection techniques (i.e. interviews, direct field observations, FGDs) enabled data gaps to be filled and the data collected to be triangulated, enriched and presented coherently in multiple formats (text, tables and pictures).

Plate 1.1A: Interview with an elderly man in Akandeyu Village. Plate 1.1B: An FGD in Akandeyu Kebele, Kurmuk Woreda.

Plate 1.2A: Stakeholder engagement with Natinga Community, Kapoeta East. Plate 1.2B: An FGD in Morungole, Kaabong.

A structured individual questionnaire was administered to 61 household heads to gather quantitative data on their household wealth profile, capabilities and livelihood strategies. The survey received fewer responses than expected due to a number of limitations such as scattered nature of target respondents, language barriers. However, the results offer very rich and insightful information that can be used to analyze and develop more practical recommendations.

Transect walks were made through selected trails in the landscape where selected NWRPs are obtained, processed or sold. These included forest sites, shrub lands and mining sites where rangeland products like honey, gum and resins, shrubs/grass, fruits, food crops, leafy vegetables, stones, sand and gold, bush meat, etc. are harvested, as well as places of processing and marketing. Field observations provided qualitative information on the nature and structure of the landscape, scale and standard of activities, state/form of the resources (quality of ecosystems), actors and tools they use to extract, process, store, and move the products from source to market and beyond.

Fieldwork was boosted by events and activities that took place while in the field. Key among them were market days in Morungole and Kurmuk, development partners' coordination meeting at Narus town (Kapoeta East County headquarters) which enabled the consultant to observe, listen and interact with local stakeholders.

1.4.3 Data Analysis and Reporting

The qualitative data was organised and documented based on themes and issues identified to respond to the (ToRs). This included the most commonly extracted NWRPs; how these products support livelihood activities; and issues within market value chains. The data was entered into computer programs in a way that allows for some quantitative analytical work to be performed.

The quantitative data was analysed using MS Excel software, and the results presented in form of charts, tables, figures and pictures, to demonstrate the status of key issues.

1.4.4 Livelihood and Market Analysis

The livelihood analysis was conducted through a three-stage analytical approach using the framework attached in Annex 2B. Building on extensive literature, which provided insights into the livelihood structure in each community and engaged with community members to discuss their livelihood activities and rangeland products they use to meet food and nutritional needs. The data was analysed and presented using the livelihood analysis framework (Annexes 2A and 2B). For products with market potential, a value chain was created to identify gaps, opportunities and possible pathways to enhance livelihood opportunities through value addition.

1.4.5 Selection of NWRPs for Analysis Products Criteria for Selection of Products

The NWRPs that communities depend on were identified in meetings with the local officials and community leaders, and then ranked based on their importance to the communities. The selection process was validated through interviews and FGDs with communities and individual respondents.

The criteria for selection and prioritisation products for further market analysis and livelihood interventions were also discussed with the local officials, and included:

1) Potential to support livelihood diversification;
2) Regenerative ability and sourced from sustainably managed ecosystems/sources
3) Resilience enhancement of communities that directly depend on wild rangeland products;
4) Ease of access to resources/ security of tenure over a relatively long period of time
5) Ability to promote inclusiveness (social inclusion), including ease of access and accrual of benefits to women, men, PWDs and children.

1.4.6 Market Analysis

Market analysis was undertaken to understand how value is created, what accrues to community members, and identify market actors, opportunities and constraints that need to be addressed, to optimise economic gains in each value chain to enhance livelihoods. A checklist of key questions covering products, users, markets, value addition, drivers and barriers, was used to guide market analysis. The products were profiled by community members who described how the products are extracted, processed and marketed.

In all sites, fewer than 3 wild products like honey and gold remain the frequently seller and to which they could attach monetary value with relative consistency and traceable market chain. The analysis was brief owing to the short and generally informal value chains.

2

DESCRIPTION OF THE STUDY AREAS

2.0 DESCRIPTION OF THE STUDY AREAS

2.1 General

The study was undertaken in three cross-border sites within the IGAD area, that is 1) Morungole sub-county, Kaabong district, Uganda; 2) Narus and Natinga Payams of Kapoeta East County, in the Eastern Equatorial State of South Sudan; and 3) Kurmuk and Akandeyu Kebeles, Kurmuk Woreda in Assosa Zone, Benishangul-Gumuz, Ethiopia.

2.2 Kaabong District, Uganda

Kaabong is one of the 10 districts in the Karamoja sub-region in north-eastern Uganda. It borders the Republic of South Sudan to the North, Republic of Kenya to the East, Moroto District to the South East, Kotido District to the South and Karenga District to the West. The district is located between longitudes 33˚ 30' 31'' to 34° 31' 28'' and latitudes 3° 45' 11'' to 3° 6' 44'' east of the Green Witch Meridian. It covers a surface area of 4,751.1 KM^2. The altitude ranges between 100m to 3000m above sea level, with the highest points found on the border with Sudan and Kenya (Morungole mountains).

Kaabong district is dominated by Dodoth who constitute about 95%, Napore, Nyangea, Mening and Teuso/Ik tribes (UNDP, 2014). According to UBOS (2017), Kaabong district had a population of 167,879 people (79,207 male and 88,672 female). These people are distributed in 29,182 households. It's predominantly rural with only 6.5% population urban. Households are large, averaging 7 persons.

Population and Demography: Like all rangelands, the district is sparsely populated, with an average density of 23 persons per square km. It's predominantly rural with only 6.5% of the total population living in urban areas.

Livelihoods and Livelihood Sources: The main source of income for most households (33%) is sale of maize, alcoholic beverages / petty brewing (11%), provision of agricultural casual labour (11%) and provision of non-agricultural casual labour (10%). Livestock ownership has declined over the last few decades. This is due to drought-induced animal deaths and cattle rustling. According to IPC (2023), just over a third of households (36%) own livestock, and only 1 in 10 households own high livestock holding (>5 TLU). This means that most livestock-dependent households diversify out of necessity to mitigate welfare risk, as income from livestock has to be complemented with other sources in order to secure even basic needs.

Natural Resources: Kaabong is endowed with different minerals among them the reef and alluvial gold, magnetised mica, iron and marble. Mining activities dominate the local artisanal activities, although there is increasing interest from large scale private sector investors.

Mining in Kaabong District is at subsistence level. The key commercially viable minerals include reef & alluvial gold in Lopedo, Loyoro, Kathile and Kamion Sub-Counties. There are quantities of Marbles in Loyoro, Lotim, Kaabong East, Lodiko and Lobongia Sub-Counties. From 1994 to 2000, a South African based Mining Company, Branch Energy undertook gold exploration in

Lopedo gold mines. Currently, the local communities are involved in surface gold mining at a smaller scale. They use rudimentary tools such as spades and pick axes. The mining activities are however majorly affected by lack of value addition technologies and use of rudimentary mining tools.

Besides the mineral wealth, Kaabong district is host to the vast Kidepo Valley National Park, a savannah protected area that is inhabited by lion, Leopard, Cheetah, Elephant, Buffalo and several other fauna and flora species. Despite this endowment, tourism development still has not picked.

Geology, Topography and Soils: The stratum of Kaabong District extends from Karamoja Sub-Region. It comprises the Pre-Cambrian system, the Mesozoic and Cenozoic groups and it is mainly the latter Pre-Cambrian. The other groups of rocks include the Mesozoic and Cenozoic eras associated with volcanic eruptions in the eastern parts of the region covered by Morungole Mountains.

Kaabong District has three major types of soils, namely ferallic, vertigos and ferruginous tropical soils. Other types include litho soils. The genesis of soils in Kaabong District has been affected by many factors such as climate, elevation, type of parent rock; vegetation covers, topography, aggravation and erosion processes. The ferruginous, which are the dominant soils, have been degenerated by weathering processes and have become less productive. Litho soils occur along the up warped surface on the eastern side of the district. They are very stony and contain solid rock. The soils are of low to medium productivity with mono cropping currently being practiced. Sheet erosion happens a lot. This is due to torrential rain and strong winds that carry away top soil cover leaving the less fertile soil. The soil cover is also changing due to the large herds of cattle that destroy the vegetation and expose soil to erosion.

Precipitation and Climate: Kaabong district experiences a dry savannah semi-arid climate that is characterized by intense hot season from November to March each year. The rainy season comes up from April to August and the district receives an average precipitation of about 519mm per annum. There is one long dry spell in the months of October to February and also in June to August.

From records at the Kapedo mission station, the district experience daily temperatures of between 30ºC to 35ºC in January-March dry spell. Relative humidity can reach 60% between June and July. There is considerable variation in seasonal temperatures between day and night, as temperatures usually fall to or below 15^{o}C. Sunshine and wind are strongest between December and April. The North-easterly winds usually exceed 200 kms per day[2]. During this period, the area experiences dust storms, desiccation and pulverization of the sparse vegetation cover. Kaabong district experiences high evapo-transpiration rates due to a combination of high day temperatures, low elevation, low humidity and constant clear skies, which prevail from November to March each year. The district has high potential for wind and solar energy from sunshine, yet it is still unexploited.

Vegetation and Forest Cover: Kaabong district has a typical semi-arid type of vegetation, divided into three groups reflecting the different ecological conditions in which they occur. The groups are forests, savannah and steppes. The forests are further sub-divided into low and

2 Kaabong District Development Plan, 2021).

high-altitude forests. The former includes semi-evergreen and deciduous thickets, while a dry montane type dominates high altitude forest types. The dry montane forests are confined to the mountains where climatic conditions are favourable for their development. These consist of most of the forest reserves on the mountains such as Morungole and Zulia. The most widely distributed tree species are *Juniperus procera, Teclea nobilis* and *Olea chrysophylla*.

Low altitude forests are confined to certain riparian environments, rocky hills and inselbergs. Semi-evergreen and deciduous thickets are the dominant types of vegetation. A variety of scattered big and small trees characterise low altitude forests; Acacia reficiens, Commiphora species and Euphorbia candelabrum are some of the tree species found there. Common shrubs are generally Coleus and Grewia species while *Hyparrhenia dissoluta* and *Panicum maximum* are the associated grasses.

Drainage and Fresh Water Resources: Kaabong district has no permanent water sources. It has numerous intermittent rivers and streams including Kaabong and Lokaapelot that fill up during the rainy periods and dry up within a few days in the dry season. These streams all originate from the Morungole and Timu mountain ranges in the east and northeast and flow south westerly draining into Karenga District, except the Kaabong River that drains into the Kyoga system. The headwaters of nearly all the rivers flow for a few hours but the water caught in rocky pools may last anything between a few days to several months.

These seasonal streams and pools constitute the major source of water for livestock both during the rainy season and in the dry season. In their sandy courses, the rivers flow for an average 30 days in a year, and water may be found by digging, either continuously along the sand or in widely separated stretches. The wells, which vary from a few centimetres to over 10 metres in depth, have steps cut, to facilitate water extraction.

Land Use: Land use is influenced by land tenure system. About 90% of Arable land is owned according to customary laws and no land is held by free and lease hold.

Gender and Livelihoods: economic activity in Kaabong and across most ASALs is divided along gender lines. Although women are generally powerless with respect to ownership and tenure security of productive assets, and are often themselves considered “owned” by their husbands, they still play a significant role in economic productivity. They are an integral component of household and community livelihood strategies. Most of them re involved in gold mining and stone quarrying, trade, sale of charcoal, brewing and sale of local brew (e*kwete*) and farming, among the semi-nomadic communities. Moreover, they undertake non-monetised activities such as taking care of elderly and children, building houses (Manyattas), collecting water, gathering fuelwood and cooking food for household members. These activities often leave them exhausted and with hardly no time to pursue personal development goals.

They also adopt alternative rangeland-based livelihood strategies like collecting and selling fruits and firewood. Increased degradation of ecosystem resources, including forests and shrubs, has reduced access to resources and livelihood opportunities associated with their extraction. Women and girls are now forced to walk for as long as 6 hours in search of raw materials/non-wood range products.

Morungole Sub-County

Fieldwork was conducted in the Morungole sub-county at the border of South Sudan and Kenya. The sub-county is located in the Ik County (Ik constituency) on the extreme north-eastern corner of Uganda. It's named after Morungole Mountains which forms the north-eastern boundary between Uganda and South Sudan. It is dominated by the Ik/Teso ethnic group but also inhabited by the Dodoth and other smaller groups that are considered immigrants in the area". Morungole sub-county was curved out of Kamion sub-county in 2016. It consists of 3 parishes of Usake, Morungole and Lukwakamoe. The population distribution by parish is shown in Table 2.1.

Table 2.1: Morungole Sub- County Population by Administrative Units

Parish	Total Population	No. of Households
Usake	2,900	638
Morungole	2,750	332
Lukwakamoe	1,020	132
Total	**6,670**	**1,102**

Source: Kaabong Local Government Records.

2.3 Kapoeta East County, South Sudan

In the Republic of South Sudan, the study was undertaken in 2 Payams of Narus and Natinga, of Kapoeta East County, in the Eastern Equatoria State. According to the UNOCHA, Kapoeta East County had an estimated population of 169,978 people by 2022.

The county which is located within the Greater Kapoeta region is an expansive rangeland bordered by Kenya to the south, Ethiopia to the east and Jonglei state to the west. The largest ethnic group is the Toposa people, who traditional herd. The Toposa people belongs to the "eteker cluster", which includes the Jie, Dodoth, and Karamojong people of Uganda, the Ethiopia and Jiye people in south eastern South Sudan and south western Ethiopia, and the Turkana people of Kenya. These dialects belong to the Nilo Hamites group.

The Natinga Payam and other areas closer to the Kidepo Mountains are occupied by other ethnic groups like the ik/Tauso. Narus Payam is located some 77Km South East of the regional city Kapoeta Town, and is the most settled and urbanised area in Kapoeta East County, serving as the Headquarters of the County.

The topography of the area is a rugged and is that is characterised by hills and ridges, which tend to be divided by shallow plains and seasonal streams. It is generally arid with sparse vegetation of shrubs and short grass.

Livelihoods: The predominant ethnic group who are the Toposas depend largely on livestock (Cattle, goats, sheep, and to some extent, donkeys). Although livestock rearing is considered the main economic activity, only one third (32%) of the men considered cattle grazing and

defence as their main occupation. One in five (22%) of men depend on NWRPs (hunting, fishing, gathering vegetables and fruits, and other natural resources), for their livelihoods (Avis & Plan International, 2017). Poverty and food insecurity are high, with 71% of adults reported having only one meal a day (Avis & Plan International, 2020). However, considering the lifestyles of many semi-nomadic communities, frequency of meals may not be an appropriate indicator of welfare, and, as such, other indicators such as ownership of productive assets will be used.

*Gender and Livelihood Strategies***:** Men's role revolve around grazing and defending their herds, while women's roles are mainly to cultivate the land (farming), take care of the elderly, cook and generally provide food for the household (Avis & Plan International, 2017). These multiple responsibilities of women drive them to be economically active because they have to earn money to take care of domestic needs. About 85% of the men have multiple wives, probably as one of the livelihood strategies.

The Toposa communities are organised into agnatic lineages, whose social values and customs are passed onto the children as early as possible. One of such values is the gender differentiation of roles where boys are oriented and trained to herd livestock, while girls on the other hand are modelled and skilled to take care of domestic activities including caring for the elderly, children and other issues related to family welfare. The community holds chiefs, sub-chiefs, elders, fortune-tellers, medicine men and witch-doctors who are considered to have a lot of administrative and spiritual power, with high regard. Although they tend to wield more respect than Government officials, they generally work well with other administrative structures. However, that cooperation is withdrawn if the elders perceive that Government interests are against the welfare or security of the communities. This means that decision processes, including common property resource access, must be negotiated through clan heads and elders, if any substantial decision is to be made.

Infrastructure is Underdeveloped: Road networks are few and underdeveloped, making cross-border connectivity poor. This affects livelihoods, as communities on either side of the borders are not able to leverage each other's' strengths to meet livelihood needs.

Plate 2.1A: The main cross-border road from Narus to Kaabong through Natinga. Plate 2.1b: Kaabong-Morungole road.

Pastoralist communities rely on family labour for most of their livelihood strategies. As such, there are differentiated roles between women and men, children and elderly that must be understood in any livelihood analytical activity. While these generally cut across most pastoralist communities in ASALs, there are significant differences between communities and ecological settings.

2.4. Kurmuk Woreda, Ethiopia

The study was undertaken in 2 Kebeles-Akandeyu and Kurmuk in Kurmuk Woreda, in Assosa zone, in the Benishangul-Gumuz region. The Benishangul-Gumuz region is located approximately 687 Km west of Addis Ababa and has a predominantly rural population (77%). It shares the trans-boundary ecosystem with the Blue Nile State of the Republic of Sudan. The Blue Nile state has an estimated population of 1.3 million people and an annual population growth of 2.8%.

According to the Benishangul-Gumuz Regional State (2022), Kurmuk Woreda recorded an estimated population of 23,391 people (12,072 male and 11,319 female). The distribution by rural and urban residence is summarised in Table 1.

Table 1: Population of Kurmuk Woreda as of July 2022

	Urban	Rural	Total
Male	922	11,150	12,072
Female	670	10,650	11,319
Total	**1,592**	**21,800**	**23,391**

Source: Benishangul Regional State (2022)

With a population of only 23,391 distributed over an area of 1,290 Km^2, Kurmuk is one of the least populated Woredas in Assosa zone and the State of Benishangul-Gumuz. It is also among the least urbanised, with only 6.8% urban population.

The Labour Migration Survey (LMS) conducted by Ethiopian Central Statistics Agency (CSA) in 2021 reveals that 669,308 people (77.3% of the population aged 10 years and above) in Benishangul were economically active. Of these, a total of 640,778 people were reported to be employed (representing 95.74% of the economically active population, and 74% of the population). The inclusion of under-age (10-year-olds) and the predominantly rural and poor population may undercut the high level of employment when it comes to white collar jobs.

Livestock-Based Livelihoods: Kurmuk has fewer livestock compared to other Woreda's in the region. It has the least number of cattle and sheep despite the fact that its population density is one of the lowest in the region (18.13 persons per Km^2 compared to 24.04 persons per Km^2 for Benishangul State, which would make it ideal for range livestock production. Table 2 shows livestock numbers compared to the total numbers in Assosa Zone.

Table 2: Livestock Ownership in Kurmuk Woreda

Livestock Type	No. of Livestock		% Share of Zone
	Kurmuk	Assosa Zone	
Cattle	149	84210	0.18
Sheep	465	30113	1.54
Goats	14360	184751	7.77
Poultry	19279	335415	5.75
Donkeys	472	33367	1.41

Source: Benishangul Regional State (2022)

Few livestock numbers mean that livestock is not the predominant source of livelihoods for the population.

Natural Resources and Alternative Livelihood Opportunities: Kurmuk is endowed with vast mineral deposits notably Iron, Gold, Copper, Nikel, Chromite and Marble. In Kurmuk, as elsewhere in Benishangul Gumuz region, gold mining activities are dominated by artisanal operations. Gold mining is a key livelihood source for men, women and children in the Woreda, who use rudimentary means.

The most recent mining law is Proclamation No. 816/2013. The legal framework for mining provides for a range of licencing regimes which recognise artisanal mining activities. Artisan Miners can obtain a licence for up to 2 years, while Special small-scale mining activities are issued with licences for up to 10 years, Small-scale mining up to 10 years and Large-scale mining up to 20 years. Artisanal miners can be supported to graduate to small-scale level. In terms of taxation, mining licence holders are required to pay royalties. However, the Benishangul Gumuz State exempted Artisanal miners from paying royalties because of the informal nature of the activity and many illegal activities, lack of transparency among large scale miners who often do not report the true picture of revenues, and limited capacity of state institutions to collect royalties (Benishangul State, 2022).

The potential for mining to act as a viable source of alternative or diversified livelihoods in the region is constrained by things like remote locations and poor transport infrastructure; lack of relevant skills and access to modern mining technologies. Other factors include price fluctuations, lack of standards and illegal mining operations; weak institutional capacity especially among regulatory agencies; and lack of capital.

Transport infrastructure is not well developed in Kurmuk. The Woreda has 5 major roads, covering 102.1Km. Only a third (35 Km) is asphalt, the rest is gravel. The network is not well maintained (Benishangul State, 2022). This constrains economic activity and livelihood strategies, as connectivity and access to different production and market centres as motorable transport is limited and costly.

3

LIVELIHOOD AND MARKET ANALYSIS

3.0 LIVELIHOOD AND MARKET ANALYSIS

3.1 Livelihood Strategies, Structure and Dynamics

3.1.1 Major Livelihood Assets

Access to physical, social, economic, intellectual and natural assets greatly influences the livelihood decisions, including the strategies that communities pursue. Findings reveal that the most important assets that communities in the target communities have land, livestock and proximity to natural resources. Other subsidiary assets are the tools to exploit the said opportunities. From the study, very few respondents had access to mobility assets meaning, only 2 people owned a bicycle across the 3 sites. Although nearly half (47.5%) have mobile phones, 90.5% have never used mobile money or any other digital payment. Over 80% of the community members were illiterate.

Land Ownership

Land ownership is important for livelihoods. Majority of community members described themselves as agro-pastoralists which means they rely on crop farming, small ruminants and poultry. More than half of the respondents reported owning 5-10 Ha, while only one in Five people have more than 10 Ha. Land ownership figures may be exaggerated, especially in Morungole where respondents included in their count, the plots of land in the Central Government Forest Reserve that they use. It is managed under the National Forestry Authority (NFA).

Table 3.1: Household Land Ownership in the Communities Targeted

	Frequency	Percent
1. Over 29 Ha	9	14.8
2. 10-20 Ha	2	3.3
3. 5-10 Ha	32	52.5
4. 2-5 Ha	15	24.6
5. 1-2 Ha	3	4.9

Source; Field Survey (December, 2023)

Most respondents have access to land, on which they cultivate. However, in all sites, none of the households seemed to have clear security tenure. Their security is secured through communal ownership (by clan heads). There is general confidence in the clan leaders exercising their powers in the interests of the community members.

Livestock Ownership

Few people own cattle and small ruminants like goats and sheep. Almost all households rear chicken. Lack of livestock despite the vast rangelands was described as a survival strategy to avoid the deadly livestock rustling by other communities/tribes. As such, even those who reported owning livestock tended to have very few (1-5 heads of cattle, sheep or goats).

Table 3.2: Livestock Ownership

	Livestock type	Frequency	Percent
	Cattle	20	37.7
	Camels	7	13.2
	Sheep	22	41.5
	Goats	34	64.2
	Donkeys	10	18.9
	Poultry	44	83.0

Source: Field Survey (December 2023)

Other Assets- Hand Tools

In all 3 sites, the most important mobile assets were hand-tool like the hoes, pick axes and spades used for cultivation and gold mining.

3.1.2 Livelihood Strategies of Communities in the Study Areas

Overview

From a combination of rapid household survey and FGDs, half of the respondents (49.2%) described themselves as crop farmers, one in five (19.7%) as pastoralist, and a third (29.5%) as agro-pastoralists.

Table 3.3: Respondents' Main Occupation

	Frequency	Percent
1. Pastoralist	12	19.7
2. Agro- pastoralist	18	29.5
3. Crop farming	30	49.2
Others	-	-

Crop Farming is an integral part of livelihoods for nearly 80% of the population. This was confirmed by the FGDs held in 4 locations Morungole, Natinga, Akandeyu and Kurmu). Field observation also revealed that annual crops are covering a considerable portion of the rangelands where the communities targeted live, particularly in Kurmuk and Morungole. The study also revealed that only 3 people in Morungole deriving some form of livelihood from eco-tourism like tour guiding activities. One third (23 out of 61 respondents) reported spending at least 1 hour hunting, over 80% of them spending more than 4 hours doing the same. This is a significant but less than expected number given the abundance of game that is within their proximity and the fact that these communities were traditionally hunter-gatherers. Community members in Morungole claimed they had long stopped hunting due to the restrictions and increased surveillance by Kidepo Wildlife Conservation Area officials. It was, however, evident that they occasionally hunt game meat. Wildlife hunting and game meat was mostly reported in Natinga (Kapoeta East). Here, guinea fowls, Dig-dik and other

small animals are hunted for meat. At least one restaurant in Narus town serves bush meat as a delicacy, which indicates some level of commercialisation. But this may threaten conservation of the trans-boundary ecosystem resources, especially on the South Sudan side where wildlife protection law enforcement is relatively weaker.

Table 3.4: Livelihood Activities

To understand livelihood options, household heads were asked what livelihood activities they spent most time doing

		Frequency	Percent
Grazing cattle	1. More than 4 hours	18	72.0
	2. 3-4 hours	3	12.0
	3. 1-3 hours	4	16.0
Cultivating crops	1. More than 4 hours	32	65.3
	2. 3-4 hours	9	18.4
	3. 1-3 hours	8	16.3
Trade	1. More than 4 hours	8	33.3
	2. 3-4 hours	2	8.3
	3. 1-3 hours	6	25.0
	4. less than 1 hour	8	33.3
Mining	1. More than 4 hours	9	27.3
	2. 3-4 hours	6	18.2
	3. 1-3 hours	12	36.4
	4. less than 1 hour	6	18.2
Honey collection/processing and sale	1. More than 4 hours	10	31.3
	2. 3-4 hours	2	6.3
	3. 1-3 hours	13	40.6
	4. less than 1 hour	7	21.9
Gathering and selling fruits and or vegetables	1. More than 4 hours	13	46.4
	2. 3-4 hours	2	7.1
	3. 1-3 hours	13	46.4
Hunting and sale wild meat/ animals	1. More than 4 hours	19	79.2
	3. 1-3 hours	4	16.7
	4. less than 1 hour	1	4.2
Collecting water	1. More than 4 hours	9	23.7
	4. less than 1 hour	29	76.3
Employed by an organisation	2. 3-4 hours	2	28.6
	3. 1-3 hours	4	57.1
	4. less than 1 hour	1	14.3
Tour guiding	1. More than 4 hours	1	33.3
	2. 3-4 hours	2	66.7

Eco-tourism: All the 3 localities have high potential for nature-based tourism. This is because the area has incredible landscapes, unique culture, biodiversity and wildlife endowment, among other features. Itis only in Morungole that some basic eco-tourism facilities have been

set up and communities supported to take up ecotourism as a source of livelihood. A cultural centre and museum were being established to show-case the Ik/Teuso culture and traditional lifestyle.

Manual Labour: Many men, women and children make daily trips to Kaabong town and other commercial centres to find work. This is done mostly by women and men, but more recently, a growing number of young people. Very often they are forced to go back without work especially during periods of famine when more people become vulnerable, and there is pretty of grass and time from long livestock treks. This also means they will lack food for their families. There are variations in wages earned depending on the employer, the activity, age of labourer, etc. However, daily wages hardly ever exceed the day's need for food, and often the beneficiaries use all funds to buy food for a household meal.

Petty Trade: Small scale trade dominates activities in and around peri-urban livelihood strategies. The items traded are usually locally made crafts, food, grass for thatching houses, firewood and charcoal. The latter is becoming an issue of serious concern in Kaabong, as tree cover in neighbouring Kotido and Moroto districts are getting seriously depleted, with the pressure shifting to Kaabong. In Morungole, charcoal production and trade was reported to be a new activity introduced by outsiders, who make charcoal on a commercial scale and transport it bigger towns outside the region. As such, the ik community, who cherish nature and only used to collect firewood from dead or old trees, are getting concerned about their ecosystems.

3.2 Main NWRPs, Market Prospects and their Importance to Sustainable Livelihoods in the Study Area

3.2.1 Overview

The rangeland products and the extent to which they support livelihoods are discussed by locality, as the availability and use of these products tend to depend on specific area.

Table 3.5: Rangeland Products of Importance to Livelihood

	NWRPs rangeland	Frequency	Percent
1	Honey and other bee products	30	57.7
2	Minerals (Gold)	32	61.5
3	Gum	3	5.8
4	Fruits collection, processing and sale	30	57.7
5	Vegetables	29	55.8
6	Herbal medicine	41	78.8
7	Spices	17	32.7
8	Crafts from bamboo & other resources	28	53.8

The study found that the most important products were honey (Kaabong and Kapoeta East), gold, grass, fruits and vegetables (across all three sites), and sand and stones (mostly in Kurmuk). Although gum and resin bearing tree species exist in all the areas, the 3 people who reported it as a source of livelihood came from Akandeyu. This signalled the fact that the potential of gum and resin has not been explored even at policy level, except in Benishangul Gumuz. Herbal medicine is readily available for all sites but communities are reluctant to talk about it for a range of reasons including cultural and perceived inferiority of the products and those who use them.

3.2.2 Morungole Sub-County, Kaabong District

The most important wild products for Morungole community were honey, gold, some fruits and vegetables.

1. Honey and other Bee Products

In Morungole, honey is produced from traditional hives that are placed in the central forest reserve (CFR) as well as wild hives (usually holes, rocks, under trees, and anthills). Honey production is one of the activities allowed in the CFR under the collaborative forest management (CFM) arrangements that the communities have signed with the National Forest Authority (NFA). Other activities include gathering of fuelwood (only dead wood), grass and shrubs.

Plate 3.1: Bee keepers deliver Honey at the only processing & marketing centre in Kaabong town.

Formal rearing of bees using traditional hives was popularised through community forestry interventions where collaborative forest management (CFM) agreements were signed between the community (represented by clan leaders and witnessed by the district and sub-county Local Government) and the central forest authority, the National Forestry Authority (NFA), a central Government body responsible for managing central forest reserves. The memorandum of understanding (MoU) for the CFM stipulates rights and obligations for each party and is monitored by Kaabong district Local Government.

The community in Morungole use honey as food, medicine and as a source of income. The medicinal value is so cherished, that communities are willing to compromise commercial production principles of frequent timely harvesting. They want to delay harvesting up to 2 or

more years because they believe the longer the period it takes to harvest, the stronger are its medicinal properties.

Production Practices: Production depends on the number of hives one has. Average production is approximately 5-20 litres quarter per individual, but could be much higher if basic bee management practices were adopted. Almost every household produces honey but production volumes are sub-optimal. This is because of poor apiary management practices. Despite depending on this activity, communities mishandled the hives they were given previously. Additionally, they harvest using fire which often kill bees and destroy the hives. They also tend to delay to harvest for up to 2 years insisting that they want it to grow and accumulate medicinal properties even when hives are due for harvesting at least twice a year. This goes to show that community members have very little knowledge of bees and apiary practices. For example, delayed harvesting to get honey to grow does not work because during the rainy seasons, bees take out the honey and produce new honey.

Processing and Value Addition: In Morungole, the honey value chain is short and unstructured. There are only two processors used in processing and marketing honey in Kaabong, out of which only one is based in Kaabong town. Also, very little value addition is done at farm level. *LISA Pan Honey Enterprises*: This enterprise processes honey from Kaabong town, with basic machinery. The woman-owned enterprise processes and packs honey alongside other products and activities from small premises. However, the enterprise's capacity to buy from primary producers, process and market all the honey from local producers is very limited.

Plate 3.2: A display of packed honey at Lisa Pan Shop in Kaabong town.

2. *KARATUNGA*: Is a social enterprise based in Moroto town. It has been supported by the USAID funded project (Biodiversity for Resilience) to process the community's honey and operate the Eco-tourism project (where a few bandas have been constructed on land leased from the community with support from the USAID project). Karatunga purchases honey from bee keepers in Morungole and process it in Moroto town. After processing and packaging in Moroto, Karatunga brings part of the processed honey and displays it at the cultural centre

(targeting tourists) and other travellers in both Morungole and Timu. There is also a small sales outlet in Kaabong.

The honey is packaged in 100mls, 200mls, 500 mls and 1 Kg, which makes marketing easier because the packaging caters for different categories of customers. In all, about 70% of the honey is sold outside the district.

The main value added by Karatunga and other processors, is ensuring that the processing is hygienic and the packaging is professional and attractive, which enhances the product competitiveness beyond Morungole. Honey has become a commercial product and the main consumers targeted are the urban elite. While Karatunga earns UGX 100,000 per litre, LISA Pan in Kaabong earns only UGX 20,000 per litre. Despite the differences in costs incurred, Karatunga invests much more in containers and labels and positioning the product in the market.

Attempts have been made by locals to do processing but poor handling during harvesting and processing usually leaves the product dirty and with zero market value. As a result, local producers find it easy and convenient to just harvest and take to the market directly with combs (see Plate 3.1). Production costs are generally low; hence the honey value chain offers opportunities to create value and contribute to sustainable livelihood transformation in Morungole. It is observed however that the quality of the honey reduces due to failure to adopt was of ensuring hygiene through proper harvesting and post-harvest handling, as well as adding basic value through proper packaging as demonstrated by Karatunga. Also, the need to diversify to other bee products such as beeswax, propolis, etc. This untapped potential is a direct result of weak market linkages and lack of entrepreneurial capacity among the 2 middle value chain actors involved.

Figure 3.1 Summarises the Chain

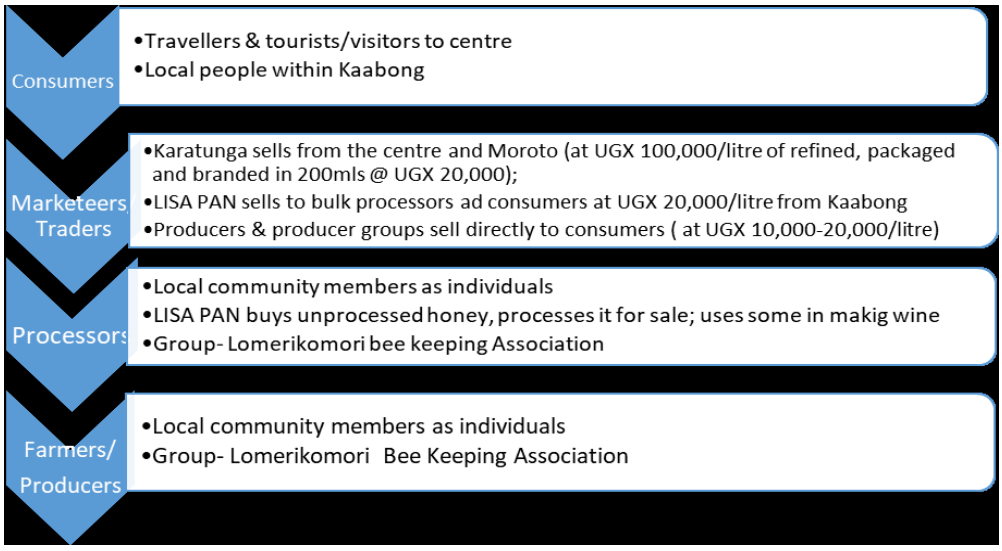

Figure 34.1: Summary of the Honey Value Chain in Morungole Sub-County

The communities in neighbouring Sub-counties of Kamion and Timu also practice Bee keeping as an alternative source of livelihoods. There is, thus, potential for up-scaling among the Ik community, to explore a larger market. The undisturbed ecosystem of Morungole has potential to support a vibrant industry if only they can produce at scale and also commercialize it. This requires a transformational process in which sustainable livelihood is perceived beyond access to food, which is apparently the main reason to pursue this activity.

Moreover, the community is sandwiched between the politically and demographically powerful Karamojong tribes (mostly Dodoth) and their Turkana (Kenya) and Toposa (South Sudan) cousins. They are vulnerable to transhumance movements, rustling and armed conflict. It is the reason they gave up on pastoralism. Hence, bee keeping became their most feasible livelihood option if it can be developed and well positioned in the market. Their preferred economic activity which was cultivation of maize and beans, faces pressure of vandalism by wild animals from Kidepo as well as transhumance pastoralists (mostly Turkana). It is so bad to the extent that they are guaranteed to have poor yields when this happens.

Recent value chains analysis at regional (Karamoja wide) and national level has revealed that there is a growing demand for honey. There is also a deficit of over 2,062 metric Tons/ year (PMA, 2005). Many people have reportedly substituted sugar for honey due to perceived medicinal values and the fact that Uganda honey, more so in Karamoja, is organic. Hence unmet demand is likely to grow. However, there is need to produce at scale and address the challenges of quality and consistency. Proximity to protected ecosystems (the Kidepo conservation area) means that producers have access to healthy productive ecosystem to support their apiary activity.

2. Gold Mining

Gold mining (really panning) is done on the bed of River Usake, which originates from the Morungole Mountains. The activity is done mostly during the rainy season (when the rivers are full and gold panning and cleaning is easier to undertake. It's carried out by all socio-demographic groups. They use very rudimentary tools like spades, pick axes, etc. High level of participation is driven by shortage of food and due to failed harvests.

The mining process involves filtering and sorting out black stones and packing in simple polythene bags.

The panned gold is sold in Morungole town by most people. A few people take and sell the gold in Kaabong town. In Morungole, a point of gold is sold for UGX 15,000 while in Kaabong, it rises to UGX 25,000-30,000 (approximately US$ 8). While there is a substantial difference in price between the 2 marketing centres, the difference in pricing is usually consumed in transportation. Hence only those with substantial amounts of gold are motivated to transport it and sell in Kaabong. The buyers in Morungole and Kaabong town are usually agents of large-scale buyers from Kampala. So, they buy and aggregate and when a certain amount is realised, they call their buyers or take it to them in Kampala.

Value Addition and Market Prospects: In Morungole, the mining value and market chain is summarised as per the figure 3.2.

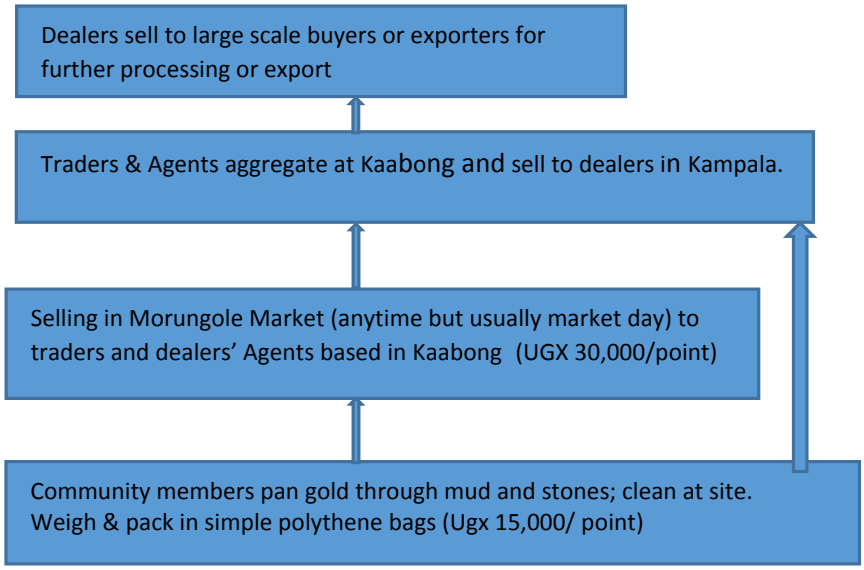

Figure 3.2: Market Chain for small-scale/artisanal gold mining and marketing in Morungole

The main factor in the price differentials is transport costs. A motorcycle charges Ushs 30,000 from Morungole Market to Kaabong. This is equivalent to the price of two points. If someone has only a few points or even 1 gram, its best to aggregate and send one person or sell from the market in Morungole. The main challenge that community members (Primary producers) have is that they tend to have urgent needs which may not wait for the market days when traders/intermediaries from Kaabong come to the market. This forces them to sell to local traders at a cheaper price. Hence, access to emergency finance is another critical factor.

Gold mining is undertaken as an occasional and not routine supplementary livelihood strategy to get money for purchasing food and for other basic domestic needs. When there is food, community members don't go to pan gold. As such, it remains a rudimentary and underdeveloped activity yet it has the potential of being a powerful alterative or complementary livelihood strategy to agriculture and livestock rearing. There is also the challenge of using mercury to clean up the gold, which exposes community members, including children, to dangerous public health risks; first in direct exposure but also through pollution of water sources. There were complaints that mining has exposed the community to other cultures where men have now taken up drinking alcohol and failing to work. A very small proportion of the value created trickles to the local gold mining community, as reflected in their "hand to mouth livelihoods". A more organised form of artisanal mining, preferably in a cooperative and consistency so that a reliable supply of gold can be assured, would go a long way in enhancing the value and improving the livelihoods of community members.

In Morungole, community members complained that most of the gold is located in border areas particularly in protected conservation area. Mining activities are prohibited in such areas. The current activities are haphazard as they leave borrow pits uncovered which cause accidents to wildlife, a situation that further escalates conflict with protected area management.

Providing technologically advanced equipment for excavation and cleaning the gold, would not only increase value but it will also significantly improve labour productivity, value for miners and better living standards for mining households. However, such investment is suitable for an activity that is commercialised. Hence, people's mind-sets have to first be aligned to the idea of commercialization as well as get themselves organised.

3. Wild Fruits and Vegetables

A wide variety of natural trees were pointed out as important sources of food. They are harvested for food and incomes. Some of their branches are used for firewood. *Balanites aegyptiaca* was the most commonly mentioned species by the community. Although it was out of fruiting season in Kaabong, community members enumerated multiple benefits that the tree provides.

Plate 3.3: A mature Balanites aegyptiaca tree in Kaabong town. Plate 3.3: Balanites aegyptiaca tree with fruits.

i) All community members (including elders and women) eat the fruit pulp. The seeds are usually discarded as the fruits are eaten casually making it difficult to collect and use other parts, such as the seed. However, deliberate collection can raise enough to make paste source from the crushed seed. It's oily and nutritious.
ii) Its young leaves are cooked and eaten as vegetables.
iii) Medicinal value- B. aegyptiaca was reported to treat several ailments including intestinal worms, malaria and hypertension and skin diseases.
iv) hade/protection from harsh weather: Balanites aegyptiaca (desert date known locally as lalob) is an ever-green tree with a dense network of branches and leaves. It's highly drought-tolerant which enables it to remain green and offer alternative sources of food and other livelihood components particularly during harsh famine and drought conditions.

Despite its importance, it is yet to be established whether there is any commercial or market potential. Estimating the production quantities was not easy. However, this would have been a good basis for establishing the real value and contribution to livelihoods and possible market potential. Community members, however, were cagey because of the significant effort it would require in collection and processing, unless it's marketed to create demand outside

the community, which is subsistence oriented. The tree species is popular for its products. Nonetheless, the commercial value of its oily seeds could be explored alongside other oil seeds (such as shear butter tree), to establish potential market outside the region.

The vegetables include mushrooms, shoot and leaves of specific plants. Community members interviewed, appeared to have hazy memories in identifying the species used. This suggest that the vegetable may not be as important as back then.

Grass and Shrubs for Construction: Access to grass is a challenge as many areas have been replaced by shrubs and woody biomass. The undergrowth grass is reported to be of poorer quality. This raises issues of vegetation succession or emergence of invasive species, as a result of ecosystem disturbance. Quality grass is also used for beddings.

Crafts: The traditional stool is the most popular. It, is made from special wood that is outside the scope of this study. Nonetheless, concerns were raised that crafts makers have to travel far in the forest. They also are no longer free to collect the materials and have to hide from authorities when they go out to look for materials. Although they were cagey, there was indication of tension between the community and two protected area authorities – the Kidepo conservation area and the forestry authorities. This could be an indicator of the declining quality of the ecosystems because of degradation[3], which affects access to quality materials for construction, crafts and other activities. The commercial value of local crafts could increase as the Ik centre of Memory was being set up, partly to ensure cultural preservation and marketing of products like local crafts.

Prices for crafts are influenced by the price of food stuffs and more recently, the difficulty with which they have to get raw materials. Specific tree species are no longer accessible. As a result, the price of stools has risen from UGX 1,000 to UGX 10,000-15,000 currently. The crafts makers plan to sell from the house of Ik memory when it's completed and will market their products as a group. There is, no systematic way of building the skills. Those interested just learn through observation, when the craftsman is curving the product.

Summary

The main non-wood rangeland products that communities in Morungole depend on are honey, gold, fruits and vegetables (including mushrooms). They go a long way in bridging the food and nutrition security gap - to the extent that communities do not go for gold panning when they have adequate food. Only honey and gold are traded for monetary value. Even these remain at subsistence level as there is neither reliable market nor any consistent supply.

There were plans to technically support them with solar processing equipment for honey, but issues of mismanagement and poor governance led to collapse, as some of the equipment were reportedly stolen by the leaders.

There is also a serious challenge of fires-often triggered by hunters, which causes serious ecological and economic damage especially during periods of hot weather.

3 In interviews with DADO, senior officials highlighted the degradation of ecosystem from large scale charcoal making which has become rampant since the military detach was established. Depletion of tree cover in Morungole would spell irreversible environmental catastrophe given the terrain and community dependence on ecosystem resources.

3.2.3 Kapoeta East County

The main rangeland products that the community in Natinga and Narus depend on for livelihoods are:

1. Honey

Honey is a significant source of livelihoods for the community in Natinga. The study showed that honey became the main source of livelihood for the Tauso people when they gave up livestock rearing as a result of frequent and often violet rustling by other tribes. The community complement honey with cultivation of white sorghum. Other livelihood components that honey supports are food, medicinal and cultural values like marriage activities. It's so important in the social and economic lives of the community that wealth is measured in terms of the number of hives each one has.

Honey is harvested from wild hives located in the forest, on the slopes of the mountains (the eastern slopes of Morungole Mountains), about 9Km from the community homesteads. Each household has their own hives, which are essentially wild.

Honey harvesting is done starting in December till March when the dry season ends. The whole village of over 1000 people harvest almost at the same time but they produce and sell as individuals. The forest where the hives are located is managed by the community through the local Chief. Average production stands at20 litres per quarter and could be much more if they were harvesting as frequently as they are required. They take as long as 2 years before harvesting a hive, reportedly to allow the honey to grow. Well grown honey is darker compared to honey that has recently been produced by the bees. Community members use the honey for bride wealth and marriage ceremonies, and the hives are regarded as significant economic assets. For each ride, the groom's family pays 200 litres of honey (10 Jerry-cans of 20 litres) in lieu of cows.

Despite this connection, there is poor management of bees and there are wide opportunities to expand production and increase value to the community.

First, there is need for improved apiary management skills and tools starting with tending to hives, proper harvesting and handling of honey. Modern equipment may help increase efficiency and quality but also enable communities to explore the whole range of bee products apart from honey.

Honey Processing and Value Addition: In Kapoeta East County, value addition to the honey is done by squeezing locally using mosquito nets to separate the liquid honey from the combs and packing it into containers for sale. Due to shortage of containers, there are usually no smaller units except 1Kg, 5Kg, 10Kg and 20Kg. This is mostly done by secondary processors/ marketing entities most of whom are based in larger towns like Kapoeta, Torit and Juba. There is high demand for honey in Juba and Torit. Prices in the two towns range from SSP 6,000-10,000 per litre. There could be sufficient pull factors if the market linkages were established or enhanced.

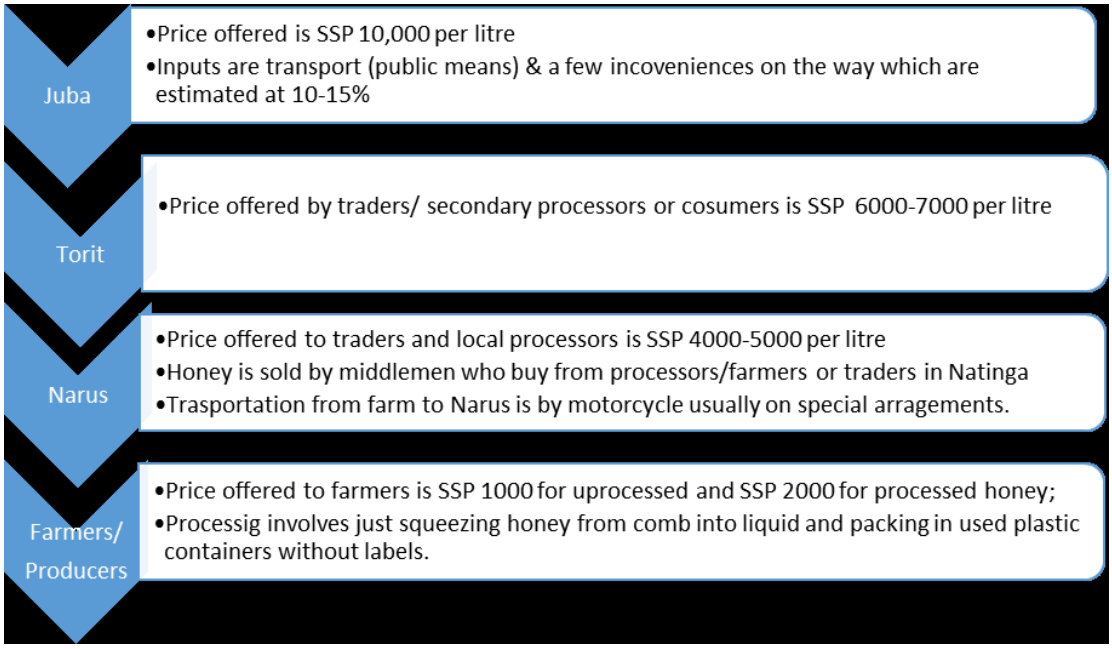

Figure 3.3: Condensed Honey Value and Market Chain in Kapoeta East

There is high demand for honey in Juba and Torit. Selling the honey in the teo regions fetches SSP 10,000 and 6000-7000 respectively per kg. The value increases in Narus (without major processing) by incurring only transport costs and perhaps a few telephone calls. Even without market contacts, honey is sold once it gets to town. The main challenge with honey from Natinga is inferior quality because of poor handling and the remote location where it's difficult to get transport.

In terms of consumers, the main buyers are usually individuals, travellers and secondary processors, as well as producers of other products in which honey is an ingredient (such as wine).

2. Gold Mining

Gold panning is done in stream beds mostly by women. It's undertaken on a very small scale at Napotipoti Boma, in Katidoti Payam. Low literacy level and insecurity where miners are frequently robed, was blamed for the low participation in this activity.

Plate 3.4A: A man collects fruits dropped from a *Balanites aegyptiaca tree* at Nadapal, Kapoeta East.
Plate 3.4B: Fruits

Plate 3.5: One of the tree species that provide fruits and vegetables during drought periods in Narus town

It was observed that wild tree species that provide food tend to be conserved around homesteads and along roads. This underscores the communities' appreciation of the contribution of these products to their livelihoods.

3. Grass and Shrubs

Grass and shrubs are important construction and fencing materials in Kapoeta East County. The main market for this product is in Narus town, where many women depend on harvesting and selling grass, shrubs and poles so as to earn a living. This trade is an important livelihood strategy as women are responsible to taking care of domestic duties including ensuring that there is food at home.

One of the most marketable rangeland products in Kapoeta East are roofing and fencing materials (grass and shrubs).


Plate 3.6A: A Woman delivering shrubs for sale in Narus market. Plate 3.6B: Selling Shrubs for construction in Narus market.

This is because grass/shrub is used for roofing and fencing homesteads; and is a common product used by both relatively wealthy ad poor members of the community. The shrubs are packaged in bundles of SSP 1,000, SSP 1,500 and SSP 2,000, with each single bundle costing SSP 500. The cheapest bundle of Shrub costs SSP 1,000 (2 small bundles).

Harvesting and selling grass is an activity that is almost entirely carried out by women. Women can carry up to 4 bundles per trip from the forest despite it being a tedious and back-breaking exercise. Yet each trip earns them SSP 2,000 (appropriately US$2), which is equivalent to utmost 2 household meals[4]. They have no other alternative.

Despite having a market, materials can stay up to 5 days without getting someone to buy. During the waiting period a household struggles to get food. Prices are set according to the price of food so that any increase in food cost will trigger the rise in price of the products.

Women complained that the distance to source for materials has been increasing since the forest begun degrading due to forest fires. It takes 6-7 hours to go to the forest where the materials are harvested (in Nakodo and Nakijo). The main challenge in this market chain is the environmental damage through ecosystem degradation. Hence, it cannot be promoted even if it was profitable. The actors also seem to have false confidence that the material sources will be sustainable even when the distance has increased. When asked whether their livelihoods were not at stake due to ecosystem degradation, they chorused that the materials regrow, although slowly. It's also not certain that there will be a sustainable market given that it's an inferior product and likely change in lifestyles in the next few years.

4. Medicinal Plants

Community members pointed out two key plants that have multiple medicinal values among others: *Balanites aegyptiaca* (which was reported to cure multiple human and livestock diseases) and Aloe vera which cures typhoid, malaria and intestinal worms. All these ailments are highly prevalent in the community yet access to modern health care services within reach is difficult.

4 A jar of maize (approximately 3kg) costs SSP 1,500, which is equivalent to 3 bundles yet a trip is 4 bundles of grass.

Far too many people claimed they have never been to or even known where a health facility is. They depend on herbal medicine and traditional healers.

3.2.4 Kurmuk

The main NWRPs in Kurmuk Woreda are gold mining, grass gathering, sand and stone mining, fruits and vegetables, as well as water, gum and resin. The products with high commercial value are gold, sand, stones.

1. Gold Mining

Artisanal gold mining is practiced extensively across the entire Kurmuk Woreda (both Kurmuk and Akandeyu Kebeles visited). It's practiced by all demographic groups – children, men and women. Although it's a livelihood activity that occupies a lot of people most of the time, community members in FGDs at both Akandeyu and Kurmuk, seemed to underrate it as a major contributor to their livelihoods. This is because there is low reliability of accessing gold.

Plate 3.7A: Gold panning; Plate 3.7B: Female miners rest with their tools on their way to the mining site in Akendeyu forest.

Officially, small-scale/artisanal miners obtain licences from the Regional State bureau for mining which covers an area of 5 Ha. The allocation of the area is done by the Woreda and Kebele where the activity is to take place. The expectation is to sell the gold to licenced dealers at a price of 5000 ETB/gram. These dealers sell or are expected to sell the gold to the Central Bank of Ethiopia. However, field observations suggest that the state authorities do not be have sufficient control, and most of the gold is sold through illegal black market. It would seem that neither level of Government even the Kebele which is closest to the mining centres is equipped to monitor the gold mining and trade activities.

Field findings agree with those of some recent studies which reported that average incomes from gold mining in Kurmuk is ETB 160 (approximately USD 2.9) per week and about one-third of the people may be lucky to earn this amount. The rest earn up to ETB 35 per week. Local gold aggregators, who are often agents of traders and dealers buy from the initial processing site and sell to traders in Assosa who take it and sell it in Addis Ababa. The local assemblers make a margin in the range of 10 ETB per gram.

In Kurmuk, artisanal miners work in pairs or small groups because of the effort required to excavate and wash the soil. Individuals form a group for a joint mining process and share the benefit at the end of the day. Mining is done by both men and women. Men dig the soil and women wash the soil to search for gold (Plate 3.7B).

Artisanal mining activities in Kurmuk Woreda are generally opaque despite the fact that the state has a clear legal framework, where artisanal mining entities obtain a licence to explore and extract the product. The challenge comes in when the state's want to control pricing and trade (where all mining companies are required to sell gold to the Central Bank of Ethiopia). This has driven the gold marketing activity to black markets where prices are controlled by powerful dealers and the spoils are taken by the middle men who buy from artisanal miners.

Moreover, as the middlemen have to go through difficult security checks and roadblocks, the costs they incur are transferred down to artisanal miners. As a result, they extract earth without clear probability of finding the gold, and they use a lot more effort excavating and panning through mud without getting anything. They are also offered prices that are significantly lower than the efforts they put in. As such, there is very little evidence that gold mining provides sustainable incomes for the mining communities, yet there is great potential. They appear to be trapped in poverty mine, where the rewards offered by the market are enjoyed mostly by the actors high up the value chain. Yet mining is attractive to the extent that young women risk traversing the forest with rudimentary tools and water containers to find the gold. It would seem that miners are sure to get ready cash if they can find the gold. This keeps them very motivated. However, they appear to get so little money that they can only keep hooked onto the activity. Moreover, most miners spend up to three weeks digging without getting anything, which calls for appropriate mechanisms to increase the probability of mining in the right place. Appropriate detection technologies would ease the mining process, increase the opportunities for alternative income generation and reduce environmental damage.

Value creation and sustainable livelihoods for artisanal miners in Kurmuk Woreda would require action at least in 4 areas:

i) *First, improve the technology* for gold detection and geophysical assessment, so as to reduce the cost and risk of prospecting for gold. This would increase chances of finding the gold when they excavate ad reduce accidents due sudden collapse of mining pits. This would not only help to avoid the tedious processing of spending weeks of hard labour without any trace of the mineral but also protect the miners from severe environmental damage caused by opening mining sites everywhere. Excavation will be more targeted. Technology improvement is also needed for initial basic processing to avoid use of mercury, which exposes miners to dangerous public health issues and increase value for miners.

ii) *Secondly, there is need to mobilise and organise the miners into collective* groups so as to reduce personal dangers, but more importantly to establish a collective voice to bargain and secure good deals from middle VC actors hence reduce exploitation. If they are trained in group dynamics and marketing, they will be able to negotiate with buyers for fair prices. They will also be able to cushion each other from vulnerabilities that expose them to exploitation and other dangers.

iii) *Support the miners in the area of environment, occupational health and safety* by training them, providing appropriate equipment and raising awareness of gold trade, safety and security;

Strengthen the capacity of government authorities (Regional & local) to regulate the mining activities and ensure that borrow pits are covered and mining sites are restored. Without this, the forest and the entire ecosystems will be degraded beyond rehabilitation, given the scattered nature of artisanal mining operations.

Admittedly, these actions will be difficult to undertake in the environment of informal, non-transparent and under-regulated gold production and trade activities. However, they are essential for the potential of artisanal mining to provide a viable alternative livelihood source. They will increase labour productivity and reduce the work burden of women, who shoulder the responsibility for household wellbeing in both Kurmuk and Akandeyu Kebeles.

Expanding urbanisation across Kurmuk Woreda, along roads where mining activities are taking place could increase pressure on rangeland resources, although it's come with livelihood opportunities. For instance, there is noticeable vibrant trade and other socio-economic activities around Dull Shakole-the main market that serves Akandeyu and neighbouring Kebeles.

2. Wild Fruits and Vegetables

Kurmuk Woreda produces a wide range of fruits and domestic fruit trees like mangoes, papaya and avocado which grow around homesteads without considerable efforts. Nevertheless, wild fruits play a considerable role in the nutritional security and livelihoods of pastoral communities.

The most important wild fruit mentioned in FGDs at Akandeyu and Kurmuk was *Adonsonia digitata* (locally known as *Agungulees).*

Plate 3.8A: *Adonsonia digitata* (Agungulees) trees in Akandeyu. Plate 3.8B: Extensive fires and harvesting Agungulee fruits.

Agungulees is a giant forest tree species, belonging to the family of *B*ombacaceae, typified by broad leaves and large straight stems. Its fruits are used for extracting juice for sale. The tree tends to shed off its leaves during the dry season as a form of adaptation to drought conditions.

Seeds of eaten up Lalob (*Balanites aegyptiaca*) fruits were also identified along forest paths; where gold miners, transhumance pastoralists herding goats, and other people frequently traverse. This only means that people collect and eat them while in the wild. Balanites trees in both Akandeyu and Kurmuk Kebeles seem to be far from homesteads, save for Kapoeta East and Kaabong regions. Bamboo was identified as a source of wild vegetables but is considered inferior only eaten during times of famine. Hence, despite the abundance of bamboo, especially around Kurmuk Kebele, there is little extracted for food or sale.

3. Grass and Shrubs for Construction/Thatching

Most houses in Kurmuk Woreda, and certainly in Akandeyu are constructed or at least roofed with grass. It's an important construction material that is highly traded in all commercial centres and villages in the Woreda. Hot weather has also forced a number of people to construct day resting houses (plate 3.8B) where aeration and shade help mitigate effects of hot temperatures.

Plate 3.9A: Youth Load grass for transportation to Market in Akendeyu. Plate 3.9B: House constructed in a village in Akendeyu.

A bunch of grass is sold for 100 ETB and those who depend on this activity can sell at least 3 bunches a day. The main limitation is the increasing distance from where they have to harvest and transport to the market-usually at Dull Shitalo market and homesteads. Grass harvesting is also threatened by extensive frequent fires. As a result, many people are using public transport which increases the cost.

4. Gum and Resin

Kurmuk is considered to be part of the gum and resin belts in Western Ethiopia (Mossisa *et al*, 2021). Therefore, the study specifically looked at how gum and resin support livelihoods.

It was established that production is low. First, gum and resin producing trees are scattered and far away in the forest and most trees are mature with no seedlings or saplings around (as shown in Plate 3.10).

Plate 3.10: Mature trees of gum producing Acacia Seyal in Akendeyu forest.

One Kg of gum is priced at 300 ETB but is usually sold in 100Kg units for 3,000 ETB each. Extensive degradation of the ecosystems has resulted in low productivity including biomass of species that produce gum and resin, as the regeneration and recruitment of young trees (seedlings, saplings) is low. The main causes of degradation were observed in the field to include frequent and recurrent fires, heavy grazing, and conversion to crop lands, gold mining, and climate change. Community members also complained about these issues in the FGDs at Akandeyu and Kurmuk.

Community members are discouraged from exploiting gum because:

- Few people have the skills needed. The activity requires extractors to work as a group to be efficient.
- There is lack of equipment and facilities
- Trees are far away from the communities, old and produce less yielding.
- Challenges with state regulation where the activity has been licenced to investors. Community collectors, who are informal and often difficult to link up with, appeared to be in the dark about investor operations.
- It would seem that the production potential in the area is low. Investors are focusing more in areas where there are more gum producing trees, as it would be uneconomical to prospect for gum in areas like Akandeyu where production volumes would not justify investment. This makes partnership with the local community difficult.

Gum and resin bearing trees were found to have low regeneration status in the sites visited, although Kurmuk Woreda is considered one of the main production zones for gum and resin in Benishangul-Gumuz. Field observation agree with the findings of some recent research like that of (e.g. by Mossisa et al., 2021 that reported patterns of hampered regeneration status due to heavy grazing by Sudanese transhumance pastoralists, conversion to crop land by small scale farming, gold mining, recurrent fire and climate change.

However, there are prospects that artisanal scale collection, if supported would work well for both the investors and the communities but this would make sense if they are aggregated. The current approaches of a few individuals working alone and producing very small volumes can hardly support, even local processing. *Concluding observations:* Although the potential for production of gums and resins has previously been established to exist in the region, both the Kaabong side and Kapoeta side did not seem to have experience or interest in exploiting them. In Kurmuk where there has been gum extraction and Government authorities have mobilised investors to exploit gum and result extraction, communities who were previously involved in extraction seem to have abandoned the activity on account of being discouraged by multiple limitations including ecosystem degradation and lack of support to access equipment. Aloe species were mentioned among medicinal sources but the communities did not have experience for exploiting it. Field observations also indicated scanty distribution of aloe species in/around the communities visited. Thus, production of Aloe oil and resins would be unlikely to support livelihoods of the targeted communities.

5. Fishing

Akandeyu is endowed with fresh water resources, which support fishing, irrigation and water supply activities. While other streams and rivers in the area tend to be seasonal and dry up shortly after rains stop, Akandeyu remains relatively wet and green.

The area produces cat fish. During transect drives, one fisherman/fish monger was seen walking with about 5 fish. It was, however, established that due to low water levels, fish production had gone down yet demand was high. Local communities desire to cover the gap in fish production through fish farming/aquaculture.

6. Sand Mining

Quality river sand is abundantly available in many rivers and streams across Kurmuk. In Akandeyu Kebele, more than 10 trucks take out sand on a daily basis.

A 10-Ton Truck (SinoTRuck) costs 16,000 ETB in Kurmuk and is sold at an average of 32,000 ETB in Assosa. The relatively booming construction sector in Assosa regional city and surrounding areas provide a steady and expanding market for sand in Kurmuk. It was not clear however, how many people are employed and it did not feature as a major priority for the communities visited. It appears that sand mining provides livelihoods mainly to youth based in Dull-Shitalo market and Kurmuk cross-border town.

7. Stone Mining

Stones are collected and crushed into aggregates for construction and heaps sold along the roads. Unlike sand, most stones are sold within and around Kurmuk.

A few permanent buildings are being constructed. This has expanded the market for stones and sand in Kurmuk and Akandeyu (Dull-Shitalo). While this may be a threat to ecosystems sustainability, it could be an opportunity to reduce pressure on direct dependency on ecosystem resources thereby promoting conservation.

8. Water Vending/ Trucking

One of the main ecosystem services that provide livelihood support is water vending especially in Akandeyu Kebele where the rivers and streams have not dried out. Trucks mounted with

large water tanks and pumping generators criss-cross villages going to and from rivers to collect water, which they sell to refugee communities, UNHCR and mining companies/individuals. On a smaller scale, motorcycles carry jerry-cans and sell to traders and individuals in the commercial centres-at Kurmuk, Dull-Shitalo market and a few centres. There was evidence of demand as public water systems in the area seemed to be dysfunctional.

The influx of refugees from Sudan has boosted water vending activity, dominated by the youth. The UN High Commissioner for Refugees (UNHCR) currently supporting refugees in the Kurmuk camp has contracted some truck owners and entrepreneurs to provide mobile water services.

3.3 Synthesis and Key Issues

Honey is the most extracted rangeland product that is used in all sites (for food, medicine and incomes). It's also a very compatible economic activity for sustainable ecosystem management and biodiversity conservation. However, productivity is very low and the production processes grossly inefficient, with very little value addition. All sites visited have high potential for honey production because of the healthy and under-disturbed ecosystems that support bee production (perhaps with the exception of Kurmuk where forest and rangeland ecosystems face severe degradation from frequent fires, crop cultivation and haphazard mining activities).

Key issues in the honey production and marketing chain that constrain value creation and contribution to sustainable livelihoods of the communities include:

1) Poor *quality:* As a result of poor harvesting methods and unhygienic post-harvest handling. The honey is collected and stored in dirty containers, mostly used plastic containers such as mineral water bottles and motor oil jerry cans, which compromise the quality. Hence, honey produced and marketed in Kaabong is of inferior quality, which is hard to market even among local consumers (especially hotels/restaurants and elite individuals).
2) *Production volumes and consistency*: Given the subsistence and scattered nature of honey production across all areas visited, it's difficult to meet commercial volumes on a consistent basis and, comply with customer quality standards. This requires producers to work together in organised groups and associations so that quality and volumes can be realised, and costs of support and processing reduced (e.g. one processing equipment set could serve several producers, training and monitoring can be easily done), aggregation of honey easier and more cost effective.
3) *Lack of knowledge, creativity and tools to add value and diversify/explore other bee products:* From the production side, communities lack knowledge on bee husbandry which makes them lose production as a result of delayed harvesting, poor management of bee hives, post-harvest handling etc., resulting in inferior products.
4) *Lack of private sector intermediaries* to facilitate market connectivity and product innovation which would create more appropriate value.

The main products that identified are summarised in the following table 3.6.

Table 3.6: Main Products Collected by Households from the Wild and their Importance

	Product	Importance	Observations/ Notes
1	Honey (from bee keeping and wild)	Used by households as food and medicine, and particularly sold for income.	Attempts have been made to organise bee keepers into association and establish a honey collection centre and partner with external processing and marketing entity but production is still very low (approximately 100 Kgs/per season). It's processed and parked in Moroto and marketed as a community product, perhaps for differentiation purposes but it appears community benefit from value addition including through social marketing, is limited. About 4,000 people are involved in bee keeping, mainly in the Government central forest reserve (CFR).
2	Gold mining	Primarily to obtain income to meet day-to-day household needs, mostly food and domestic needs such as basic necessities and scholastic materials for children.	Panning for gold is done by practically all people including children. They mainly use a spade and is done at a very small scale. Most people sell the product locally to bulk gold collectors who sell to middlemen in Kaabong town. The buyers in Kaabong undertake first purification using mercury and acid and sell in Kampala.
3	Vegetables	In all 3 locations, communities gather vegetables from the wild (including leaves of some tree species. The economic value for all vegetables is low except for bamboo shoots.	Vegetables from the wild are generally considered as inferior products which are associated with famine period. It is therefore difficult to domesticate and commercialise them as its regarded famine food. Yet many could be having nutritional values that give consumers additional benefits including immunity from diseases.
4	Fruits	A number of fruit trees were reported to be important for supplementary human nutrition. The most outstanding is *balanites aegyptiaca* (lalob) and is common in all the 3 locations. It has multiple functions and the tree is conserved even though not domesticated.	Although fruits play a critical role in the food and nutritional needs of the communities, very few of them have commercial value. It would, however, be important to explore the many benefits of *banalities*, aloe Vera and Agungulees, to find mechanisms of commercialising them given the adaptability of the local conditions rather than introduction of new tree species that may require a lot of effort to management.

5	Sand and stones	There is plenty of sand in all 3 areas. However, sand only had commercial value in Kurmuk, where youth mine and sell it to trucks that subsequently transport it to towns like Assosa regional city.	Although all 3 areas have plenty of sand, Kurmuk was the only area where stones and sand have commercial value. The sand value chain has a major outlet in Assosa city where demand is triggered by huge infrastructure developments. There are opportunities for local communities to benefit from this if awareness and mobilisation are undertaken, and basic start-up tools are provided.
6	Water	There was evidence that despite being water scarce, the areas receive plenty of water but quickly dries up without attempts to harvest and use it.	Water Trucking is a key livelihood area in Kurmuk, perhaps because of the refugee camps. It could also support mining activities. Kurmuk has fishing potential which could be exploited by empowering them to establish water reservoirs and stock them with fish. The community's ability to manage aquaculture activities should be analysed.

4

CHALLENGES AND OPPORTUNITIES FOR MARKET DEVELOPMENT OF SELECTED NWRPs

4.0 CHALLENGES AND OPPORTUNITIES FOR MARKET DEVELOPMENT OF SELECTED NWRPs

4.1 Major Barriers for Production and Marketing of Selected NWRPs

Although communities depend on a range of ecosystem products and services from the rangelands for their food, incomes and other livelihood components, the general level of production and value chain management is oriented to basic subsistence. Nearly all the people are driven by basic survival even when the transactions involve monetary exchange. Consequently, there is very little effort at market-oriented production. The main barriers to market development relate to the following:

- Low, inconsistent production
- Poor quality of products-largely due to mishandling
- Limited capacity of private sector like absence of capable, motivated self-driven entrepreneurs to support production and marketing
- Limited institutional capacity
- Lack of access to knowledge and technology
- Weak market linkages

The underlying factors to these constraints are:

1. **Lack of access to technology**: In all areas, communities use rudimentary tools in the extraction and use of rangeland products. Whether in mining, collection and processing of honey, gathering and crushing of stones, fruits, gum and resins. As a result, there is low labour productivity, waste and inefficient use of resources and consequently the value realised is low, and also escalated environmental destruction. Honey producers in Morungole (Kaabong) and Natinga (Kapoeta East), for example use fire and other destructive tools when harvesting honey which result in death of bees, destruction of hives and contamination of the honey, in addition to the risk of habitat destruction through wild fires. They tend to sell honey with combs to local intermediaries who only extract honey by using mosquito nets or basic machinery, and pack contents in used containers.

   In Kurmuk Woreda, gold miners simply open the land without reasonable assurance that they will succeed in getting gold. They then move to the next site until they get lucky. This process is not only exhausting and inefficient, but it is destructive to the Environment. Mining in Natinga and Morungole reported to do the activity during rainy seasons when there is plenty of water. Lack of technology limits optimal exploration of rangeland resources as well as the ability to secure appropriate value from the harvest. Additionally, inappropriate harvesting technology affects fruit picking even where such activities were considered to be profitable. For instance, in Kurmuk Woreda, Agangulish trees known for their juice producing fruits are widely available. However, because harvesting the fruits involves tedious and risky acts of climbing the large and tall trees, it poses a challenge. This is too risky an activity, even for children who used to harvest them. These barriers tend to lock out women, the

elderly and persons with disabilities. For the Lalob fruit, many of its multiple functions (such as extraction of oil and nuts from seeds) are lost, as communities find it hard to gather and dry enough seeds for processing. They instead eat the pulp fresh and throw away the seed.

2. **Lack of access to market information and exploitation by middle value chain actors:** These two challenges are closely related and are so far a serious constraint to optimal utilisation of rangeland products and value creation for communities. The phenomenon is so rampant in the production and trade of gold, as well as produce like maize and sorghum. Although the production and marketing environment for gold and other minerals generally, differs across the 3 sites (with relative liberalisation in Uganda and close control in Ethiopia and South Sudan), market operations are not transparent across all the areas. The gold value chain across all areas is dominated by a host of intermediaries and private dealers who connive to exploit primary producers. This poses numerous disadvantages for the scattered small-scale operators. They are also disorganised, lack basic market information and there are few (if any) institutional mechanisms to protect them. Primary concern with subsistence also keeps them from making strategic decisions like resource pulling and bulk marketing to increase their bargaining power. As a result, they continue to get little from their labour and can hardly save and build any financial reserves to protect themselves from any shocks.

3. **Absence of capable intermediaries to support value addition and market linkages**: there are hardly any entrepreneurs that the communities are working with. As a result, they are unable to add any value and explore ways to penetrate stable and potentially lucrative markets. Without stable and reliable markets, there are few incentives to produce more or add value to the existing product.

   Inadequate infrastructure leading to poor market connectivity: Roads in Kaabong and South Sudan are poor, Direct linkage between the two is in fact non-existent because the available road had been closed for a long time. As a result, there is poor connectivity and market linkages due to absence of motorable roads, as well as modern telecommunication facilities like radio, telephone, and internet signals often do to reach many places within the communities. This constrains the value chain development, especially in terms of value addition through processing and marketing. This typically affects honey production and marketing and explains why in both Kaabong and Kapoeta, there were concerns of lack of market, when demand for honey appears to be high. Kaabong residents hope cross-border trade would enable them sell food and other produce to South Sudanese and in return be able to buy livestock and restock their herds that had been rustled. Improved and safe road networks would attract investors and enhance market linkages, thereby enabling the communities to generate more value from range products.

4. **Competition**: Local artisanal miners in all 3 areas face competition from more sophisticated and organised investors. There was evidence of mechanised mining activities in some sites close to where local communities are mining. Although local communities did not feel threatened that the activities of more sophisticated investors would affect them, it is on account of the fact that exploratory licences currently

cover a small area (5 Ha allocated by state authorities), and the fact that the state is constrained to regulate the activities. This could very likely change in the near future as the state moves to streamline mining activities with a view to optimising revenue returns from the mineral exploitation activities.

5. **Ecological degradation**: Although vegetation and forest cover appear to be healthy, the quality of ecosystems was reported and observed to be degraded. This affects access to rangeland products, where communities have to move long distances and use a lot of effort to access desired products. In Kurmuk for example, community members complained that they have to move more than 2 hours to get construction materials that they used to access within minutes. In Narus, women who sell thatch grass and shrubs mentioned that they have to take overnight trips to get poles and enough bundles of quality shrubs for sale. It's exhausting and yet with very low returns. This is attributed to ecosystem degradation was blamed on a number of factors, including unsustainable exploitation where people cut trees indiscriminately; over-dependency on natural resources for food, fibre, energy, animal fodder and incomes with few if any alternatives, overgrazing, lack of regulations, population pressure and descriptive behaviours such as bush burning by hunters.

6. **Climate change and declining availability and productivity of key resources**: Honey and bee production are affected by prolonged shortages of water and declining quality of biodiversity which provides forage for bees. This affects honey production both in quantity and reliability of supplies, a key factor for market development.

7. **Inter-community conflict**: Without confidence and guarantees of long-term stability, it will be difficult to attract external partners, particularly the private sector. Yet they are needed to bring in capital catalyse innovations and work with the communities to expand and upgrade production systems into marketable products, which will in turn widen income and livelihood opportunities and the incentives to sustainably manage eco-systems. The risks that fuel inability of Tausis and Dodoth communities to restock their livestock herds lost to rustling, and frequent destruction of the Ik community's crops and other products by transhumance Turkana pastoralists, tend to undermine investment by these communities. Hence any consideration of market-driven development will have to integrate sustainable inter-community peace and secure co-existence.

8. **Human-wildlife conflict**: In Kaabong, human-wildlife conflicts were reported to be on the increase, as animals move out of the Kidepo valley protected area to destroy farmers' crops. Local Communities in Morungole reported that elephants moved as far as 50 Km away from the park in order to destroy large gardens of mature maize crop. It gets worse when crops start maturing. The elephants can raze a whole hectare of maize crop overnight. This affects their food security and resilience. Another incident where Buffaloes had recently killed 4 people as they walked in landscapes, they considered safe.

9. **Unsustainable coping methods to drought and other food security challenges:** Community members in Kaabong and Kapoeta East (Narus) have taken on livelihood coping mechanisms that are damaging to the environment, such as burning charcoal which was not a common practice. This is self-destructive as the ecosystems in which they live are fragile and further degradation will increase stress on their livelihood strategies.

10. **Wild fires**: extensive fires are a challenge not only in Kurmuk but across the Assosa Zone. Wild fires were reportedly triggered by hunters and the only visible effort at controlling them is regular establishment of fire lines to protect crops and homesteads. Forest fires affect biomass and biodiversity on which bee production depends. They also expose the soil to land degradation from wind and water erosion, in addition to destruction of habitats. Wild fires affects availability of food (fruits, vegetables from wild trees) as it disrupts the productive cycles of plants, thereby increasing vulnerability of communities that depend on them.

11. **Invasive species**: In Akandeyu Kebele, local communities complained that the fields opened for agricultural production were being infested by invasive plants specifically a species known as *Akenchira* in Amharic).

12. **Pests:** Local communities in Kurmuk blamed the infestation of ants for low production of honey, as they reportedly predate on bees frequently forcing them to abscond from hives. It is perhaps for this reason that local hives tend to be hanged high up in the trees, which makes management and harvesting challenging. Communities in Kurmuk and Narus also complained about termites that are said to destroy structures made from wood and grass. As a result, houses don't always last, forcing users to replace materials more frequently-often one year when they could potentially last 3 or more years. This increases pressure on range resources.

13. **Shortage of water**: Although all 3 areas are critical water catchments with many numerous rivers passing through them, communities face severe challenges of water shortages especially during dry seasons. Rivers flow seasonally and there is hardly any water development, except a few boreholes and dysfunctional dams. Available water is also poorly managed - with communities undertaking domestic chores like washing cloths and utensils directly in streams where vehicles/motorcycles are washed, animals drink from and water for industrial activities (mostly mining and construction) and even cooking is drawn. Animals drink directly from streams, causing degradation of river/stream banks and siltation. Lack of water limits or otherwise affect industrial activity, for instance miners have to carry water containers along with earth opening tools); and limit production of honey since bees need a lot of water nearby to be productive. The water harvesting facilities established at public facilities in Akandeyu Kebele (Primary school and Health centre near the Kebele office) could have served as good demonstration but appear to have lacked maintenance and consequently vandalised.

14. **Cross-border tensions over resources**: Kurmuk communities complained about deforestation and overgrazing by Sudanese, this has led to forested areas around the border being more heavily degraded. In Kaabong, the Ik communities in Morungole complained about Turkana transhumance pastoralists. Their animals were destroying their crops and vandalising their bee hives. The Dodoth in the same area are reluctant to restock animals, although they claimed they didn't have resources yet to do so but it looks like it is because of the fear of livestock rustling by the Turkana who are armed while the Dodoth (as well as others in Karamoja) are not armed and have to rely on the protection of the national security forces (UPDF).

15. **The influx of refugees** to Kurmuk may be exacerbating the pressure on range resources in the area. Kurmuk is host to more than 2,500 Sudanese refugees. The region was already hosting other refugees from South Sudan. These refugees were reported to have increased pressure on water, pastures, and forest products. Others are said to be involved in illegal mining. Yet there seemed to be some level of integration, as refugees and host communities live close to each other in some villages in Akandeyu, and seemed to support business activities at Dull Shitalo market and across all small towns along the Border. Refugee operations were reported to have boosted the local economy but imposed significant pressures on the natural resource base.

16. **Loss of market prospects associated with cross-border security**: Cross-border conflicts in Sudan were reported to have disrupted marketing of rangeland products, including produce that local communities in Kurmuk claimed they used to sell to Sudan. Since the outbreak of war in Sudan, these communities are not able to sell their product and their regular buyers have since stopped coming. A related challenge was reported in Kaabong.

17. **Social challenges**: A number of social challenges to sustainable livelihoods were identified as:

    i) Low literacy levels: Two contrasting features characterise the communities in all 3 areas-high levels of poverty and rich endowment of natural resources. Low literacy levels accounts for most of the underlying causes for inefficiency and lack of innovation in exploiting the range resources. Also, given the magnitude of the pressures exacerbated by climate change, potential innovative solutions will require some level of creativity, foresight and the will to transform the ways in which communities live, exploit natural resources and interact with others in the market place to create sustainable value. Transforming communities from subsistence thinking, with primarily occupation being food and basic, living on day by day, to productive communities who see opportunity to create value and increase their wealth as levers of development, will be difficult in a community of predominantly no education.

    ii) *Child labour and disincentives to education*: Gold mining was mentioned across all sites as an economic activity that cuts across the demographic strata (men, women and children). They are not organised in any groups, so children undertake the activity not as part of family labour but in their individual rights. Each working

to earn and use their own money. The child labour problem is exacerbating the wider challenge of low school enrolment in pastoral communities. Communities in Kurmuk expressed concerns of children refusing to attend school and the likelihood of perpetuating generations of illiterate people going into the future. A social environment that perpetuates low literacy levels, will complicate efforts of respective Governments and their partners in addressing social problems like early child marriages, poverty and ecosystem degradation. It will be difficult to develop resilience to climate change effects and widen inequalities; as such communities not easily adopt modern resilience-enhancing technologies and practices like solar energy, climate-smart farming practices, water management, and livelihood diversification through off-farm activities, among other innovations.

iii) Occupational and environmental health risks: artisanal mining sites in Kurmuk (as well as in Kaabong and Kapoeta East) are characterised by air pollution and the use of dangerous chemicals like to clean and purify gold. These heavy metals from mercury are associated with respiratory, skin and other diseases, which may not manifest immediately but have effects in the future and may actually affect a wide range of people. Pollution of water sources from these activities also affect people outside mining sites, although these did not seem to be a major concern in the areas visited. Deep holes are also constructed without any concern for safety exposing miners to risks of death or injury in case such mining structures collapse. There were indeed reports that 4 people had recently perished as a result of collapse of such structures in Akendeyu Kebele. Despite these incidences, there seemed to be less awareness or interest in investing in protective gear and other safety measures. In the circumstances, the most realist approach to protect communities is to invest in awareness creation, protective equipment and guidance tools for safe artisanal mining operations.

iv) Gender: Women are disproportionately more affected by intense resource exploitation activities than men. Opening earth and crushing rocks using rudimentary tools, to lifting heavy loads of wood and non-woody biomass like grass and shrubs over long distances; requires strength to which women are biologically less adapted compared to men. This affects their health and reproductive responsibilities. Yet when these issues were raised in FGDs, community leaders argued that whatever problems men faced were also experienced by women. This may be an act of gender blindness or sense of powerlessness to address the challenge. It is instructive to note that across all 3 areas, women have a culturally assigned role to take care of family needs and they have to do it irrespective of the limitations they face. In the circumstances, any initiative that reduces the strain on their time, health, physical and emotional energy, or indeed empowers them with options to diversify livelihood sources, would contribute to their overall empowerment and their households' livelihood security. Access to knowledge and appropriate technologies, could address these challenges from multiple perspectives.

4.2 Opportunities for Market Development

Supportive Government Policy: The Government of Uganda has introduced the Parish Development Model (PDM) through which grants or lowcost financing for income generating activities will be granted to complement the mindset training and sensitisation activity. It targets the base of the pyramid. On the other hand, the Ethiopia Government, has been implementing investment support programs to develop value chains for honey and other rangeland products like gum and resin. These programs are ongoing in Benishangul Gumuz, and could be leveraged to benefit the Kurmuk communities. **Emerging peace**: Despite the areas being frequent conflict hotspots with latent conflict, there is relative peace that allows provides an opportunity to make largescale interventions. Such interventions will likely expand opportunities for scarce resources such as water and alterative livelihoods and would reduce incidences of friction and conflict. **Pristine relatively healthy ecosystems**: As the region joins the global community to discuss and find ways of addressing ecological and climate change pressures such as land degradation and biodiversity loss, etc., the area remain relatively intact in terms of landscape structure, biodiversity and land use. **Strategic partnerships** with external agencies working in the region there are several NGOs and externally funded activities especially in Kaabong district and Kapoeta East County.

5

CONCLUSION AND RECOMMENDATIONS

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusions

There is heavy dependency on rangeland resources for livelihoods. In all sites, all products are exploited at subsistence level, even those with high market prospects including in domestic and export market spaces.

Most rangeland products are collected and consumed, as complementary (and survival) livelihood measures. Wild fruits and vegetables tend to be considered inferior products, often used for lack of better alternatives. As a result, there were few essential products with clear market prospects (with the exception of honey, gold), even where some potential prospect exists (e.g. crafts, sand mining, ecotourism,). Some are underutilised due to complexity, limited knowledge and organisational capacity (as is the case with gum and resin extraction in Kaabong and Kurmuk). With the exception of Kapoeta East (where communities in Natinga depend largely on honey production from wild sources), crop production (particularly grain and pulses – maize, sorghum, beans), was identified as the main priority for livelihood enhancement. While the communities (Ik in Morungole) and the Benishangul (in Kurmuk) traditionally practiced some forms of conservation agriculture, where a reasonable level of tree cover is maintained even when land is opened up, or shifting cultivation, where over-tillage is discouraged, allowing the land to recover natural fertility and maintain vegetation cover, these practices may not cope with the degradation pressures if these activities are promoted extensively to meet the demand for food. There would be need to identify appropriate sustainable land management approaches that also take into consideration other range resource uses and the susceptibility to degradation.

Honey production is the most viable rangeland product extracted and used by communities in the Kaabong/Kapoeta cross-border region. However, its production remains at subsistence levels, despite the fact that the Ik/Tauso communities depend on it for income and other livelihoods components. The study concluded that most of the honey is informally processed and marketed at farm gate or within community. Some producers sell directly to final consumers who are usually within local communities or guests and passers-by. Handling of honey, across all communities visited, is poor and the product is inferior on account of poor handling including rudimentary processing. Yet, the ecosystems from which it is produced means it's a superior product that can compete in the premier markets if well positioned. There are, therefore, significant opportunities for livelihood enhancement, especially through expanding production and upgrading the producers to processors, which they can do at Morungole and Natinga centre respectively.

Local communities' traditional knowledge of species, their distribution and ecology, as well as the range of socioeconomic uses (including food, medicine, incomes, energy, shelter, etc.), appears to have contributed to preservation of particular tree species especially those commonly used. For instance, across all the 3 sites, *Balanites aegyptiaca* (locally known by its Arabic name "*lalob*") tends to be preserved even in urban areas in all 3 sites because of its multiple uses especially food (from leaves, fruits and seeds), medicine and shelter for humans and livestock from harsh weather.

5.2 Recommendations

This study recommends the following policy actions. The recommendations take into consideration what is practically feasible in light of the ecological and especially the social setting.

1. ***Support bee value chains to boost honey production, expand bee product varieties and improve access to profitable markets****:* Honey and other bee products offer a significant and sustainable opportunity for resilient livelihoods in all 3 locations. They have the potential to produce organic honey and other bee products that can command premium prices in local and international markets if strategically positioned (due to being produced from culturally sensitive, socially responsible and sustainably managed range ecosystems). To realise this in communities, the following steps should be taken:
   a) Promote apiculture through i) training to transform communities from wild honey extractors to bee keepers who have proper husbandry knowledge and attitudes towards bees; and ii) Provide modern bee hives and associated toolkits to improve productivity and management of bees, as well as safe handling of harvesting operations;
   b) Build community capacity for safe and hygienic extraction and processing of honey and other bee products by providing equipment and training in honey and other bee products extraction, processing and packaging (including propolis, beeswax);
   c) Support marketing by engaging and facilitating strategic market linkages through fostering partnerships with appropriate private sector actors; organising the bee keepers in cooperatives and facilitating connections with production and market facilitators (technology suppliers, financial intermediaries, and on-going training/ mentorship support entities);

2. Streamline artisanal gold mining operations and support artisanal gold value addition initiatives: In the case of promoting artisanal/small scale gold mining, it is critical to organise the communities into formal groups so that they can register and operate formally. This will enhance traceability and value creation, which will benefit the communities and reduce incidences of exploitation. The activity will also be subjected to regulatory monitoring, thereby reducing potential adverse effects on the environment as well as risks associated with illegal operations.

3. Support the communities to harvest, productively utilise and sustainably manage water resources**:** This will entail implementing the following interventions in different cross-border areas:

   i) Support the communities in Morungole (Kaabong) and Kapoeta to establish appropriate water harvesting and storage infrastructure. This will help mitigate water scarcity during dry seasons and enhance productivity of ecosystem services. In particular, water availability will enhance honey production (and other bee products), ensure continuous mining activities, and enable livelihood diversification through production of horticultural products like vegetable and fruit growing, with irrigation. This will enhance incomes, improve nutrition and assure secure livelihoods for the target communities, while reducing protecting biodiversity and reducing pressure on ecosystems.

ii) *Support aquaculture development in Kurmuk Woreda to enhance livelihood diversification and optimise value creation from water resources*. Support local communities to undertake productive aquatic activities and aquaculture. This will ensure abundant water resources, most of which is lost and/ or poorly managed. This is on account of available potential in the capture fishery where demand for fish is reportedly high but production remains low due to fluctuating water levels. The constructed water reservoirs would also serve multiple purposes including supporting irrigation (for horticultural production), livestock production) and industrial activities (mining, construction).

4. Strengthen institutional capacity of the public sector to effectively facilitate productive and sustainable use of range resources:
Local Government authorities in Kurmuk, Kapoeta East and Kaabong should be equipped with basic office tools like computers and mobility facilities such as motor cycle each to support rangeland product development through close monitoring and reporting. Relevant Units responsible for mining and extractives (including gum and resin extraction) should be supported to develop and disseminate guidelines and operational procedures for safe, secure and environmentally friendly extraction activities. Additionally, develop self-driven mechanisms for restorative activities to reduce environmental damage and undertake cost-effective land restoration. Appropriate incentives are needed to promote community-driven ecological rehabilitation activities and monitor extractive activities to ensure that ecological damage is minimised.

5. Support communities to adopt low-cost alternatives to reduce the pressure of deforestation and vegetation depletion: In clustered settlements (which seem to be the case around the Akendeyu Kebele and Kurmuk Woreda headquarters, Morungole, Narus town and Natinga community centre), there are opportunities to promote low-cost house construction using unburnt compacted earth blocks instead of untreated poles, shrubs/bamboo and grass,, that are susceptible to termite attach and rapid decomposition. This technology could be promoted by providing fabricated machinery for block making., Training local youth in the technology of block making, training them in basic masonry skills, and incentivising them to provide affordable services to local communities.

6. Integrate functional literacy training in all planned interventions: Improvements in literacy levels is necessary to catalyse this change process. For instance, in the gold and bee products value chains, this study envisages that community mobilisation to work together in cooperatives and leveraging public-private partnerships to have a voice in the market place will be the most appropriate approaches to increase value and enhance livelihood outcomes in all 3 areas (Kaabong, Kapoeta and Kurmuk). With this in mind, low literacy levels will likely undermine such efforts or will require more effort to realise.

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ANNEXES

ANNEX 1: SWOT Analysis of Selected Rangeland Products in the Study Areas

Product	Strength	Opportunities	Threats	Weakness	Priority
Honey	biodiversity & ecosystem quality; high potential for marketing; Communities in position to influence and get good returns	✓ High market prospects; ✓ High potential for superior product (ecological & social market positioning); Potential for regional and international markets.	Natural resource degradation Weak standard enforcement and unregulated domestics trade	Subsistence nature of the community livelihood structure; Few and weak value chain institutions; Inferior product/poor quality product Poor packaging materials.	Very High
Gold	Presence of gold deposits Proximity to mining environments Rights to extract the minerals Support from Local Government	High market demand for gold	External interests and competition from large scale companies with sophisticated technology; Regulatory framework that favours investors	Lack of organisational ability & support; Poor attitudes; Lack of equipment	High
Gum & Resin	Abundant in the range ecosystems Presence of regional network to promote production and marketing	Strong international market	Ecological destruction contributing to low regeneration	Lack of tools and other capacities Low levels of awareness of the resource Weak market linkages	Moderate

ANNEX 2: Household Survey Data

District

	Frequency	Percent
EE	23	37.7
Kabong	20	32.8
Karmak	18	29.5

Sex

	Frequency	Percent
1.Male	36	59.0
2.Female	25	41.0

Number of people living in the house hold

Level of Education

	Frequency	Percent
1. Never attended school	49	80.3
2. Lower primary	5	8.2
4. Lower secondary	3	4.9
5. Upper secondary	3	4.9
6. Post secondary level	1	1.6

Are you Head of HH

	Frequency	Percent
No	17	27.9
Yes	44	72.1

Q4

	Frequency	Percent
Mobile Phone	29	47.5
Vehicle		
Motorcycle	6	9.8
Bicycle or cart	5	8.2
Hoe	50	82.0
Panga/Axe	47	77.0
Spade	44	72.1
Water harvesting/ storage tank	12	19.7

Q5

	Frequency	Percent
1. Pastoralist	12	19.7
2. Agro- pastoralist	18	29.5
3. Crop farming	30	49.2

Q6

		Frequency	Percent
Grazing cattle	1. More than 4 hours	18	72.0
	2. 3-4 hours	3	12.0
	3. 1-3 hours	4	16.0
Cultivating crops	1. More than 4 hours	32	65.3
	2. 3-4 hours	9	18.4
	3. 1-3 hours	8	16.3
Trade	1. More than 4 hours	8	33.3
	2. 3-4 hours	2	8.3
	3. 1-3 hours	6	25.0
	4. less than 1 hour	8	33.3
Mining	1. More than 4 hours	9	27.3
	2. 3-4 hours	6	18.2
	3. 1-3 hours	12	36.4
	4. less than 1 hour	6	18.2
Honey collection/processing and sale	1. More than 4 hours	10	31.3
	2. 3-4 hours	2	6.3
	3. 1-3 hours	13	40.6
	4. less than 1 hour	7	21.9
Gathering and selling fruits and or vegetables	1. More than 4 hours	13	46.4
	2. 3-4 hours	2	7.1
	3. 1-3 hours	13	46.4
Hunting and sale wild meat/ animals	1. More than 4 hours	19	79.2
	3. 1-3 hours	4	16.7
	4. less than 1 hour	1	4.2
Collecting water	1. More than 4 hours	9	23.7
	4. less than 1 hour	29	76.3
Employed by an organisation	2. 3-4 hours	2	28.6
	3. 1-3 hours	4	57.1
	4. less than 1 hour	1	14.3
Tour guiding	1. More than 4 hours	1	33.3
	2. 3-4 hours	2	66.7

Q7

		Frequency	Percent
Q71. it has changed remarkably. I now do completely different things	1. strongly Agree	27	54.0
	2 Agreed somewhat	15	30.0
	3. neither agreed or disagreed	1	2.0
	5. strongly disagree	7	14.0
Q72. it has changed progressively. I still do what I was doing but I have taken on other activities to supplement my income	1. strongly Agree	24	55.8
	2 Agreed somewhat	7	16.3
	3. neither agreed or disagreed	2	4.7
	4. disagree somewhat	3	7.0
	5. strongly disagree	7	16.3
Q73. it has not changed. I still do what I was doing.	1. strongly Agree	10	21.3
	2 Agreed somewhat	2	4.3
	3. neither agreed or disagreed	7	14.9
	4. disagree somewhat	8	17.0
	5. strongly disagree	20	42.6

Q8

	Frequency	Percent
Cows	13	34.2
Camels	3	7.3
Sheep/Goats	20	48.8
Donkeys	3	7.3
Poultry	19	46.3
Crop Produce	22	53.7
Gold Mining	8	53.3

Q9

		Frequency	Percent
In-kind	1. most or all time	6	20.0
	2. sometimes	6	20.0
	4. Never	18	60.0
Cash	1. most or all time	28	90.3
	2. sometimes	3	9.7
Digital payment	2. sometimes	3	17.6
	3. rarely	1	5.9
	4. Never	13	76.5
Bank	2. sometimes	2	9.5
	4. Never	19	90.5

Q10

	Frequency	Percent
Q101Honey and other bee products	30	57.7
Minerals	32	61.5
Gum	3	5.8
Fruits collection, processing and sale	30	57.7
Vegetables	29	55.8
Herbal medicine	41	78.8
Spices	17	32.7
Crafts from bamboo	28	53.8

Q11

		Frequency	Percent
Livestock	1. within 1 hour walking distance	15	46.9
	More than 6 hours	17	53.1
General market	1. within 1 hour walking distance	22	45.8
	1-3 hours	8	16.7
	3-6 hours	1	2.1
	More than 6 hours	17	35.4
Commercial centre	1. within 1 hour walking distance	29	54.7
	1-3 hours	9	17.0
	More than 6 hours	15	28.3
Location of key economic resources	1. within 1 hour walking distance	9	16.7
	1-3 hours	6	11.1
	3-6 hours	3	5.6
	More than 6 hours	36	66.7

Main road	1. within 1 hour walking distance	8	15.4
	1-3 hours	7	13.5
	3-6 hours	22	42.3
	More than 6 hours	15	28.8

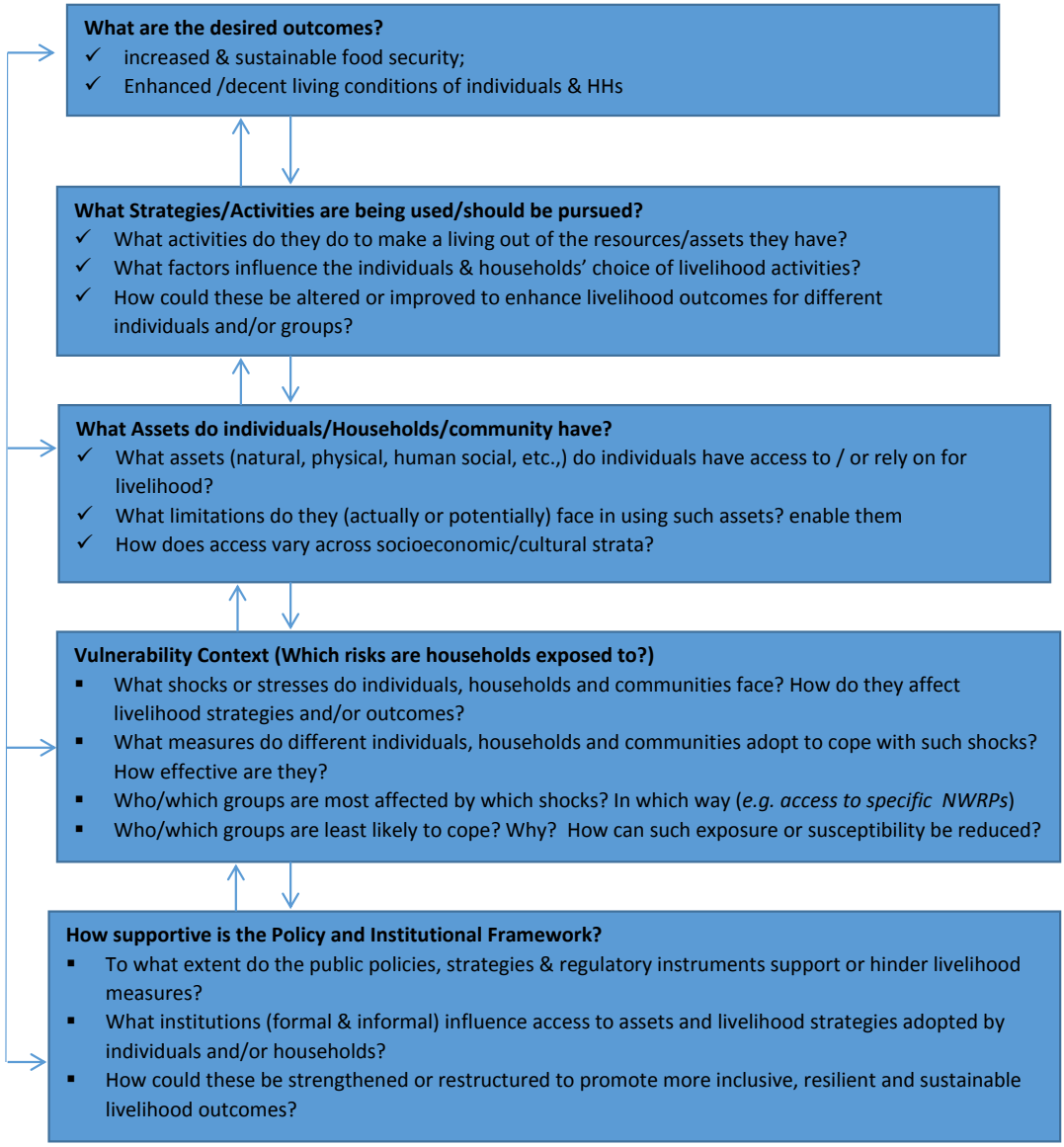
Q12

	Frequency	Percent
Sell livestock	38	71.7
Take on alternative source of livelihood	39	73.6
Diversity livelihood	9	17.0
Seek and depend on humanitarian relief by government or NGO	37	69.8
Look for a job	20	37.7
Restocking/ Asset acquisition through traditional means	9	17.0
Send part of the family member away	11	20.8
Begging by family members	11	20.8
Migration to other places	22	41.5

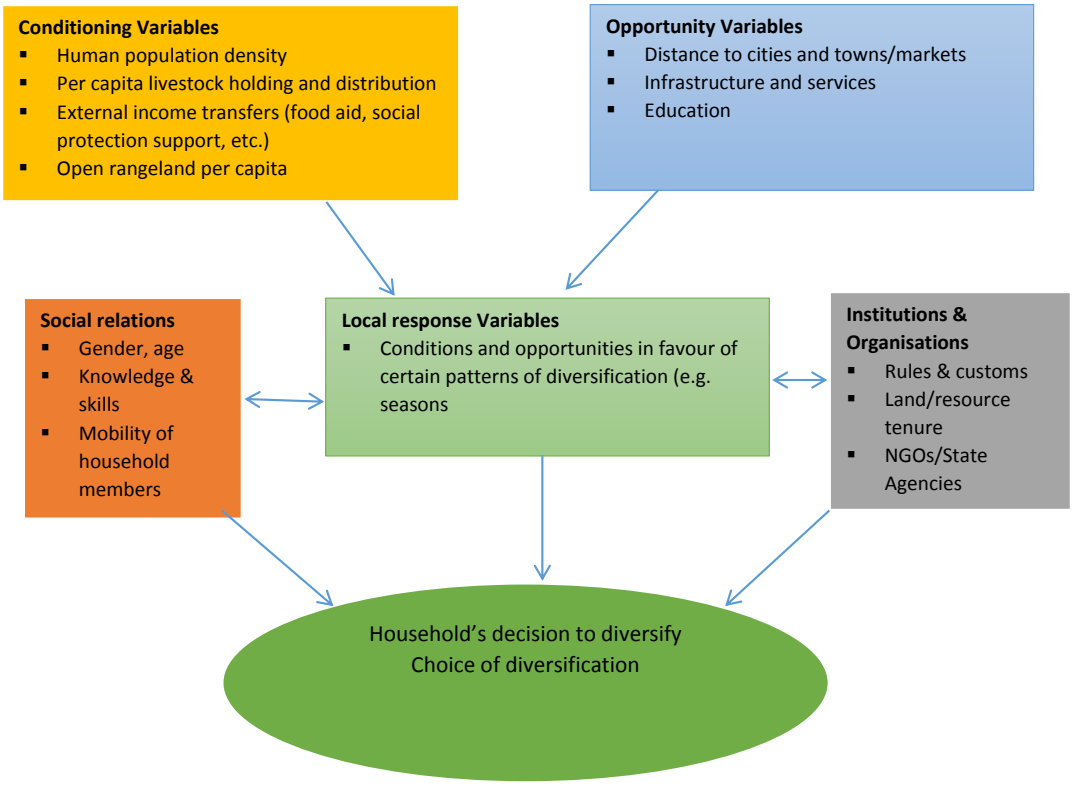
Q13

	Frequency	Percent
1. A grant in cash to start an income generating activity	11	52.4
2. A repayable loan to start an income generating activity	4	19.0
3. Direct asset transfer	6	28.6
4. Receiving physical equipment	9	42.9
5. Receive physical farm implements	14	66.7
6. Received training to boost my income generating activities	10	47.6
7. Mobilised into an association/ group with others to work together on income generating activities	10	47.6
8. Received training in savings and credit services	4	19.0
9. Never received any form of support whether monetary, physical assets or training	5	21.7

ANNEX 2A: A General Framework for Sustainable Livelihood Analysis (SLA) (*Adapted from FAO*)



ANNEX 2B. Framework Livelihood Diversification in ASALs (*Extract from Achiba, 2018*).



ANNEX 3: Checklist of Questions for Livelihood Diversification

For each of the NWRPs selected (Bee keeping, gold mining, Gum and resin/incense extraction, fruit and bamboo gathering), the following checklist will be used:

1) What are the main NWRPs that people in this area collect from wild and use it at home or sell?

2) How have the collection of these products (*3 most important ones identified*) changed over the last 5 years, 10 years? Why?

3) Where do you get the materials from? (*Indicate whether it's a private or public forest/ resource or site*)? What proportion of your household's (income, food, animal feed, etc.) needs do the activity of gathering these products contribute?

4) How long do you walk/travel to get the product? (Estimated distance and/or time taken)? How long is it from where the product is taken to the market (where you sell from)?

5) What specific reasons influenced your choice of this product and not any other for your income/livelihood?

6) How are access rights secured? Is there restriction (e.g. by law through a licence, informal agreement, cultural or group/communal voice) or is it illegally obtained. To what extent do you consider your rights to the product or field secure?

7) Would you perceive the ecosystem or resource from which you get the product to be healthy and productive or degraded? To what extent is severe degradation a concern, now or in the near future, for you and/or others who depend on the resource?

8) How satisfied are you with what you are doing and/or how much you are earning?

9) What do you consider to be the main risks (if any) in depending on this particular product (NWRP) for livelihood? Is there anything you or authorities could do about it to help you enhance or guarantee your livelihood?

10) In what ways could you be assisted to engage in a better product or livelihood approach that is less tiresome or in which you could earn more?

ANNEX 4: General Checklist for Market Analysis of Non-wood Rangeland Products

1. What non-wood rangeland products are produced and i) directly consumed/used by households? Ii) sold by households for money other forms of value?

2. How is the market structured? In terms of:
   a) *Actors*: who are the producers, transporters, buyers? Are there market connectors/ middlemen/women?
   b) *Market size*: Where is the product sold? (Locally, nationally. Cross-border)?
   c) *Competition*: Who are the competitors? Are any of these from outside the community/region? What strategies are the actors using to beat competition? What advantage do the individuals/households consider to be the main strength in the market?
   d) *Value addition*: How is the value chain structured? Who or what level is most value added? How are the benefits distributed?
   e) *Production and distribution systems*: What mechanisms are used to extract, process, transport and/or sell the products? How efficient is the production and marketing system? Have actors made any initiative to improve or consider alternative: product and /or production mechanisms?
   f) *Security*: to what extent are the actors protected by law? (is the production and/ or marketing process recognised by Government? And/or traditional institutions? Are there any formal arrangements between all or some market actors? How does the production and distribution system specifically protect women, youth, elderly, Persons with disabilities, ethnic minorities, and refugees? To what extent does the production and distribution system specifically address resource sustainability concerns?

3. What constraints do actors in the production and distribution process face? (*distortion and rent-seeking by middlemen; insecurity especially for women and elderly; Government regulations and taxes/fees; inadequate/underdeveloped market infrastructure; access to market information; high transport costs/physical barriers; lack of financial support services; lack of access to knowledge and/or technology, etc.).* How have they tried to avoid/address them?

4. External support: What is the current scale of investment in NWRPs? What investment incentives currently exist at local, regional and inter-governmental/ trans-boundary level in the selected NWRPs? To what extent have external actors (foreign or domestic large-scale investors, donors, etc.) influenced the production and distribution process? How likely could this happen in future?

5. What impact have these had/ or might these have in the future on:
   i) Producer/Supplier markets?
   ii) nature of demand? *E.g. could it evolve into more formally institutionalised to threaten smallholder informal producers/market actors?*
   iii) Youth employment

iv) Incomes/returns of local market actors (particularly on pastoralist households, dropouts, special interest groups of youth, women and elderly)
v) Environmental/ ecosystem components e.g. biodiversity, wildlife, grazing resources, arable land, etc.

6. How should local institutions (including rules of access/utilisation) be restructured to ensure equitable access, higher value for primary producers, and sustainability of the resource base?

7. How can digital space be utilized to improve marketing efficiency? Is the necessary equipment or facilities (e.g. smart phone hand-sets) easily accessible to primary NWRP actors? Is the infrastructure for digital facilities (electricity, telephone and internet network) reliable and/or affordable in most areas?

ANNEX 5: LIST OF PEOPLE CONSULTED

	NAME	ORGANISATION/POSITION	CONTACT
	Lomongin Emmanuel	District Natural Resources Officer	0774143374
	Lomodi Francis	District Speaker, Kaabong District	0782196338/
	Simiyu Benjamin	Water Engineer, Usake Dam	0789354091
	Lomer Daniel Longoli	SAS/Sub-County Chief, Molungole	0774447481
	Longoli Simon	CDO, Kaabong District LG	0780902605
	Lokol Paul	V/Chairperson, Morungole SC	0785485130
	Samanya Samuel	Agric. Officer,	0760614209
	Lokii Aldo	LC II Chairperson, Usake Parish	0772454699
	Nakung Teddy	USAID/RTI/B4R	0707994255/ 0779705156
	Nakwang Oliver	USAID/RTI/ B4R	oliver.nakwang@gmail.com
	Tumusiime Hillary	Forest Sector Manager, NFA	
	Okongo John Bosco	District Cooperatives Officer	0782715771/0770532107
	Turyayesiima Nathan	PA/ World Food Program, Kotido	0779980071
	Aremun Charles	Project Officer, FOKAPAWA	0785505178
	Lomoe Simon	Executive Director/ DADO	0772343367
	Apero Anna Loput	Entrepreneur- LISA PAN Honey Enterprises	0773/876837/0771386423
	Oting Gai	County Executive Director, Kapoeta	0922 12 2185
	Kidega Patrick Paul	County Director of Agriculture, Environment & Forestry	+211927674190
	Peter Lokorite	Paramount Chief	
		Relief and Rehabilitation Coordinator Kapoeta East County	

	Dr. Birhanu Eticha	Deputy Director /Livestock, Agriculture & Envt- Benishangul Gumuz State	
		Head of Agriculture & Forestry-Kurmuk Woreda	
		Administrator–Kurmuk Kebele	
		Administrator–Akandeyu Kebele	

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