

LANDSCAPE STUDY REPORT

Zambezi Valley
Livelihoods and
Non-Timber
Forest
Products



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1 Executive Summary

The Utariri Integrated Biodiversity, Climate Change and Livelihoods Programme in the Zambezi Valley is a one-health landscape-wide intervention geared at transforming rural livelihoods, promoting climate action and biodiversity protection in the landscape. To inform project interventions around livelihoods and non-timber forestry product exploitation, the livelihoods and NTFP baseline research (was rolled out in the Utariri districts) to provide a benchmark for the project results. The research administered 241 household questionnaires, 39 key informant interviews and 12 focus groups across the landscape covering Nyaminyami, Hurungwe, Mbire, and Muzarabani districts. The research established that communities are aware of the range of protected areas in their districts. Participants are also aware of the statutory and customary prohibitions regarding biodiversity in their areas. There is a wide subscription to customary biodiversity practices which protect specific species through totems and taboos and spiritual connections between some forms of wildlife. State conservation agencies like Zim Parks, Forestry Commission and EMA have significant roles to play in the biodiversity protection especially through monitoring and regulating the protection of some species such as the protection of pangolins, pythons etc.

For the greater part of the Zambezi Valley, agriculture remains the main livelihood for most of the research participants in both the commercial and subsistence subsectors. Adjacent to these farming lands are wildlife-rich game parks and safari operations spanning from Nyaminyami to Muzarabani together with a vibrant water economy expressed through the tourism, fisheries and the riparian activities in and along the Zambezi River. Hurungwe and Muzarabani are some of the largest grain and tobacco producing districts in the landscape. However, the Zambezi Valley has a more diverse portfolio of livelihoods which include tobacco farming, livestock such as cattle and goats, and drought

tolerant crops such as sorghum and millet and more recently watermelons, millet especially in Nyaminyami and Mbire. The low-lying parts of the Valley are drought prone and are more suitable for drought tolerant crops and livestock. Due to climate change and the complex hydrogeological conditions, water access is a key constraint to livelihoods with several dysfunctional boreholes and drying river channels. In cases where contract farming is practised especially in tobacco, cotton and red sorghum, farmers complained that payments for their produce by contracting firms was always delayed thus compromising the farmers ability to plan for coming seasons. Delayed payments exposed farmers to extortionist middlemen who normally shortchange the farmers, offering lower prices in ready cash. Linkages to the market are generally weak due to poor transport access and poorly developed commodity associations.

The Valley is habitat to diverse NTFPs (fruits and non-fruits). Their exploitation remains weak owing to poor aggregation and inadequate resource mapping and assessments. The NTFP sector remains essential for the communities and households with some value chains such as *Ziziphus mauritiana* (*Ziziphus mauritiana*) and baobab (*Adansonia digitata*), thatch grass (*Hyparrhenia sp* and *Hyperthelia sp*) fish, tamarind (*Tamarindus indica*) and ilala palm (*Hyphaene petersiana*) generating significant income for households. These commodities are obtained in larger markets or by monopolistic corporates who come to buy in communities. Few aggregators are found in the landscape due to low licensing and tight standards especially regarding product quality, labour and phytosanitary issues. Prices for NTFPs are highest on roadsides and in urban markets. The interest in NTFP value chains has seen

companies like Schweppes buying baobab pulp for beverage production. There are small-scale efforts to process *Ziziphus mauritiana* and baobab jam while the National Biotechnology Centre and Schweppes have started processing initiatives drawing from resources from the Zambezi Valley. There is a growing apiculture movement in Muzarabani and Mbire with assistance from Zimbabwe Apiculture Trust.

It is still not clear how NTFPs enterprises will be managed in terms of benefits sharing if they are harvested from the commons, but efforts are under way to harmonize the extraction and commercialization of NTFPs ensuring a fair and sustainable process. A great potential exists in this sector including tapping spring water, less known and used fruits and non-fruit NTFPs.

Mbire district has three community conservancies. Most biodiversity threats are driven by population growth, settlement

encroachment to protected areas, climate change and habitat loss. In terms of non-timber forest products (NTFPs), the landscape experienced widespread extraction of tamarind, *Ziziphus mauritiana* and baobab and several other NTFPs but most of the harvesters are still unlicensed. Communities raised concern over the increased incidence of human wildlife-conflict (HWC) as animals and their perceived notion of more protection of animals as opposed to humans. The baseline concluded that the Zambezi Valley has a rich natural capital base which needs to be integrated with community livelihoods



Roselle (Hibiscus sabdariffa) grown in Mbire, Mashonaland Central Province

Acknowledgments

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List of Acronyms

ADRA	Adventist Development and Relief Agency
AGRITEX	Agricultural Extension Services
AWF	Arican Wildlife Foundation
BAT	Bushlife Africa Trust
CAMPFIRE	Communal Areas Management Programme for Indigenous
CBNRM	Community Based Natural Resource Management
COTTOCO	Cotton Company of Zimbabwe
COVID-19	Corona Virus Disease of 2019
EMA	Environmental Management Authority
FACHIG	Farmers' Association of Community Self-Help Investment Groups
FAO	Food and Agriculture Organisation
FGD	Focus Group Discussion
HH	Household
HRDC	Hurungwe Rural District Council
HWC	Human Wildlife Conflict
IKS	Indigenous Knowledge Systems
ISALS	Internal Savings & Lending Schemes
IWT	Illegal Wildlife Trade
KII	Key Informant Interview
MAB	Man and Biosphere Reserve
MRDC	Mbire Rural District Council or Muzarabani Rural District Council
NGOs	Non-Governmental Organisations
NTFPS	Non-Timber Forest Products
NRDC	Nyaminyami Rural District Council
PA s	Protected Areas
PWMA	Parks and Wildlife Management Authority
REDD+	Reducing Emissions from Deforestation and Degradation
RDC s	Rural District Councils
SADC	Southern African Development Committee
SAFIRE	Southern Alliance for Indigenous Resources
TWEP	Tobacco Wood Energy Project
UNDP-GEF	United Nation Development Programme Global Environmental Facility
UNESCO	United Nations Educational, Scientific and Cultural Organization
ZimParks	Zimbabwe Parks and Wildlife Authority
ZIMVAC	Zimbabwe Vulnerability Assessment Committee

2 Introduction

Globally, the rural economy plays a critical role in achieving the 2030 agenda for sustainable development. However, rural households are generally highly deprived and more susceptible to risks because of the shrinking output of agricultural activities driven by climate change, soil degradation, water scarcity, pest infestation, and the lack of market opportunities compared to urban settings. Livelihood diversification in rural settings is essential and is defined as a process in which rural households construct highly diverse portfolios of farm and/or off-farm activities over time in order to secure survival and improve their standards of living (Ellis, 2000). Off-farm income generating activities include waged or casual work in towns, agro-processing, vending, manufacturing etc.

Over the past three decades, governments, conservation and development agencies and non-government organisations across the world have encouraged the marketing and sale of non-timber products (NTFPs) as an off-farm activity capable of boosting income for poor people in the tropics whilst encouraging forest conservation. Non-timber forest products, as defined by the Centre for International Forestry Research (CIFOR) are products or services other than timber that are produced in forests. They include fruits and nuts, vegetables, fish and game, medicinal plants, resins, essences and a range of barks and fibres such as bamboo, rattans, and a host of other palms and grasses. NTFPs have played an essential role in sustaining the livelihoods, income generation, food and nutritional security, fuelwood, fodder and traditional medicine as subsistence support to the rural communities since time immemorial (Talukdar et al., 2021; Shackleton and Pandey, 2014), including Zimbabwe. Rural communities value the contribution of NTFPs to human and livestock diets beyond their calculated market values (Nunes and Van den Bergh 2001, Shackleton et al. 2001), justifying selective conservation and management. In a study

conducted in Zimbabwe, Woittiez and colleagues (2013) emphasize the importance of forest and biodiversity conservation for utilitarian purposes such as the extraction of products that provide a coping strategy following years of crop failure.

The Zambezi Valley landscape exhibits diverse socio-cultural and biophysical characteristics which vary along and across the basin. The southern part of the Valley, which sits at a high altitude, enjoys a more humid climate which is accommodative to rainfed cropping. The low-lying part in the north is constituted of a drier topography which is generally more favorable for cattle, goat and drought tolerant crops. Most of the Zambezi River tributaries descend the Mavhuradonha to Matusadona escarpment into these plains with huge potential of sustaining irrigation farming. Crops such as millet, sorghum and watermelons grow well in this semi-arid area and are increasingly getting market attention as climate change intensifies. The southern uplands are humid and largely covered by miombo woodland, while the northern lowland is *mopani-dominated*.

The lowveld section of the Zambezi floodplain, which spans from Kariba in the West to Muzarabani in the East, experiences chronic droughts, floods and food insecurity. Historically this riparian region has been infested by tsetse flies thereby affecting human settlement and economic activities. These districts (especially their northern parts) have been classified as marginal zones given their fragility. The colonial government designated significant tracks of this territory as protected areas and ran large campaigns to eradicate tsetse flies (carriers of trypanosome, a cell parasite) which significantly changed the land from uninhabitable to inhabitable and suitable for cattle range. Because of their pristine nature, the districts carry a rich

biodiversity. The Valley has an abundance of non-timber forest products (NTFPs) such as baobab (*Adansonia digitata*), *Ziziphus mauritiana* and ilala palm (*Hyphaene petersiana*), which also provide livelihoods for the local communities.

The baseline sought to establish the nature of the communities' economies including their livelihoods, their use of NTFPs, sustainability, markets and value chain opportunities. Baselineing the state of livelihoods and rural economies in the landscape is a valuable exercise, as the Utariri Programme seeks to roll out its implementation plan.

Rationale and Objectives

The Utariri Integrated Biodiversity, Climate and Livelihood Programme which is being rolled out in the Zambezi Valley sought to establish the state of biodiversity protection practices, livelihoods, NTFPs' exploitation, and perceptions of communities on natural resource management. The baseline findings will provide guidance during project implementation contributing towards sustainable management and utilisation of natural resources, restoration of biodiversity, climate action, and building community resilience in the Valley. The baseline will serve as reference to assess the project impact as the project rolls out.

For that reason, the baseline sought to

- identify and analyse livelihoods and the use of Non-Timber Forest Products at community and household levels,
- assess the nature and patterns of NTFP exploitation in the Zambezi Valley landscape
- recommend appropriate mechanisms of addressing livelihoods and NTFPs challenges in the landscape based on the evidence gathered.

The baseline data will act as a reference point in the project monitoring and will inform the context-appropriate interventions and their distribution within the landscape.



Grace from Angwa in Mbire, Mashonaland Central Province selling Baobab

3 Background

Countries in the Zambezi Basin reflect an increase in temperatures by over 0.5°C in the past 100 years, with the last decades recording the warmest and driest period ever (Ndebele-Murisa et al., 2020). The past 20 years have witnessed noticeably less rainfall and drought has become an increasingly serious threat (2010). The Valley has historically been underpopulated due to the abundance of tsetse flies which impacted livestock and humans. Annual Zimbabwe Vulnerability Assessment Reports (ZIMVAC) have shown chronic food insecurity in the Valley districts. The more humid and cooler parts of the Utariri project districts (Hurungwe and Muzarabani) have experienced ecological transformation owing to extensive land clearance and deforestation. This is due to the inflow of new settlers attracted by tobacco farming opportunities. Overreliance on tobacco has led to the dutch disease, an economic phenomenon where the rapid development of one sector of the economy (particularly natural resources) precipitates a decline in other sectors. Kariba and Mbire districts have experienced increased cyclic droughts and have seen initiatives to commercially grow sesame, red sorghum and watermelons.

In communal agricultural areas, a combination of poor agricultural practices (stream bank cultivation, overgrazing, and soil erosion) and high human population densities have had negative effects on water quality of streams. Until recently, commercial agricultural areas were relatively pristine until communities started to cut down trees to cure tobacco. These areas were characterized by mature deciduous riparian forest strips which act as riparian buffers, thus protecting water resources (Ndebele-Murisa et al., 2020).

The governance and management of non-timber forest products in the landscape is closely tied to the institutional arrangement governing forests and wildlife in Zimbabwe and the way indigenous people were alienated and impoverished through colonial laws. The Communal Land Forest Produce Act (Cap 19:04) of 1928 (amended 1987), regulates the exploitation and protection of forestry produce within communal lands. There are several gaps regarding sustainable exploitation of NTFPs with the view of guaranteeing continued production, regeneration and community benefits. Apart from the principles of common property governance¹, the NTFPs and related forests are governed by the Forestry Act (Cap 19:05) of 1948 and the Environmental Management Act (Cap2:-24) of 2002 and the relevant statutory bodies. At a quotidian level, communities feel more loyal to customary authorities and traditional institutions. These institutions administer both formal and informal



Chief Chundu from Hurungwe attending the launch of the Utariri Programme in March 2023

¹ The eight design principles of Elinor Ostrom (1990)

regulatory tools that include taboos, sanctions and incentives and other local forms of spiritualism. Traditional leaders and spirit media regulate against cutting of fruit trees and medicinal plants. Fruits are also considered as food for the wild animals which link up with the spirits of the land.

The forest and related NTFPs in Zimbabwe's miombo and mopane woodlands within customary lands are managed through established local traditional systems of governance, control and rule. Among the common property governance principles in communal forests, are the need for congruence between rules and local conditions, graduated sanctions, monitoring, clearly defined boundaries, collective choice arrangement, sustainable conflict resolutions arrangement and the nestedness of rules.

According to the ZIMVAC (2011) report, Zimbabwe is partitioned into 25 livelihood zones. Hurungwe falls into Cereal Low Cotton communal zones, the Highveld Prime cereal and cash crop zone. Mbire and Muzarabani fall into Northern Zambezi Valley which rely on extensive small grain, groundnut and cotton production. Kariba falls in the agrofiseries livelihood zone characterised by fishing and related activities. There is a distinctively gendered gender division of labour whereby men spend most of the year in fishing camps along the shores of Lake Kariba.

Along the Valley, some soils are sandy loamy and require fertilisers for crop production. However, communities in Mbire and Kariba hardly use fertilisers and agrochemicals due to economic constraints. The vegetation in the zone consists of bushes and some grassland with some parts suffering massive deforestation. More recently, there is heightened economic interest in the Valley owing to discoveries of oil in Muzarabani, extensive alluvial gold mining along the major rivers, the opening up of the Kanyemba town and border post and the expansion of Kariba and Chirundu towns.

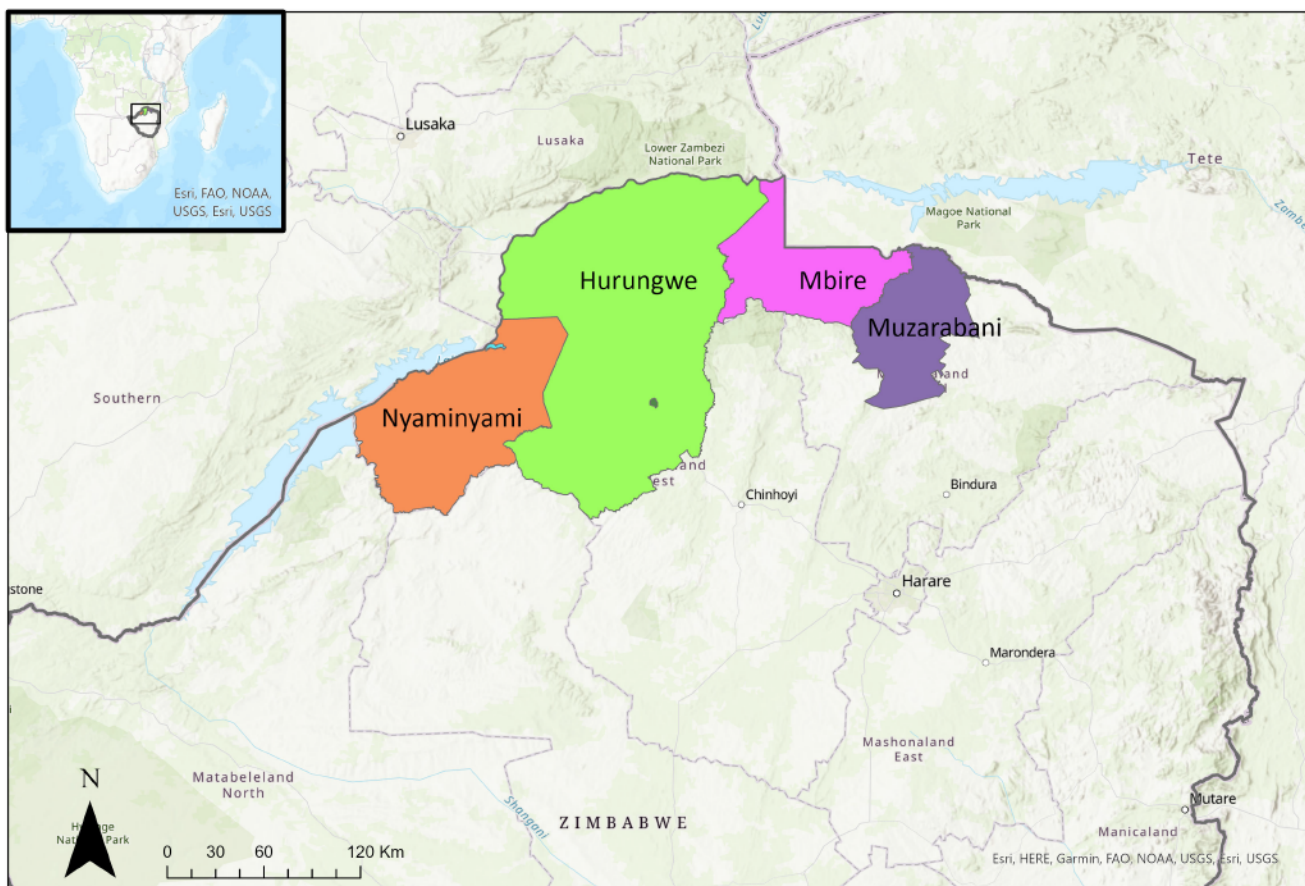


Figure 1: Utariri Operating Districts in the Zambezi Valley

Seasonal throwback floods from Cabora Bassa affect large parts of lower Muzarabani. Although flooding is seasonal, occurring between January and February when the rainfall season is at its peak (Mavhura et al., 2013), it is exacerbated by anthropogenic effects. When the water level in Lake

Kariba rises above threshold, it is released to avoid dam failure, often at the peak of the rainy season, resulting in a substantial increase in the discharge of the Zambezi River downstream. The intense summer rains trigger flash flooding and severe land degradation (Mudavanhu et al., 2015). More recently, climate change in the form of prolonged droughts, delay in the start of the rainy season and more frequent cyclones, together with reduced infiltration due to loss of vegetation cover have triggered damage to shelter and to critical infrastructure and livelihoods. This situation has disrupted the rural economy, trade and basic services. All the districts, except Nyaminyami, have also seen huge inflows of settlers since 1980 due to resettlement (ZIMVAC 2011).

Vegetative Characterisation of the Zambezi Valley

Two vegetation zones define the Zambezi Valley districts. These are the mopane woodlands which generally cover the drier and hotter lowlands. The upper parts of the Valley are dominated by miombo woodlands. The low-lying drylands are characterized by water scarcity, which affects both natural and managed ecosystems and constrains the production of livestock as well as crops, wood, forage and other plants and affects the delivery of environmental services. The drylands contain some of the most fragile and threatened ecosystems on the planet, including biodiversity hotspots and many threatened species. The Zambezi Valley houses the Middle Zambezi Biosphere Reserve, a UNESCO designated Man and Biosphere Reserve geared towards the preservation of endangered biological species. A large part of Zimbabwe's population lives and derives their livelihood in the Zambezi Valley including the riverine lands, along the Zambezi River and Lake Kariba. The majority of these people depend directly on forests, rangelands, grasslands, fisheries and rain-fed agriculture for subsistence, shelter, fodder, heating and cooking, and income. The drylands face many challenges and are highly vulnerable to land degradation, including deforestation, with higher dependence on goods and services (energy, food, and income), and expansion of agriculture and infrastructure development. Ecosystem services within the miombo and mopane ecosystems are suffering high levels of degradation, the main direct causes of which are the expansion of agriculture, charcoal production, overgrazing, fires and illegal mining. Increased flooding and droughts are further increasing the negative effects of these practices. Unsustainable practices are resulting in reduced land productivity, biodiversity loss, and invasion of alien species, pollution, looking towards an overall decline in ecosystem services.



A woman carrying firewood for domestic fuel consumption

4 Methodology

Data was collected between 24th April and 2nd May 2023 in Hurungwe Wards 7,8 and 9; Muzarabani wards 5,6,7,8,9,10,17,19, 20, 21, 23, 27, 28 and 29; Kariba wards 3,4 and 6 and Mbire wards 1, 2,3, 4, 9,10, 11,12,16, and 17. Data collection was divided into three thematic components. The Livelihoods and Non-Timber Forest Products (NTFPs) baseline administered 741 questionnaires and conducted 31 key informant interviews and 10 focus groups discussions. Quantitative data was collected using closed-ended questionnaires administered by enumerators. Qualitative data was collected through Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs), at Ward and District level. For the quantitative data collection, enumerators were recruited from the area (district), to ease communication and cultural appropriateness. The enumerators were trained in interviewing skills prior to deployment to ensure efficiency and ethical compliance. They also ran a

test questionnaire in a non-targeted village to familiarize themselves with the questions and the interviewing techniques.

Table 1 illustrates the people engaged for the baseline through questionnaires, key informant interviews and focus groups discussions administered in the landscape. The questionnaires for the Livelihoods and NTFP component were administered to heads of households (HH) because of their decision-making powers in terms of resource allocation. The team of researchers conducted interviews with purposively sampled key informants at ward and district levels.

Table 1: People Reached in the Landscape

	Survey Questionnaire	Key Informant Interviews	FGDs
Hurungwe	75	10	3
Mbire	228	2	6
Muzarabani	363	10	7
Kariba	75	9	4
Total	741	31	20

Demographic Characterization of the Respondents

The landscape average household size was 5.35 against a national average of 4

Sex

The baseline reached out to 741 survey questionnaire respondents, 52.90% of which were females 47.10% being males. Table 2 shows the distribution by district.

Table 2: Respondents by gender across the landscape

District	Female	Male	Total
Hurungwe	37.30%	62.70%	75
Mbire	51.80%	48.20%	228
Muzarabani	53.70%	46.30%	363
Kariba	68.00%	32.00%	75
Total	392	349	741

Age

Most of the respondents, 47.9% were middle aged (36-59 years) and 35.5% were youths (18-35 years) while the rest were elderly.

Table 3: Age-groups of respondents

Age	Youth (18-35 years)	Middle age (36-59 years)	Elderly (60+ years)	Total
Hurungwe	16.0%	61.3%	22.7%	75
Mbire	35.1%	49.6%	15.4%	228
Muzarabani	34.7%	46.6%	18.7%	363
Kariba	60.0%	36.0%	4.0%	75
Total	263	355	123	741

Education

An average of 15.8% of the participants have not achieved formal education at all with Muzarabani and Kariba having 24.8 and 20% with no formal education. In the whole landscape all districts have under 5% tertiary education achievement.

Table 4: Education level of the respondents

Education	None	Primary	Secondary	Tertiary	Total
Hurungwe	8.0%	40.0%	52.0%	0.0%	75
Mbire	10.5%	48.7%	39.5%	1.3%	228
Muzarabani	24.8%	42.4%	31.1%	1.7%	363
Kariba	20.0%	52.0%	24.0%	4.0%	75
Total	135	334	260	12	741

Marital Status

Most of the research participants were married with a percentage of between 75.8% for Muzarabani and 100% for Nyaminyami.

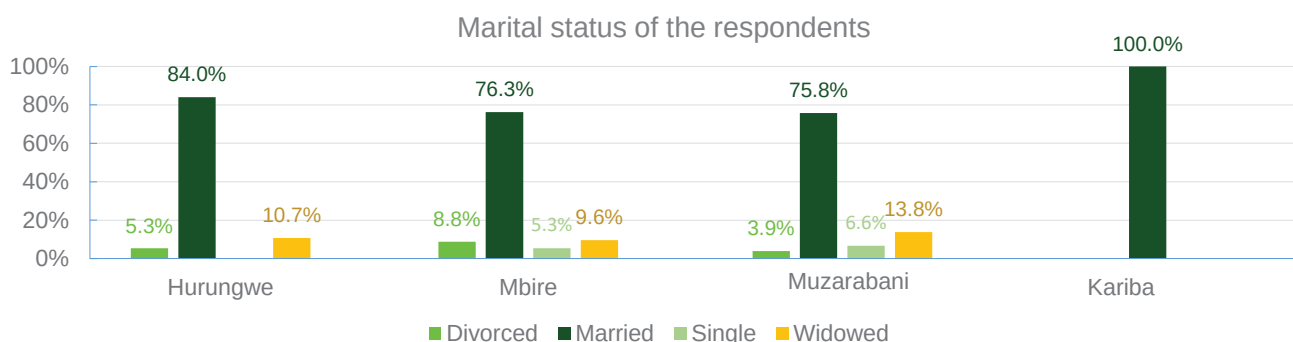


Figure 2: Marital status of the respondents

5 Results and Key Findings

Historical Changes of the District

Focus groups and key informants revealed that in the 1950s, the territory occupied by wild animals was very large compared to the human settled territory of the then Dande area. The situation changed soon after independence, when increased human immigration into Hurungwe, Muzarabani and Nyaminyami increased population and the demand for natural resources such as land, wood and water. Some of the community members came from Mount Darwin, Chivhu and Masvingo and they were given land by the traditional leaders for farming, increasing population density. In Nyaminyami, the construction of the Kariba dam led to massive displacement of the Tonga people into the upland districts and away from their water-based livelihoods like fishing and seasonal riverbed cropping. The demand for natural resources such as fruits has resulted in an increase of Human Wildlife Conflict (HWC) cases since people encroach wild animal's territory on a daily basis searching for firewood and NTFPs such as *Ziziphus mauritiana* and *baobab*. Soon after independence the law enforcement was very effective as compared to these days where law offenders are not penalised effectively due to the political powers that protect them. Across the landscape rivers used to have lots of water and people could practise fishing. The villagers used to engage in rain making ceremonies and in the event that some game animals/ elephants were reported to have been seen on the move. A ceremony would be done before killing it. Traditions began to change after 1980 with the coming of and adoption of Christianity. The arrival of technology and rights has caused some generational changes in actions/attitudes towards beliefs. The elders are not passing down indigenous knowledge system (IKS) to their young ones.

In the resettled areas, most of the community members arrived in the ward around 2003 and 2004. In the pristine areas, the Communal Areas

Management Programme for Indigenous Resources (CAMPFIRE) projects were initiated in the late 1980s to ensure co-management of wildlife until the early 2000s. The whole Valley is littered with conflicts between chiefs over territorial boundaries and control. Important habitats, including wetlands, have been destroyed by fire and deforestation. Most wetlands have dried up because people have encroached into these fragile ecosystems.



Studies have found that the baobab fruit is a nutrient-dense fruit, the pulp is particularly rich in vitamin C and contains B vitamins, potassium, magnesium, iron and more.

Socio – Economic Status of Participants

The socio-economic status of the participants revealed a development gap between districts and communities which were attributed to economic development, climate, displacement history, infrastructure development, education etc. The difference between those in the lower and those in the upper regions is significant as this has implication on the economic activities they engage in. There were variations based on history of the tsetse infestation and its eradication which affected livestock economies of communities. Being border districts, these districts face marginalization that has its origin in colonial dualism, where natives had no control over wildlife or land or boundaries.

Water and Sanitation access

Figures 3 and 4 illustrate the state of water and sanitation across the districts. Over half of the interviewed households, 52.9%, use Blair toilet, 21.1% engage in open defecation, 21.6% use pit latrine while 4.2% use shared toilet facilities

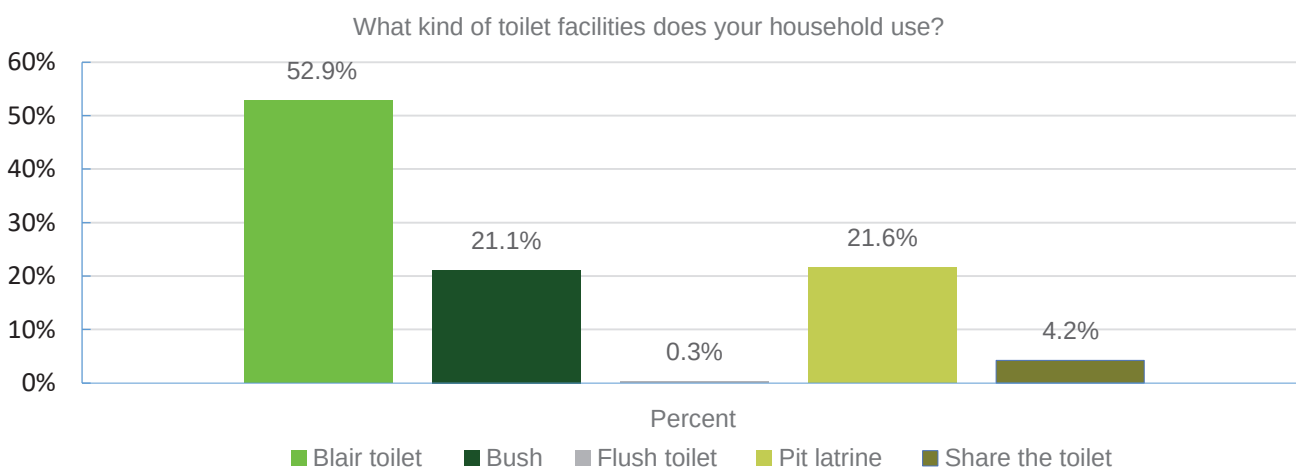


Figure 3: Toilet facilities used by the households

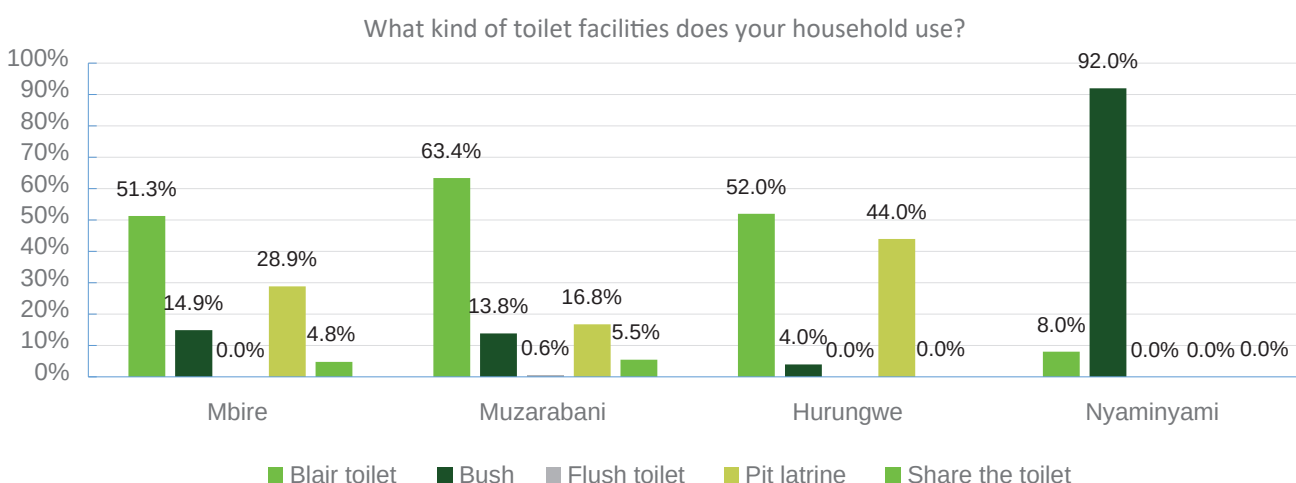


Figure 4: Toilet facilities used by the household.

In terms of water sources, 55.9% of the respondents use public wells or boreholes, 20.8 % use rivers, streams or springs, 13.5 % use a well in their homesteads and the rest use either piped water, dams and public taps (see figure 5).

Main source of drinking water during the dry season

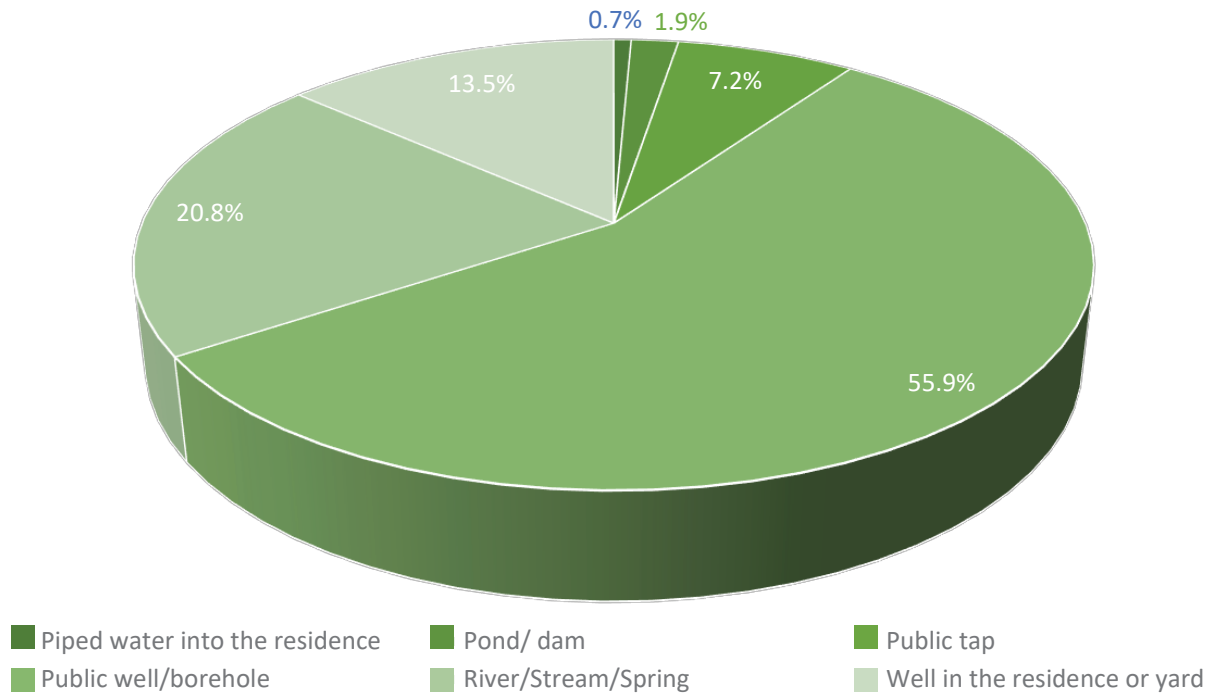


Figure 5: Main source of drinking water during the dry season

What is the main source of drinking water for members of your household during the dry season?

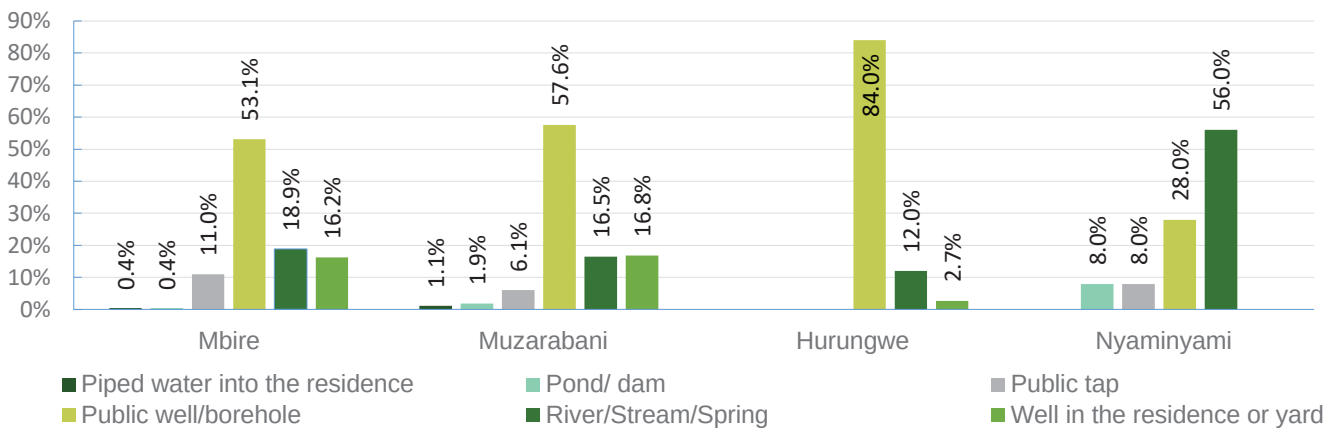
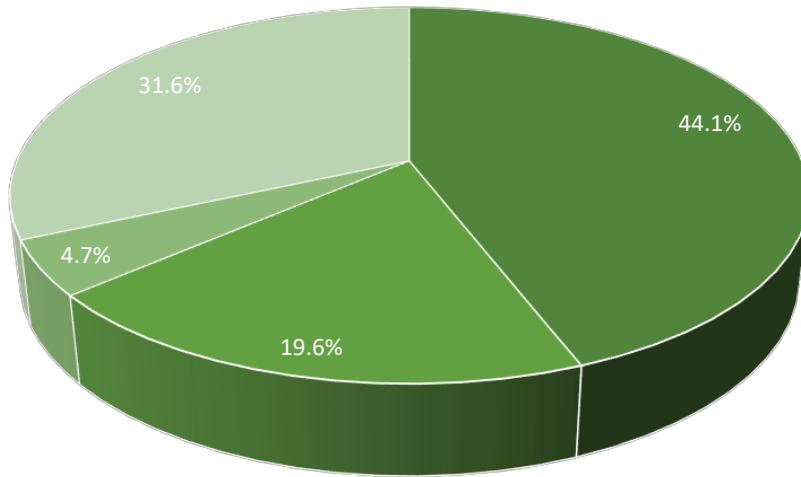


Figure 6: Main water source during the dry season

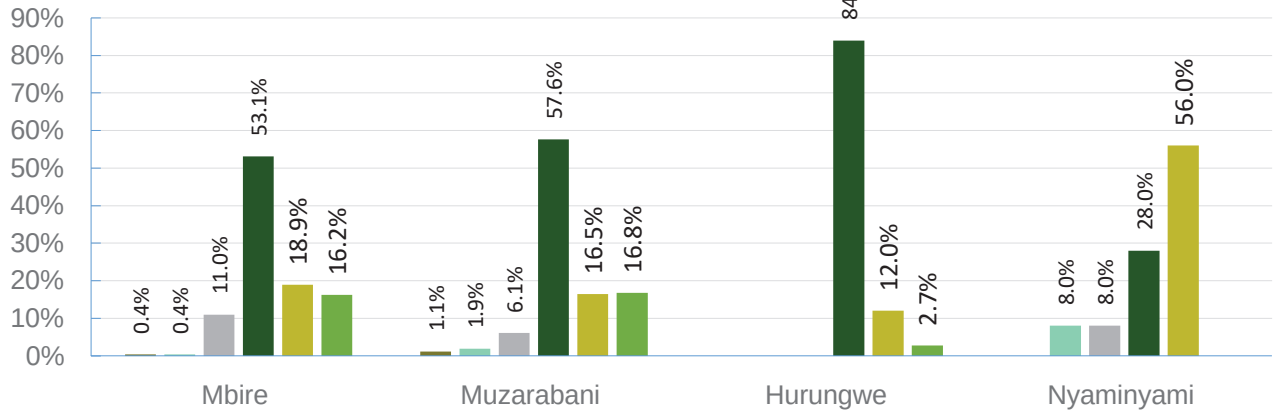
In most parts of the Zambezi Valley, access to clean potable water continues to be a great challenge and poses various risks, including waterborne diseases due to contamination from pollutants and bacteria. Furthermore, individuals, especially women and children often face dangers like animal attacks or injuries during the often-long journey to access water sources. Addressing these risks requires improving water quality and promoting community-led initiatives for sustainable water access. In addition, in Muzarabani, respondents during focus group discussions indicated that spring water from the mountains has been developed into a piped water scheme and this has survived and improved water access to both humans and animals. However, during the dry season, drinking water can be sourced from public wells and boreholes, and wells in residences or yards as compared to in the rainy season. In the four districts and most of the wards, $\geq 60\%$ of the boreholes are dysfunctional and need rehabilitation. Organisations such as Adventist Development and Relief Agency (ADRA), Save the Children sometimes provide communities with portable water.

Availability of water from the water sources



Available all the time Available most of the time Hardly available Sometimes available

Availability of water from the water sources



Piped water into the residence Pond/ dam Public tap
 Public well/borehole River/Stream/Spring Well in the residence or yard

Figure 7: Availability of water from the water sources

As noted in figure 7, above, 40.8% of the respondents indicated that water is available all the time and just 5.5% indicated that water is hardly available. A greater percentage of the respondents (72.5%) travel less than 1km to the water source, 22.9% travel 1-3km, 3.30% travel 3-5km and 1.4% travel more than 5km. This shows that water sources are somewhat closer to the interviewed households.



Water sources are within reach for most villages.

Cooking and Lighting Energy

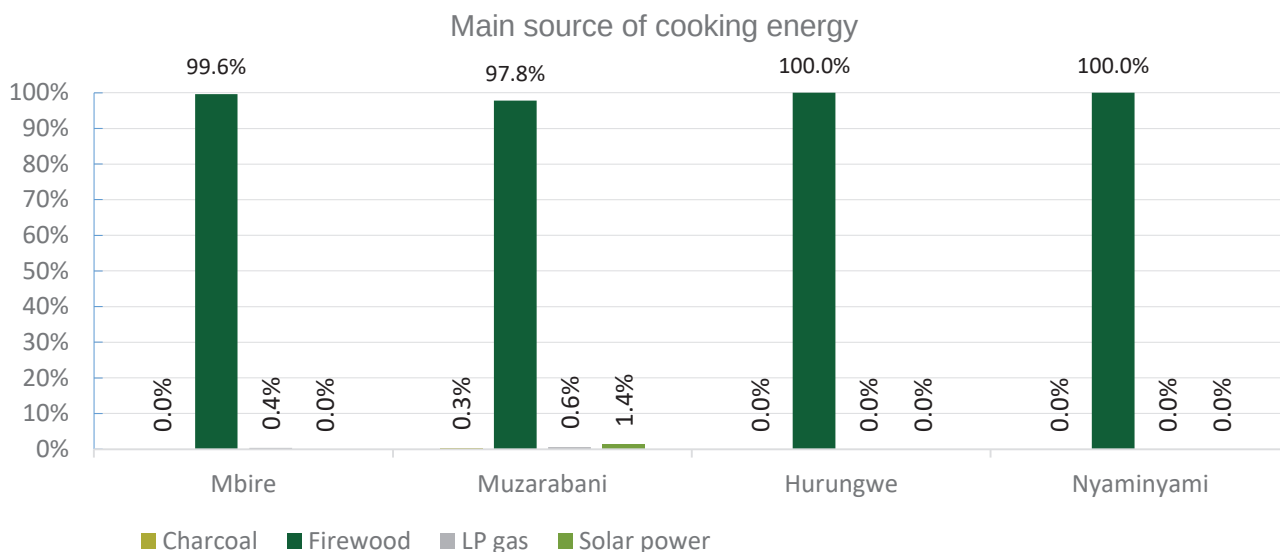


Figure 8: Main source of cooking energy

Most of the respondents (97.8%) use firewood as their main source of energy, which negatively impacts the forests. 0.3% use charcoal.

Household Assets

Figure 9 below shows the assets that the interviewed households possess. Over 80% of the households confirmed that they have a cell phone, 50.5% have radio/cassette player, 53.5% have a solar panel, 56.3% have cattle and 67.7% have goats. The research found it interesting that most households have a cellphone, and this could be a useful enabler for project publicity and communication.

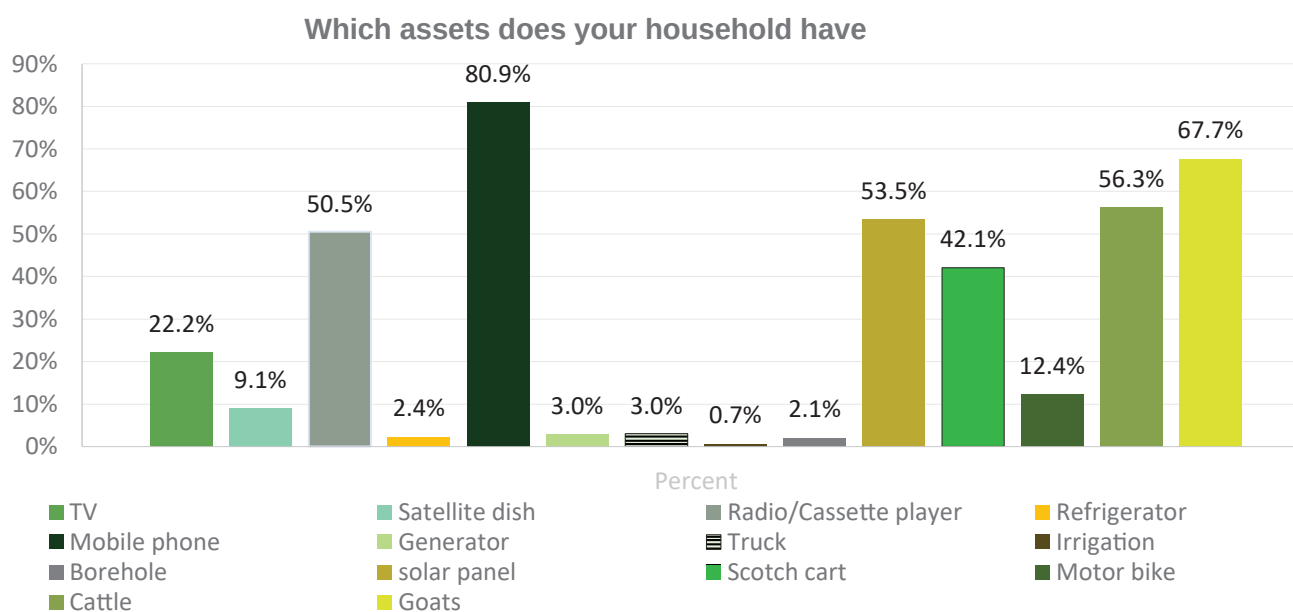


Figure 9: Assets owned by the household

Social Infrastructure and Services Availability and Access

Most of research participants had access to the majority of social services. Services such as primary school, grinding mills and public transport have the highest access levels but communities have very little access to vocational training facilities.

Respondents that said they have infrastructure across the landscape

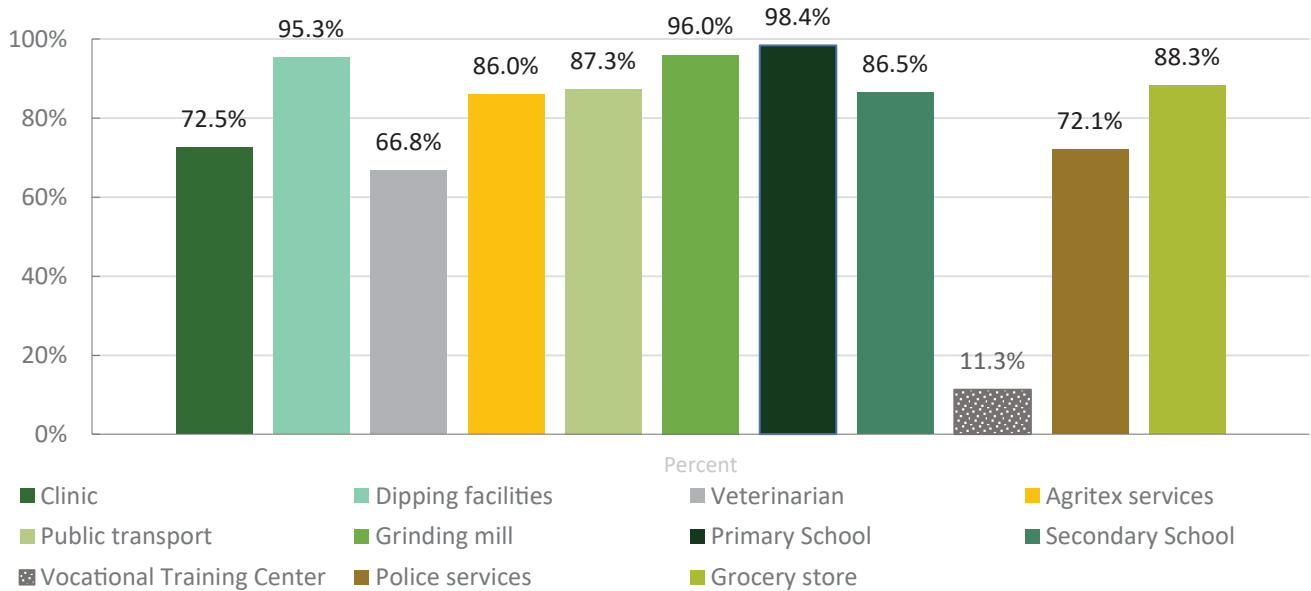


Figure 10: Social infrastructure and services availability and access

Using the distance variable, clinics (52.6%), training centres 74.4% and Police stations (66.4%) and secondary schools (39.9%) are the least accessible services within the district with the majority of the participants accessing them at distances beyond five kilometres. Table 5 below summarises the service access by distance.

Table 5: Distance to access services

	Clinic	Dipping Facility	Nearest Bus Stop	Primary School	Secondary School	Vocational Training Centre	Police station	Grocery store	Water for livestock
Less than 1km	12.1%	21.2%	35.3%	24.8%	10.5%	17.1%	7.4%	31.4%	39.7%
1-3km	23.4%	27.8%	22.6%	35.5%	26.4%	2.5%	13.8%	28.4%	33.9%
3-5km	11.8%	21.5%	9.6%	22.3%	22.6%	6.1%	12.4%	11.6%	15.2%
More than 5km	52.6%	29.5%	32.5%	17.4%	39.9%	74.4%	66.4%	28.7%	11.3%
Total	228	75	75	75	75	75	75	75	75

Non-Timber Forest Products

The widespread utilization of non-timber forest products (NTFPs) by rural households in sub-Saharan Africa has been confirmed by several studies (including in Townson 1994). In the Zambezi Valley, forest foods, firewood use and sale, basketry and handicrafts, furniture and carpentry and other extractive products all form a portfolio of NTFPs that have an important role to play in the growth and functioning of rural households' small-scale enterprises and collectively make substantial contributions to rural household economies. Using household data from rural Zimbabwe, Cavendish (1999a) showed that environmental resources generated as much as 35 percent of average per capita incomes, with major contributions coming from wild foods, firewood, the use of woodland-derived construction materials, and the contribution of woodland areas to livestock browse and graze. Furthermore, this study revealed significant differentiation in resource use by different rural

groups. Poor households, for example, derived over 40 percent of their income from environmental resources, and resource dependence declined systematically as households became richer.

NTFPs are very important in meeting house needs of rural populations in Zimbabwe. However, little has been done to assess the contributions of NTFPs to the needs of these households. Most of the forests in Zimbabwe are under threat of degradation due to, among other things, the alienation of communal woodlands/forests by the state as well as the high population growth rate. One of the solutions for the sustainable management of natural resources is to vest proprietorship in local communities who, with some technical guidance, are capable of establishing their own management institutions.

Range of NTFPs by Season and Geography (type, quantities, permits, access)

The geographical pattern of resource distribution in the Zambezi Valley is ecologically defined and based on the distinct topography of the lowlands in the North and the uplands in the South. In the Southern uplands, the climate is cooler and more humid. The vegetation is more adapted to the humid and cooler climatic conditions and therefore is endowed with a different range of indigenous fruits. This miombo woodland area is good for indigenous fruits such as mazhanje (*Uapaca kurkiana*), hacha (*Parinari curatellifolia*), hute or water berry (*Syzygium cordatum*). Indigenous fruits such as baobab (*Adansonia digitata*) and marula (*Sclerocarya birrea*) are associated with mopane woodlands and are found in the low-lying Northern plains. *Ziziphus mauritiana*, which is a widely spread and naturalized fruit is also abundant in this area. The communities obtain fruits such as *Ziziphus mauritiana* and *baobab* from their fields and the forests. Wind usually helps communities, especially women and children who usually pick fruits from the forest floor, to harvest more buckets of *Ziziphus mauritiana* and *baobab* by making the trees drop more fruits. Men also harvest *Ziziphus mauritiana* by shaking the trees



Fallen marula fruit ready for harvesting in Ward 12, Mbire District, Mashonaland Central Province

and forcing the ripened fruits to fall to the ground. Scotch carts are then used to transport the fruits to their homes. Harvesting of baobab is usually done by both women and men from April to June. *Ziziphus mauritiana* fruits are usually harvested by both women and men in June up to August.

Sustainable *Ziziphus mauritiana* harvesting involves no tree climbing, no beating the branches or cutting down the branches. The communities are prohibited from cutting down wild and indigenous fruit trees such as *Ziziphus mauritiana*, baobab, marula, tamarind and many others during the harvesting process. Ilala palm leaves are collected in lower Muzarabani and Kariba and sold in Harare without processing. Marula grows in lower Muzarabani. Mazhanje (*Uapaca Kirkiana*), that grows in Upper Muzarabani and Hurungwe, is usually only harvested by members of the community for consumption and sometimes for sale.

Fruit NTFPS

Based on the number of respondents who collected the fruits, *Ziziphus mauritiana*, baobab and mazhanje (*Uapaca kirkiana*) are the most widely collected wild fruits. However, the questionnaire could not help to estimate the value or volume of the collected produce per respondent.

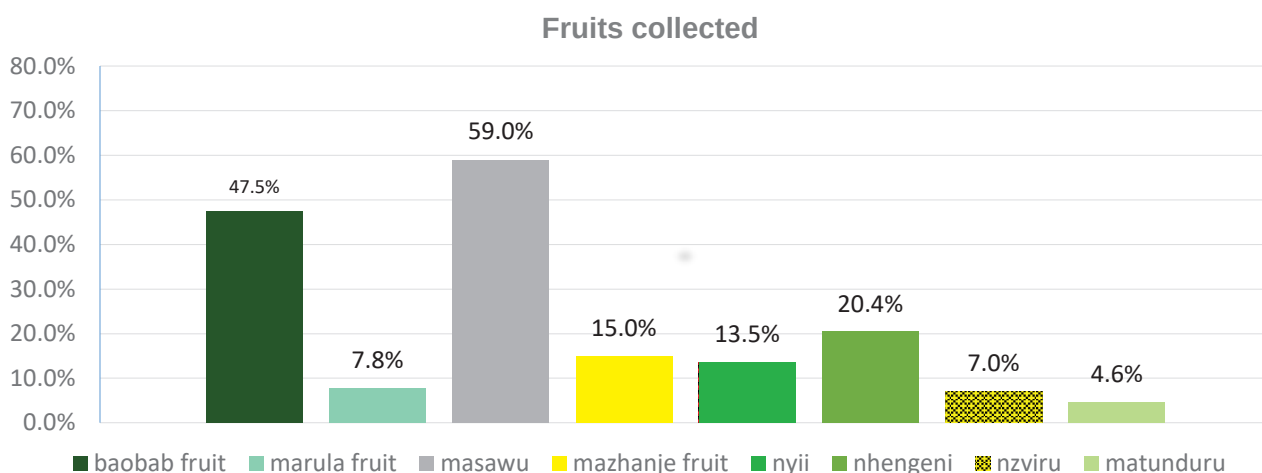


Figure 11: Fruits collected across the Zambezi Valley (multiple response)

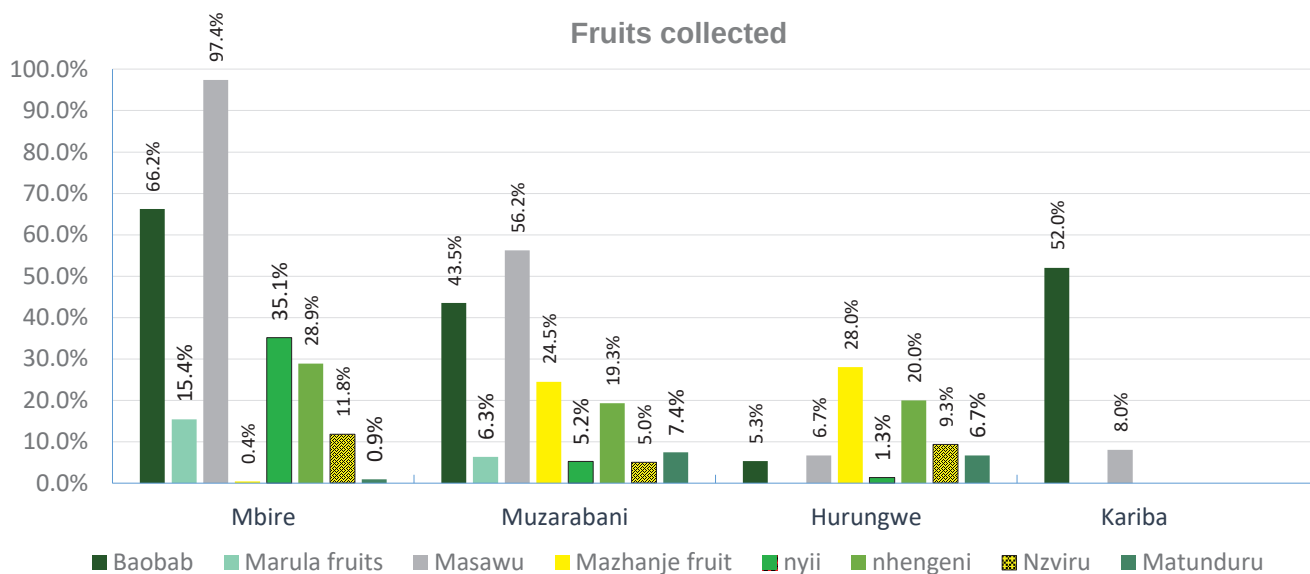


Figure 12: Fruits collected in Zambezi valley by district (Multiple response).

Indigenous fruits such as baobab and marula are found in the Zambezi Valley in the fields and along the mountain range. Scotch carts are used to transport the fruits to homes. Based on the percentage of the respondents who harvested the NTFP, the most popular wild fruits in Mbire are baobab, *Ziziphus mauritiana*, nyii (*Berchemia discolor*) and nhengeni (*Ximenia sp.*). Muzarabani's most popular fruits are baobab, *Ziziphus mauritiana*, mazhanje (*Uapaca kirkiana*) and nhengeni. In Hurungwe mazhanje and nhengeni are the most popularly harvested wild fruits. In Nyaminyami baobab is the most popular

fruit, but focus groups also indicated that communities harvest tamarind. In the uplands of Hurungwe and Muzarabani which are dominated by miombo woodlands, a different range of indigenous fruits such as mazhanje (*Uapaca kirkiana*) and hacha are the most commonly harvested. Respondents indicated that the National Biotechnology Authority of Zimbabwe intends to build a processing center in Lower Muzarabani for baobab, marula and *Ziziphus mauritiana*. The community will be able to collect the fruits and bring to the processing center.

Non-Fruit NTFPs

Figure 12 shows the range of non-fruit NTFPs harvested in the Zambezi Valley. Among the most widely collected NTFPs are deadwood, thatch grass, ishwa (edible termites), broom grass, honey, fish, mushroom etc. In some of the communities, participants indicated that they hunt small animals such as mice and birds. Traditional healers confirmed that they have been arrested for hunting some apparel that they use for their healing which are taken from animals. Marula leaves are usually used for making okra-type relish called *kamuninga* in vernacular. In the landscape Zimbabwe Apiculture Trust (ZAT) has honey processing centres at Muzarabani Centre and Mushumbi Centre in Mbire.

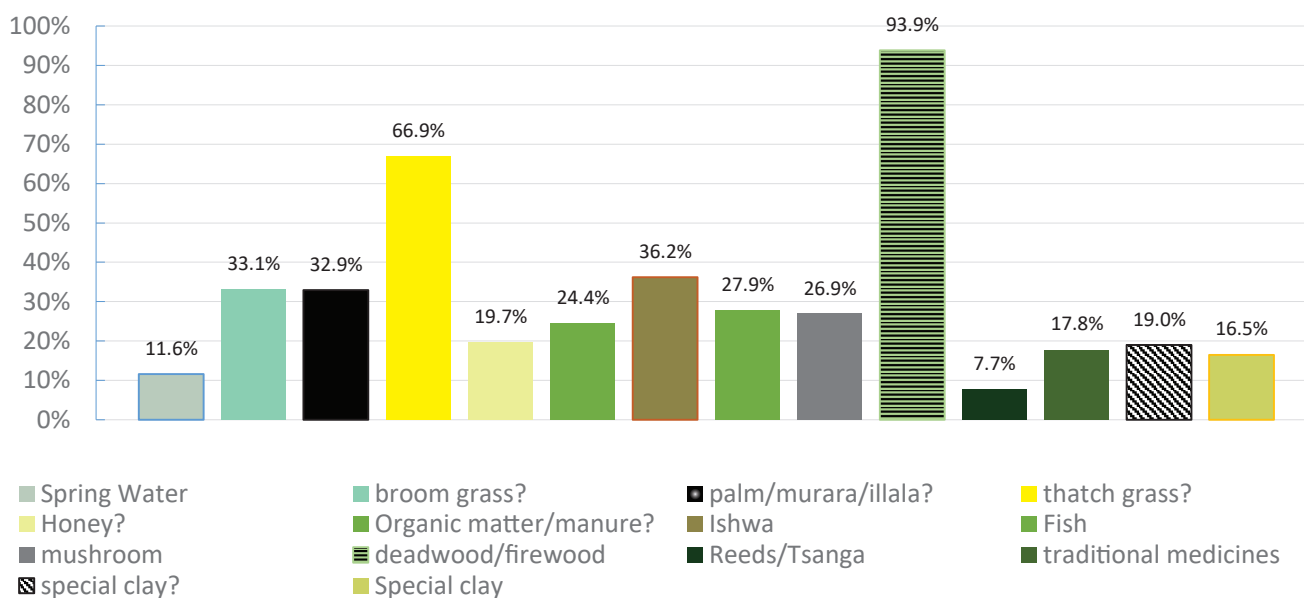


Figure 13: Non-Fruit NTFPs collected in Zambezi Valley

Most of the collectors of the NTFPs do not necessarily have permits and the local authority has not developed a robust permit system. The non-fruit NTFPs vary by district. From the four district graphs deadwood, broom grass, thatch grass, and ilala are widely collected, with variations from district to district,

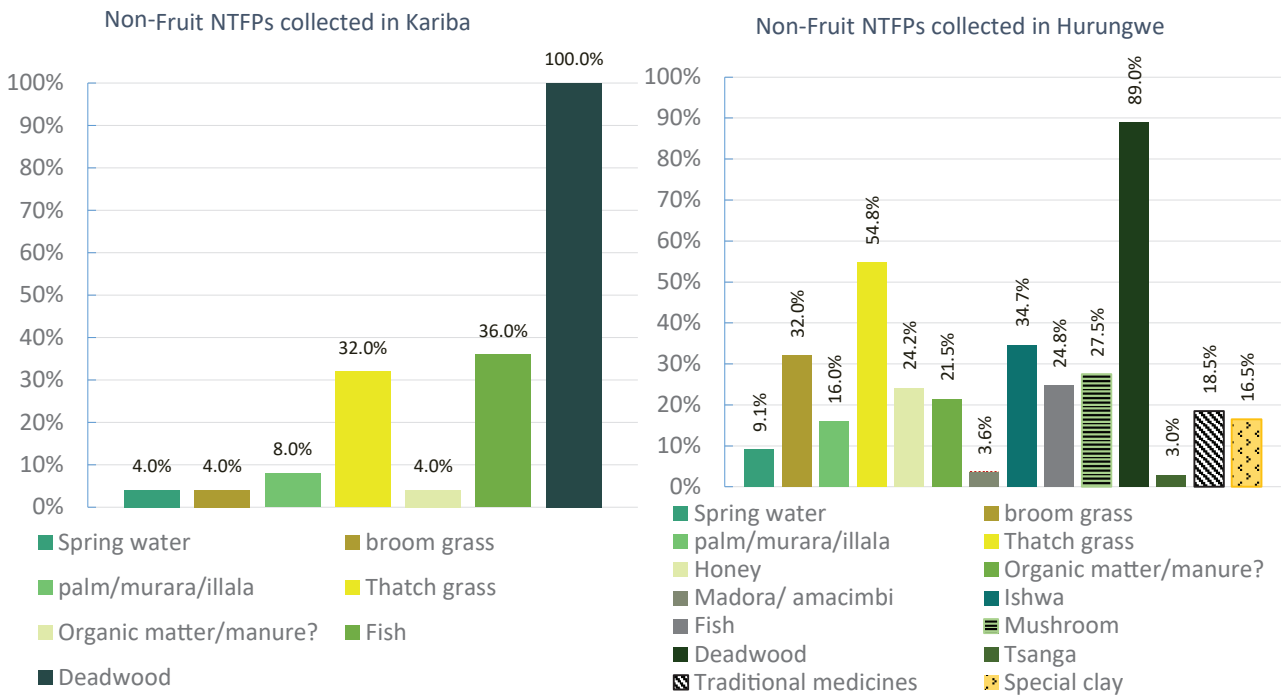
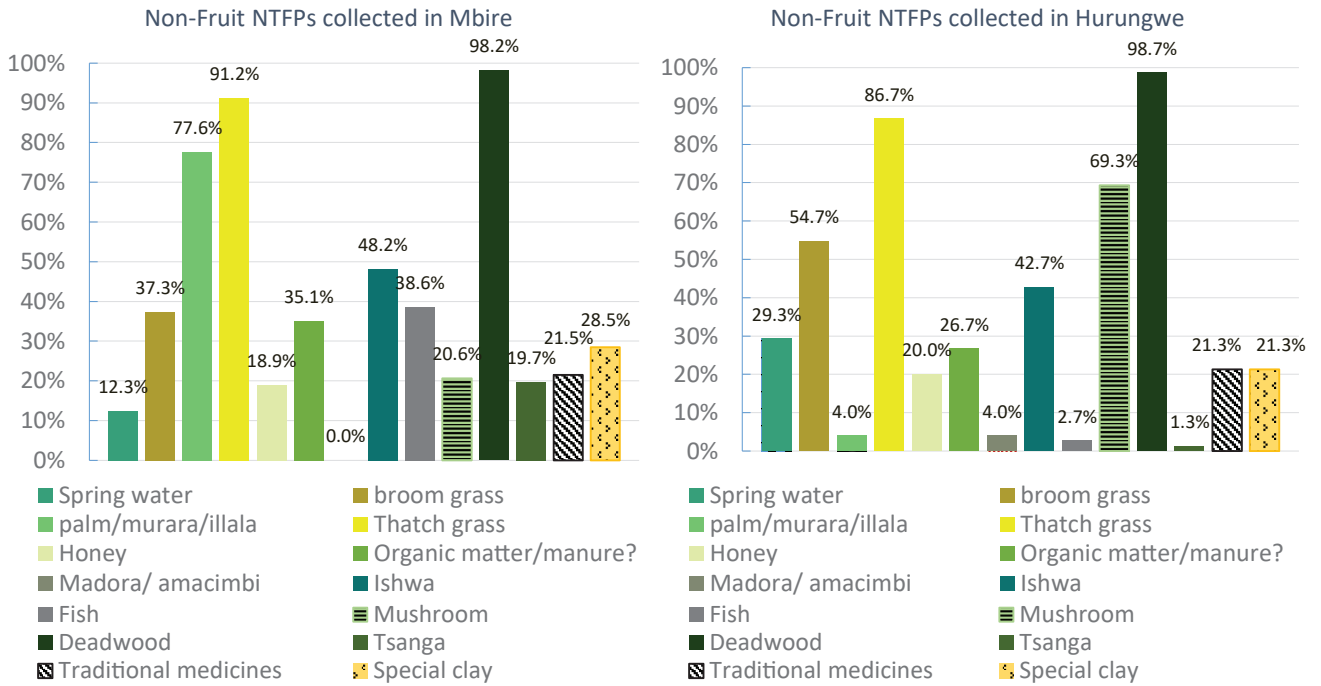


Figure 14: Non-Fruit NTFPs collected in Zambezi Valley by district



Dried fish for sale In Hurungwe District

Value Addition and Benefits of NTFPs (marketing, private sector and CSO engagement)

Aggregation for NTFPs is usually undertaken by middlemen who buy *Ziziphus mauritiana*, ilala, and baobab from the local people. The aggregated NTFPs are then transported to Harare, Bindura and other urban centres for sale. NTFPs such as *Ziziphus mauritiana* and baobab bring in foreign currency. For instance, a bucket of baobab is sold at USD\$3.00. Baobab and *Ziziphus mauritiana* are used for human consumption. There are very few entrepreneurs who are processing and conducting value addition on baobab and *Ziziphus mauritiana*. Jam is being produced at local level.

The Kushinga group, in ward 27 (Museredza) in Muzarabani, is a women's group that has started innovating around product development.

According to one of the group members, the women were trained by SAFIRE and given technical support and equipment for processing jam. The group allege that new players in the NTFP sector want to copy their *Ziziphus mauritiana* and baobab jam making recipes. **There are** commodity associations for sorghum, maize and sunflower (ZimGold and Surrogate) (Focus Group, Ward 7 Muzarabani, 26/04/2023). The plans and efforts to establish a NTFP processing centre in Lower Muzarabani to produce juice are already under way. Some baseline research has been conducted by Bindura University. Focus group participants also indicated that they get traditional medicine, and food and income from indigenous fruits. The NTFPs such as *Ziziphus mauritiana* and baobab bring in foreign currency to communities.

Conflict and Conflict Management/ Resolutions in NTFP Access

Increased commodification of NTFPs in the resource-endowed areas attracts more contests for territory and control of common property resources. In the lowlands most *Ziziphus mauritiana* trees are found in people's fields. Locals have tried to protect communal resources from makoronyera (parasitic resource harvesters) usually from Harare or other bigger towns. The tools for NTFP harvest vary and depend on disposition of the resources.

For instance, resources found in water sources will demand fishing hooks or nets, while those harvested from trees will require sticks and hooks. In both Muzarabani and Hurungwe districts, the NTFP sector is slowly getting affected by the tobacco sector where indiscriminate tree cutting affects NTFPs like mazhanje (*Uapaca kirkiana*) and hute (*Syzygium cordatum*). Fruit trees such as muzhanje and mukute are harvested for tobacco curing.

Challenges associated with NTFP collection

Respondents indicated that several challenges are encountered when collecting NTFPs. The key challenges include:

- Risk of being attacked and injured by wildlife. The majority of the respondents reported that they get attacked by wildlife when collecting NTFPs. Some mentioned being charged by elephants, others being attacked by hippos and crocodiles, especially for those living close to Lake Kariba
- Risk of drowning, especially among fishermen that go fishing without the appropriate boats.
- Long distance to the forest. For others the forest is too far away and bringing the harvests becomes very difficult unless one has a scotch cart and some draught power.
- Serious competition for access to NTFPs, especially fruit NTFPs. As a result, outsiders are restricted from harvesting some of the NTFPs. With the flocking in of business players and their collectors, there is tension among locals and outsiders.
- Local authorities are slow in facilitating permits for collectors and they are usually shortchanged by buyers who come from outside the landscape.
- Lack of safe and hygiene storage facilities. For some of the resources, collectors don't have the safe and clean storage space. Collectors do not have the required clothing for handling edible material. The implication of these problems on the production and trade of the NTFPs needs urgent solution. Many of the perishable products like *mazhanje* (*Uapaca kirkiana*) may either be wasted or destroyed if not consumed on time. Therefore, the problem of inadequate storage facility worsens, long term supply and transporting of the products to a far away market.
- Overharvesting and disruption of the cycles of vegetative propagation of the plants, especially in the absence of sustainable harvesting thresholds for individual resources. For that reason, there is need for ensuring that key species are allowed to multiply and regenerate within their habitat.
- There is no clear regulatory framework around the extraction and marketing of NTFPS.
- Lack of transportation due to bad road network in many of the rural areas. Because of this, the available transporters tend to exploit and overcharge the producers of the NTFPs. This inflates the unit selling price of the products by the time it gets to the final market. Many of the middlemen discourage farmers from going to buy the products in far villages despite large production and availability.
- Customary tenure regimes create multiple, overlapping individual and group rights to the same area (forests) and to individual NTFP resources. For that reason production and supply of NTFPs is not stable and buyers tend to shift their sources once supply becomes unstable.

Current Policy gaps in NTFP Trade and Regulatory Regimes

There is growing interest in the NTFP sector. However, the laws have not been harmonized to address the existing gaps. So far EMA, Forestry Commission and the RDCs are the entities responsible for issuing extraction and commercialization permits and the management of the NTFP sector. To achieve an efficient and fair management of NTFPs, it is necessary to undertake resource mapping assessments, certify the collected products and comply with the Access of Benefit Sharing (ABS) framework. The assessment of the forest resources allows for the verification of species occurrence, distribution, sustainability of the harvest and potential commercialization per species.

Processes that need to be taken into account for the development of NTFP business models are:

a. Resource Mapping Assessments



Resource mapping assessments involve the search for information regarding the occurrence, distribution, access and use of resources (NTFPs). This provides information on spatial and temporal patterns and distribution through the use of GIS tools, seasonal timelines and community engagement. On the basis of the mapping assessments, authorities can then issue the permits.

b. Sustainable Harvesting



Collectors or resource harvesters need to establish the productivity of the NTFPs before they can establish the commercially viable quantities to extract. Extraction should allow for seed dispersal for the trees to regenerate. The number of fruiting trees per unit area, which is the yield factor, and the harvest per tree need to be calculated to establish the average tonnage of harvest per unit areas based on the number of prolific trees. After these calculations, the volume of production per ward or district can be calculated.

c. Standards and Certification



Resource consumers in the NTFP sector are increasingly interested in the way NTFP products are produced and how specific labour, health, safety and community rights thresholds are observed. It is therefore important to certify products to ensure good market linkages.

d. Guarantees



There is a need for the market to be aware of the availability of a stable supply.

e. Legislative and Policy Environment



There is a need to regulate and expedite the legal regime that allows for communities to benefit from resources in their communities through appropriate licensing and permit issuance. This process involves upholding constitutional rights, review of the Forestry Act and The Communal Lands Forestry Produce Act. National laws need to be synchronized with local by laws.

f. Harmonisation of National Laws with International Laws



The NTFP sector should comply with the Nagoya Protocol on Access and Benefit and Sharing and the Convention on Biological Diversity. Sustainable harvesting and management of forests have implications for climate change and carbon management.

Livelihoods and Socio-economic Activities of Households

In terms of the livelihood clusters, Muzarabani district has three areas that have well defined livelihood patterns. These are firstly, the Lower Muzarabani that depends on subsistence small grain production, goat and cattle production and the watermelon value chain. Second, are the cooler uplands where smallholders mainly rely on maize production on very small plots household plots. Third are the post-2000 resettlement areas where commercial tobacco production is widely produced. These activities are derived from the interaction of the five capitals and endowments from the landscape under the sustainable livelihoods framework.

Fig 15 shows the main economic activities that respondents rely on.

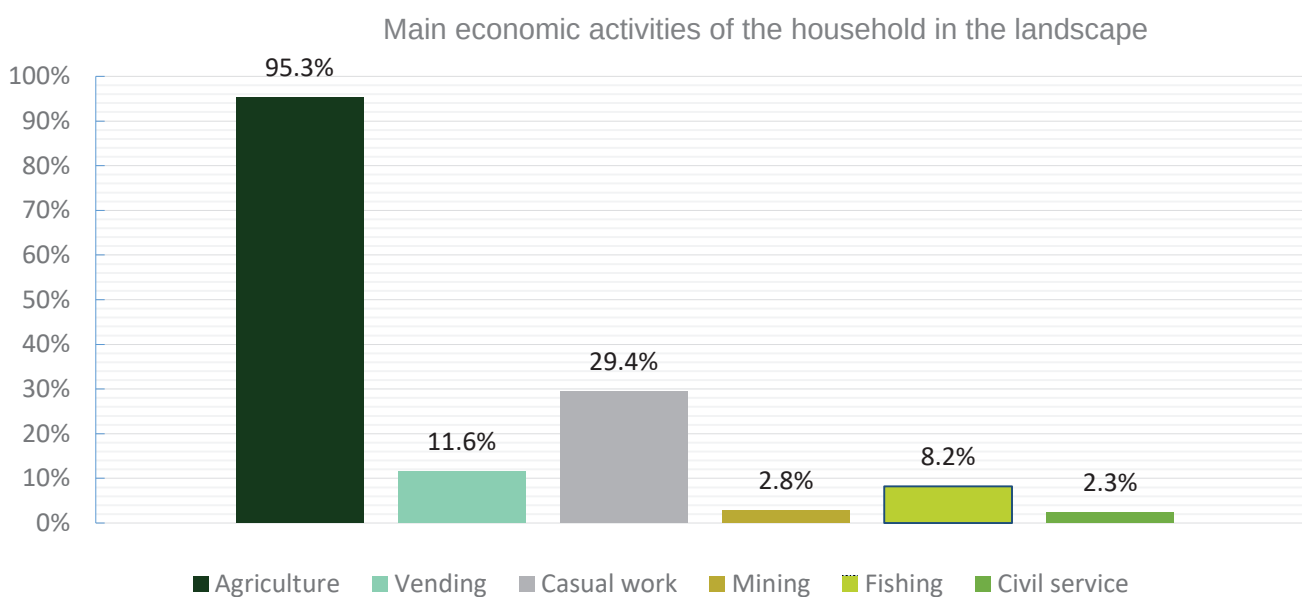


Figure 15: Main economic activities that of the households across the landscape

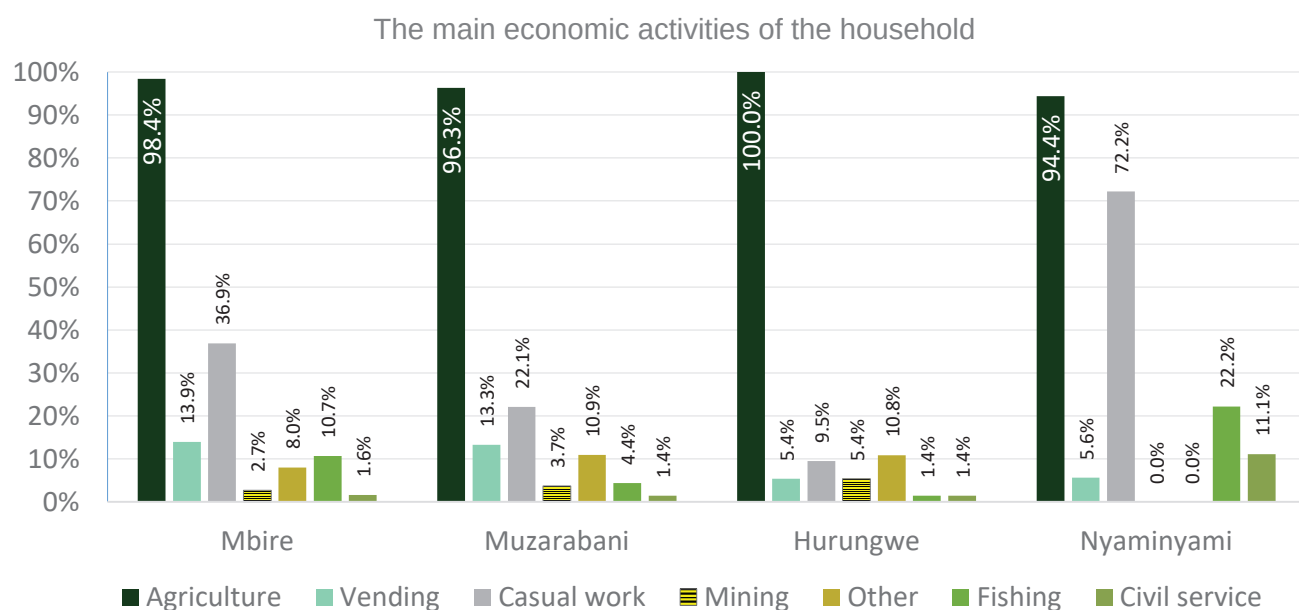


Figure 16: The main economic activities of the household by district (based on multiple responses)

The main livelihoods in the landscape are agriculture, casual work, cross border trade, and vending. In Nyaminyami and Mbire, fishing is widely practised. Fishing camps are key productive centres for economically active men and women. Communities mainly grow maize, tobacco, sorghum, millet and soya beans. Small grains are the most adapted crops to the climate

of the area but they have not enjoyed favourable market conditions until recently. In terms of livestock, goats are most widely owned, and participants felt that they were not getting the best process for their livestock as they are shortchanged by middlemen. Livestock movement is also controlled and regulated by the Veterinary Services as part of disease control.

Land Ownership

In terms of land ownership, 82.9% of the respondents indicated that they owned land for farming. Of these, 67.1% said it is sufficient for crop production and 32.9% who were mostly communal and resettled farmers said the land is insufficient. In search of land, some people have relocated within the Muzarabani district.

Crop Production and Other Agro-Based Livelihoods

As shown in Figure 16, the most grown crops in the Zambezi Valley are maize, green vegetables, cowpeas, sorghum, cotton, and tobacco. The main livelihood in the highveld is crop farming of mainly maize, tobacco and soya beans. Some parts of the highveld practice horticulture. The main livelihoods in lower Muzarabani, Mbire and Nyaminyami are livestock rearing, mainly of goats and cattle, and cross border trade. Small grains such as millet and sorghum are grown in the valley. For both the lowveld and the highveld, some crops such as cotton, sorghum and watermelons are grown on contract basis. In relation to climate change, small grains and short season varieties are encouraged in the whole landscape. Many of the dams are drying up and the rainfall pattern has changed. Youths are involved in horticulture, production of watermelons, and in arts and crafts. There are initiatives to promote poultry and goats rearing among the youths. Among the new value chains being pursued are sweet potatoes, bee keeping and selling honey as far as Harare. In response to climate change, people are practicing intercropping, crop rotation, conservation agriculture (*pfumvudza*), and growing small grains. Horticulture activities are done especially along Musengezi River. Livestock farming in cattle breeding, boer goats, and bushveld chickens are the emerging livelihood options.



Elizabeth Sibanda a member of Alpha Community Garden in Nyamakate Ward 7, Hurungwe District

Historically, the community has been practicing streambank cultivation successfully for horticulture, especially along the Musengezi river, but streambank cultivation is outlawed since colonial times as part of wetland protection. In Kariba, the Tonga practice riverbed agriculture on the *mabhonje* fields (riverbed fields), a practice which they used to do along the Zambezi River when the floodwaters receded.

In Muringazuva area, people rely on subsistence crop farming (i.e. maize and cotton) and livestock production (i.e. cattle, goats, pig and sheep). Maize production has decreased due to the devastating effect of climate change which has resulted in erratic rains, high temperatures and the uptake of tobacco farming. There is proliferation of crop pests and diseases e.g. Fall Army Worm (FAW) that greatly affect production. Poultry has been affected by proliferation of Newcastle disease. Some farmers are now growing small grains such as sorghum and sesame. Sesame is also grown in the Hoya area. Pensioners and those receiving remittances are very few. Gold panning activities are ongoing in Mukororodzi, Musengezi, Riva, and Chakwa rivers.

Conservation agriculture (*pfumvudza*) has been adopted by most people with the support of the government. Many farmers have adopted short and medium season varieties of sorghum and maize. Others are engaging in broiler chickens as an income source while others engage in petty trading of kapenta, chunks, vegetables, secondhand clothing etc. Some of the individuals are operating as spiritual healers (self-proclaimed prophets).

Coping Mechanisms

As coping mechanisms, households reduce the frequency of meals from three to two per day.

There is an increase in sex work, especially at Muzarabani growth point; Gonono, Mushumbi, Siyakobvu and other rural shopping centres. FGDs revealed that sex workers traded sex for fish at fishing camps in Nyaminyami. In Mbire sex workers traded sex for sesame, which they would later trade with Mozambican cross border merchants. For Hurungwe and Muzarabani districts, sex workers visited tobacco auction floors in Karoi and Mvurwi as far as Harare to target high-spending tobacco farmers. Some young members of the community are also engaged in gold panning. Along the highway, touting (*chihwindi*) is taken as an alternative livelihood especially by younger men. Mopane trees are cut down to make charcoal, especially in Chiwenge and Karedzi. Due to frequent droughts, riverbank cultivation is leading to erosion and siltation of rivers as people encroach into areas near water sources. Traditionally, people used to fish using spears, nowadays fishing nets are used, which cause overharvesting. Hunting is prohibited but few individuals still practise hunting for game meat.

Most community members in Muzarabani (72.1%) use maize seeds provided by the government through the Presidential Input Scheme. Over a quarter of the respondents (26.5%) indicated they obtained some of their seed from local seed banks and 25.5% highlighted that they use commercial maize seed varieties. The communities have various seed sources as shown in Table 3 below. Most of the respondents (57.1%) said they were using assisted ploughs for preparation of their field for maize farming while 42.9% indicated that they used conservation agriculture. Some of the tobacco farmers have entered into contract farming. The majority of the respondents (77.9%) indicated that cereals, pulses and vegetables are mostly grown for household consumption. Selling is done locally.

Table 6: Source of seed, tilling methods, and markets

	Main Source of seed	Main tilling method	Market
Maize	Government	Conservation agriculture, assisted plough	Local
Beans	Retained seed	Conservation agriculture, assisted plough	Local
Cowpeas	Government, retained seed	Conservation agriculture, assisted plough	Local
Sorghum	Government, retained seed	Conservation agriculture, assisted plough	Local
Millet	Retained seed	Conservation agriculture, assisted plough	Local
Green vegetables	Retained seed	Gardening	Local
Cotton	Contracting companies	Assisted plough	Contracting companies
Sesame	Retained seed	Conservation agriculture, Assisted plough	Middleman



Paulina Jali a passionate mushroom farmer from Sierra Village in Nyamakate Ward 7, Hurungwe District

From the perspectives of the research participants, there is huge preference for farming enterprises followed by carpentry. During focus groups discussions participants indicated that they would require new skills like motor bike mechanics, bricklaying, dress making, tiling, and mushroom farming.

Table 7: Preferred enterprises

Enterprises ¹	Muzarabani
Broiler keeping	18.7%
Farming	12.2%
Carpentry	9.6%
Gardening	6.9%
Livestock farming	5.5%

Key informant interviews and focus groups revealed that households and communities were prepared to pursue the beef and goat value chains given that the Muzarabani Lowveld, Kariba and Mbire have very strong goat breeding households. On the other hand, Muzarabani boasts a vibrant cattle economy. However, the selling price from these distant places is not lucrative as beef traders will charge transport costs thus lowering the price per beast. The rich beef traders therefore come with trucks and buy beef at a lower price than the common market. In the Upper Muzarabani, research participants suggested intensive horticultural investments to allow for all year-round income.

Complaints Mechanisms

Research respondents expressed that the local traditional leadership was their main platform for reporting complaints with a 68% share of the sample. The second most important was the councilor with 55.9% of the sample. These were followed by project focal persons with 21.5%, use of the cell phone 17.9% and suggestion boxes with 16.5%.

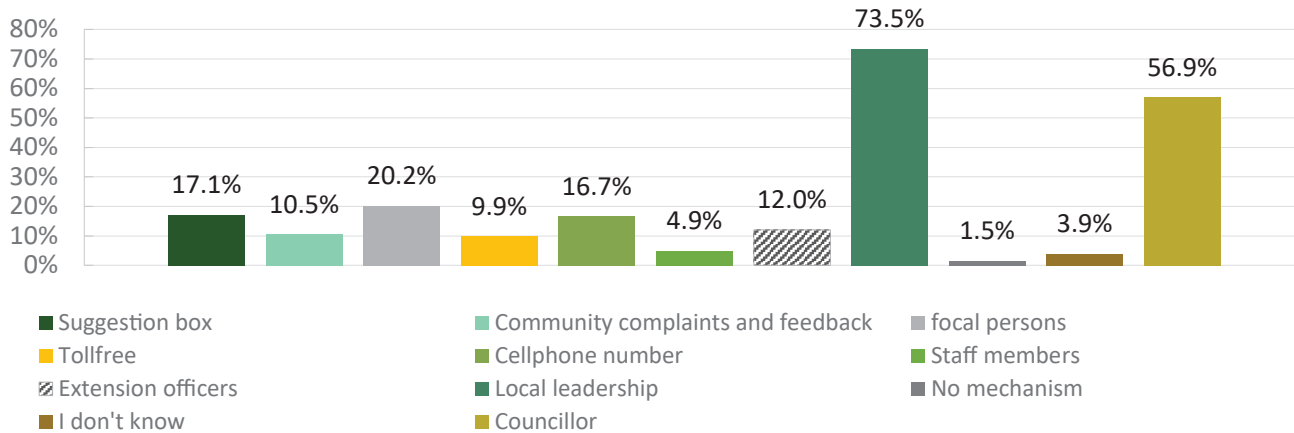


Figure 17 Main platforms for Reporting Complaints

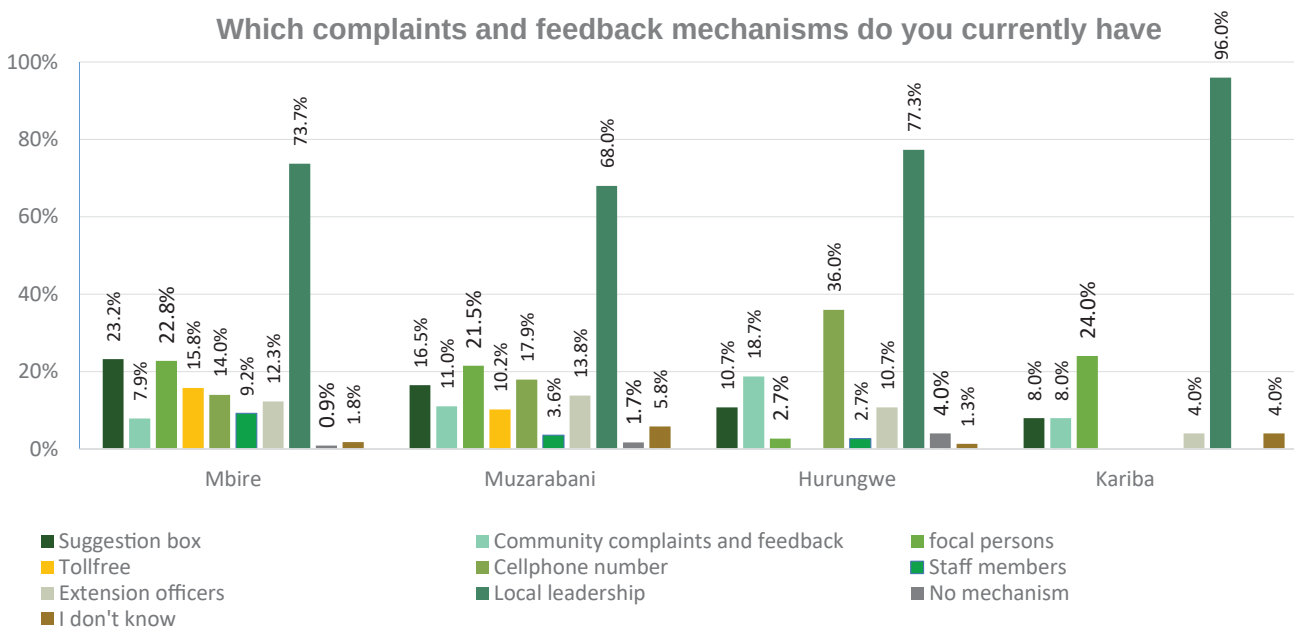
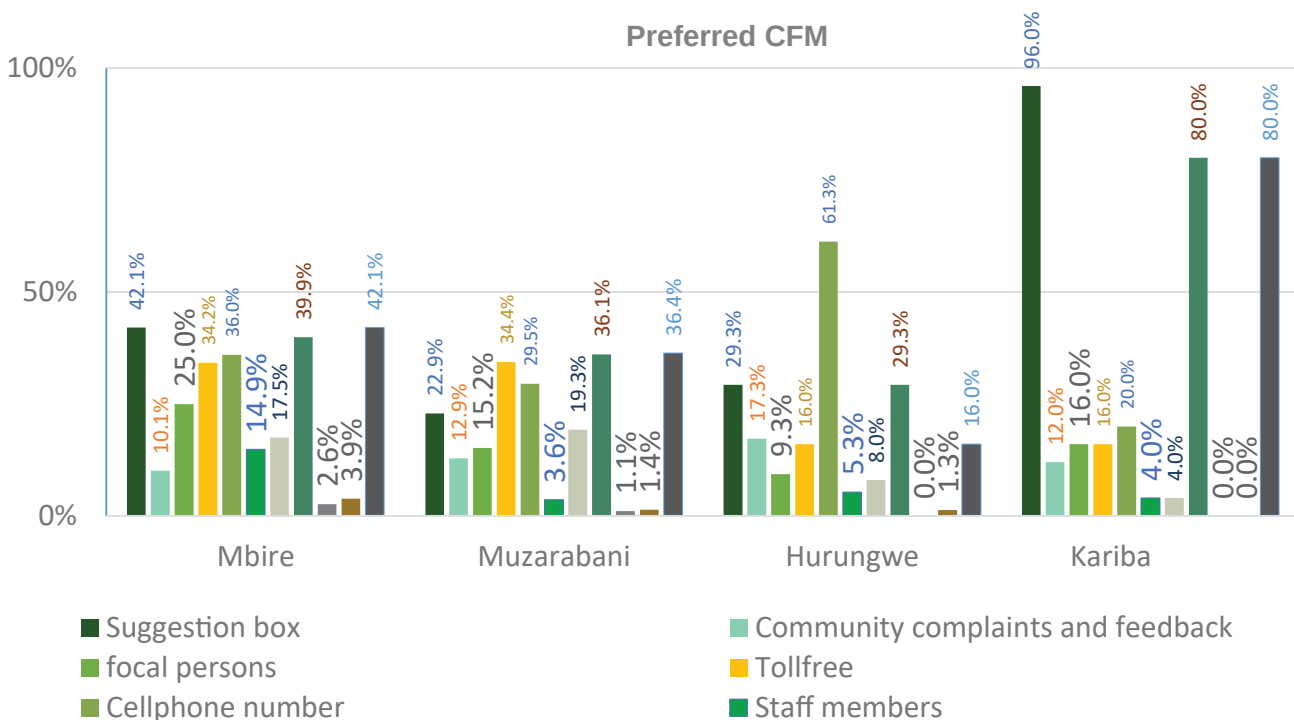


Figure 18: Complaints and feedback mechanisms in the community



6 Conclusions

The baseline study discovered that the landscape experienced multiple socio-ecological transformations linked to inflows on new settlers from the 1950s, after independence in the 1980s and as a consequence of the land reform programme in the 2000s. The settlers throughout the phases basically relied on agriculture and therefore conducted massive land clearance either for tillage or for tobacco curing. More people returned to settle in the villages during the COVID-19 pandemic between 2020 and 2022.

Agriculture remains the main livelihood for most of the research participants in both the commercial and subsistence subsectors. Hurungwe and Muzarabani are some of the largest grain and tobacco producing districts in the landscape. The Zambezi Valley has a more diverse portfolio of livelihoods which include tobacco farming, livestock such as cattle and goats, and drought tolerant crops such as sorghum, millet and watermelons especially in Kariba and Mbire. The low-lying parts of the Valley are drought prone and are more suitable for drought tolerant crops and livestock. Due to climate change and the complex hydrogeological conditions, water access has been a key constraint for the districts with several dysfunctional boreholes, drying rivers and seasonal droughts. In cases where contract farming is practised, especially tobacco, cotton and red sorghum, farmers complained that payments for their produce by contracting firms were always delayed thus compromising the farmers ability to plan for subsequent farming seasons. Delayed payments exposed farmers to extortionist middlemen who normally shortchange the farmers, by offering lower prices in ready cash. Linkages to the market are generally weak due to poor access and poorly developed commodity associations.

Although the valley is habitat to diverse NTFPs (fruits and non fruits), their exploitation remains weak owing to poor aggregation and inadequate resource mapping and assessments. The NTFP sector remains essential for the communities and households with some value chains such as *Ziziphus mauritiana* and baobab, thatch grass, fish and ilala generating significant income for households. Commodities are obtained in larger markets or when big corporates come to buy in communities. Few aggregators are found in the landscape due to low licensing and tight quality control standards especially regarding quality, labour issues and phytosanitary issues. Optimal prices for NTFPs are the highest in big urban markets. The miombo woodland supports fruits such as *mazhanje* (*Uapaca kirkiana*) and hacha but these are found in smaller. The interest in NTFP value chains has seen companies like Schweppes buying baobab pulp for beverage production. There are small-scale efforts to process *Ziziphus mauritiana* and baobab jam while the National Biotechnology Centre is planning to set an aggregation and processing centre at Muzarabani growth point. There is a growing apiculture movement in Muzarabani which could work to deter elephants from encroaching into fields by using beehive fences. It is still not clear how NTFPs will be managed in terms of benefit sharing if they are harvested from the commons. A lot of potential exists in this sector including tapping spring water, less abundant fruits and non-fruit NTFPs.

7 Recommendations and way forward

Considering the vulnerability of communities in the Zambezi Valley to increased frequencies of droughts, emerging from climate change as well as the dominant stress associated tobacco trap, HWC and water shortages, the following recommendations are proposed with respect to the livelihoods and NTFP thematic area:

- The communities in the Zambezi Valley should develop livelihoods that are anchored on the geographic and ecological comparative advantages of the area integrating climate change adaptation, environmental sustainability and biodiversity considerations. Examples are the vibrant livestock economy where cattle and goat production flourish, and the related value chains may be expanded and strengthened.
- We recommend building an abattoir which may be co-owned by the community or the potential off taker of beef and goat meat.
- After observing the pervasively negative social, economic and gendered implications of the tobacco trap, and the related entrapment of the small-scale farmers into this labour intensive, ecologically damaging and exploitative value chains, the research recommends that farmers transition their focus toward horticultural crops, apiculture, mushroom farming and alternatives to tobacco with shorter turnaround cycles and low socio-ecological footprints.
- Ensure that existing value chains for crops such as sesame, red sorghum, small grain, cotton and watermelons (some of which are grown under contract arrangements) do not expose farmers to exploitative late payment arrangements that expose them to parasitic market opportunists who buy their produce at suboptimal prices simply because they have ready cash.
- There is a need to cultivate the culture of preserving / building resilience for future generations especially by ensuring youth and women engagement in project design, implementation and evaluation.
- There is need to offer trainings on value addition and processing of *Ziziphus mauritiana*, baobab and marula fruits, expansion of NTFPs processing project (baobab and *Ziziphus mauritiana* jam). Create new products e.g. **gununzvi (pounded *Ziziphus mauritiana*)** which can be done at a large scale and packed as instant *mahewu*. It is recommended to conduct a value chain / market assessment for new NTFP value chains to ensure viable business models, connecting to ready markets and facilitating access to investments. The value chain assessment may take into account environmental sustainability as well as fair trade considerations e.g. to facilitate relevant certifications to open up markets.
- The programme can support the development of a comprehensive methodology to conduct resource mapping assessments that ensure sustainability and fairness in the NTFP's extraction commercialization, and to promote the adherence to the Access of Benefit Sharing framework.

- There should be adherence to safe mining practices and consultation with the Environmental Management Agency and other related agencies to ensure sustainability and appropriate reclamation and restoration of affected lands.
- Traditional leaders must be capacitated or educated on natural resource management and biodiversity conservation to ensure that land allocation is done properly.
- There should be improved financial literacy in all income generating activities and access to finance through facilitating loans, microfinance, ISALs.
- Assistance to be rendered to set up and strengthen aggregation centres and market linkages for a great variety of farm produce and NTFP products eg mushroom, groundnuts, honey, baobab pulp.
- The Zambezi Valley Districts can introduce sesame as a value chain in the districts, but the crop needs to be promoted. There is large untapped market of sesame in the Indian and Chinese markets. Most of the sesame production in the Valley is traded in Mozambique because Zimbabwe does not have a functional market.
- Given the climate of Zambezi Valley, there is an opportunity to introduce sugarcane production in the district, since the temperatures are similar to those of Chiredzi in the Southeast Lowveld.
- The Utariri programme should deliberately target youths in activities for participation and empowerment.
- These should be for the local authorities to write environmental by-laws, through a participatory approach.

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