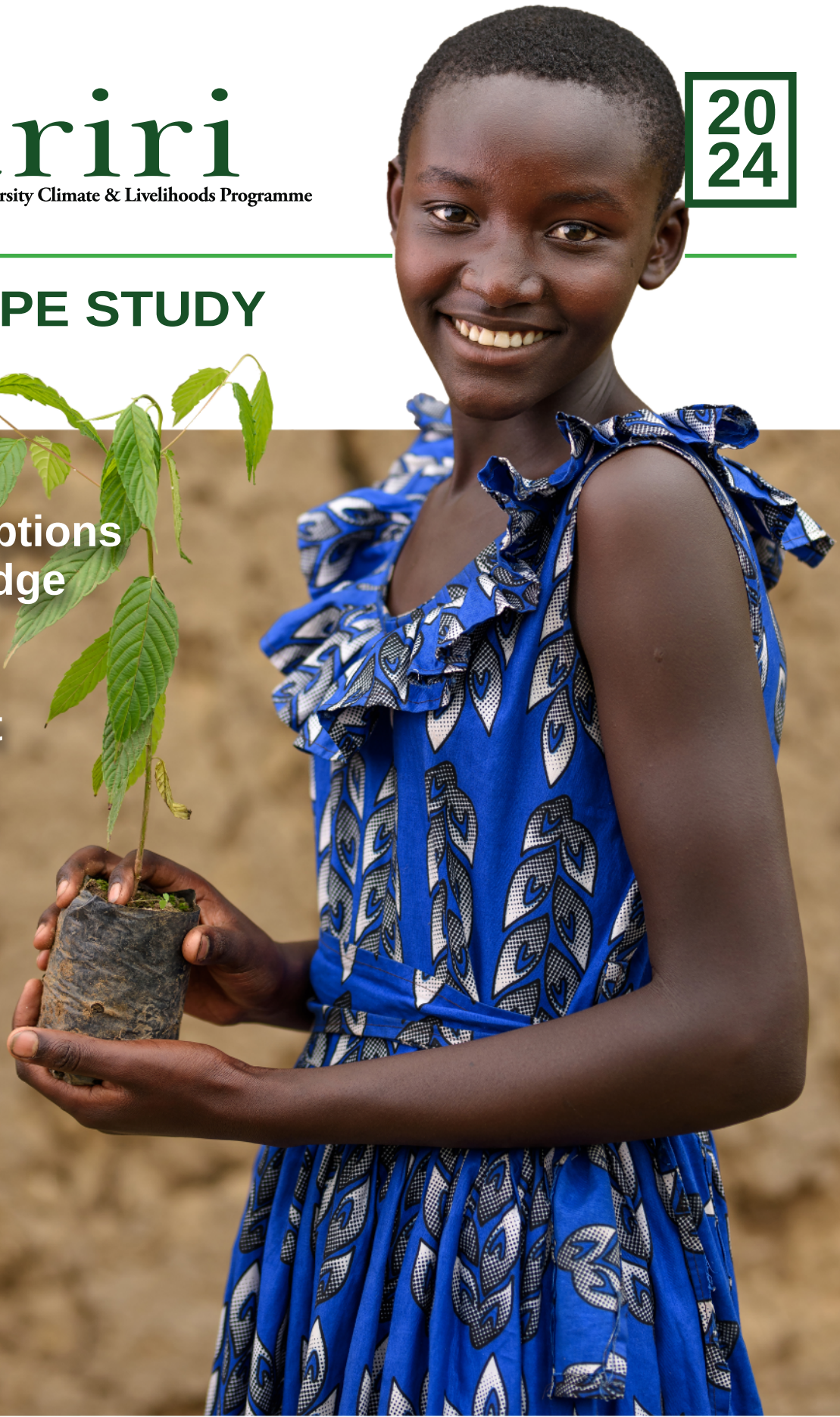


LANDSCAPE STUDY REPORT

Zambezi
Valley Perceptions
And Knowledge
On Natural
Resources
Management



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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 natural resource management perceptions, the Utariri Programme rolled out a baseline survey aimed to provide a benchmark for project results. The research administered 747 household questionnaires, conducted 39 Key Informant Interviews (KIIs) and 12 Focus Group Discussion (FGD) across the landscape covering Kariba, Hurungwe, Mbire, and Muzarabani districts.

The research established that participants are aware of a wide range of natural resource laws and management practices within the landscape. Participants noted the customary/traditional knowledge systems that were embedded in their Korekore and Tonga cultures for the protection of natural resources such as taboos, ritual and ceremonies. Participants are aware of the statutory and customary prohibitions regarding biodiversity destruction in their areas and their sometimes contradictory philosophical foundations. There is a wide subscription to traditional natural resource management practices. Local leaders believe that Christian worship has desecrated some of the sacred groves. Some resources and specific species are protected through totems and taboos and spiritualism. There have been struggles to align indigenous traditions and customs with statutory provisions and regulations from the Environmental Management Act (Cap20:24), Mines and Minerals Act (Cap 21:05) Forestry Act (19:05), and related regulations. State conservation agencies like Zimbabwe Parks and Wildlife Management Authority (hereafter ZimParks), Forestry Commission, the

Environmental Management Agency (EMA) and the Department of Agricultural, Technical and Extension Services (AGRITEX) have significant roles to play in natural resources management, especially through monitoring and protecting fauna, flora, and natural habitats. These statutory bodies are sometimes viewed with a colonial lens especially given that the laws they protect are linked to colonial history of dispossession.

Within the Zambezi Valley landscape, multiple actors; public, private and civil society organisations (CSOs) are pushing environmental education and biodiversity protection projects. Organisations such as My Trees Trust, Wildlife Conservation Action and Zambezi Valley Conservation Network, Zambezi Society, African Wildlife Foundation, Bushlife Africa Trust and several safari operators have invested resources into natural resource management, and protection. The local authorities have trained and deployed scouts while safari operators and ZimParks have trained and deployed scouts/rangers around Protected Areas to respond to problem animals, poaching and retaliatory killings. At household and community levels, a series of natural resources management practices are being implemented: tree planting, reporting offenders, observing traditional regulations, attending rain making ceremonies and *marende* rituals.

In the landscape, some Chiefs have allocated land on fragile ecosystems and on the edges of protected areas (PAs). Duty bearers have not always responded with urgency to problem animal reports thus fuelling retaliatory killings. Communities have engaged in unsustainable and detrimental practices such as stream and riverbed cultivation through *mabhonje*¹ (*riverbed fields*), alluvial gold mining, poaching for fish and wild animals, starting veldfires, excessive tree

¹ A traditional that was historically used by the Tonga to cultivate Zambezi River bed after the recession of the floodwaters. The mabonje allowed for food security even during dry seasons.

cutting for tobacco curing and charcoal production. The use of cow dung smoke during honey harvesting is understood to be a key cause of veldfires. There are several cases of new settlers crossing the buffer zones and settling within protected areas while others have removed perimeter fences delineating the protected areas. Communities feel that authorities need to compensate them for the damages incurred through HWC.

Most threats to natural resources in the Zambezi Valley are driven by population growth, settlement encroachment into protected areas, climate change and habitat loss, overharvesting and others. Customary land allocation is almost perpetual for 'sons and daughters of the soil', and this has worsened land fragmentation and soil exhaustion. In terms of Non-Timber Forest Products (NTFPs), the landscape experiences widespread extraction and use of tamarind, *Ziziphus mauritiana* and baobab and several other NTFPs, but most of the harvesters are still unlicensed. Locals do not see the value in these

licenses to collect NTFPS as they see these as God given resources that help them and the animals of their land especially during the dry years.

Mbire and Hurungwe districts have some of the landscape's most vibrant community conservancies. The conservancies are modelled around the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) philosophy. The baseline identified gaps in energy development, synergies among various implementing agencies, poor resource sharing arrangements which have weakened community engagement and benefit sharing.

The study recommends more collaborative work, more resource mobilisation and support for legal and policy reviews which will put natural resource conservation on track and in line with global imperatives. Using the provisions of the Nagoya Protocol, community members recommended well-structured policy and legal reforms to ensure that local resources benefit local people.



Muzarabani Landscape, in Mashonaland Central Province



Acknowledgement

The Utariri Programme is greatly indebted to the Swedish Embassy in Zimbabwe for their financial support. We are thankful for the assistance from the Government of Zimbabwe for facilitating this extensive research and data collection within the Middle and Lower Zambezi. Utariri is grateful to the communities and citizens that contributed to this baseline research.

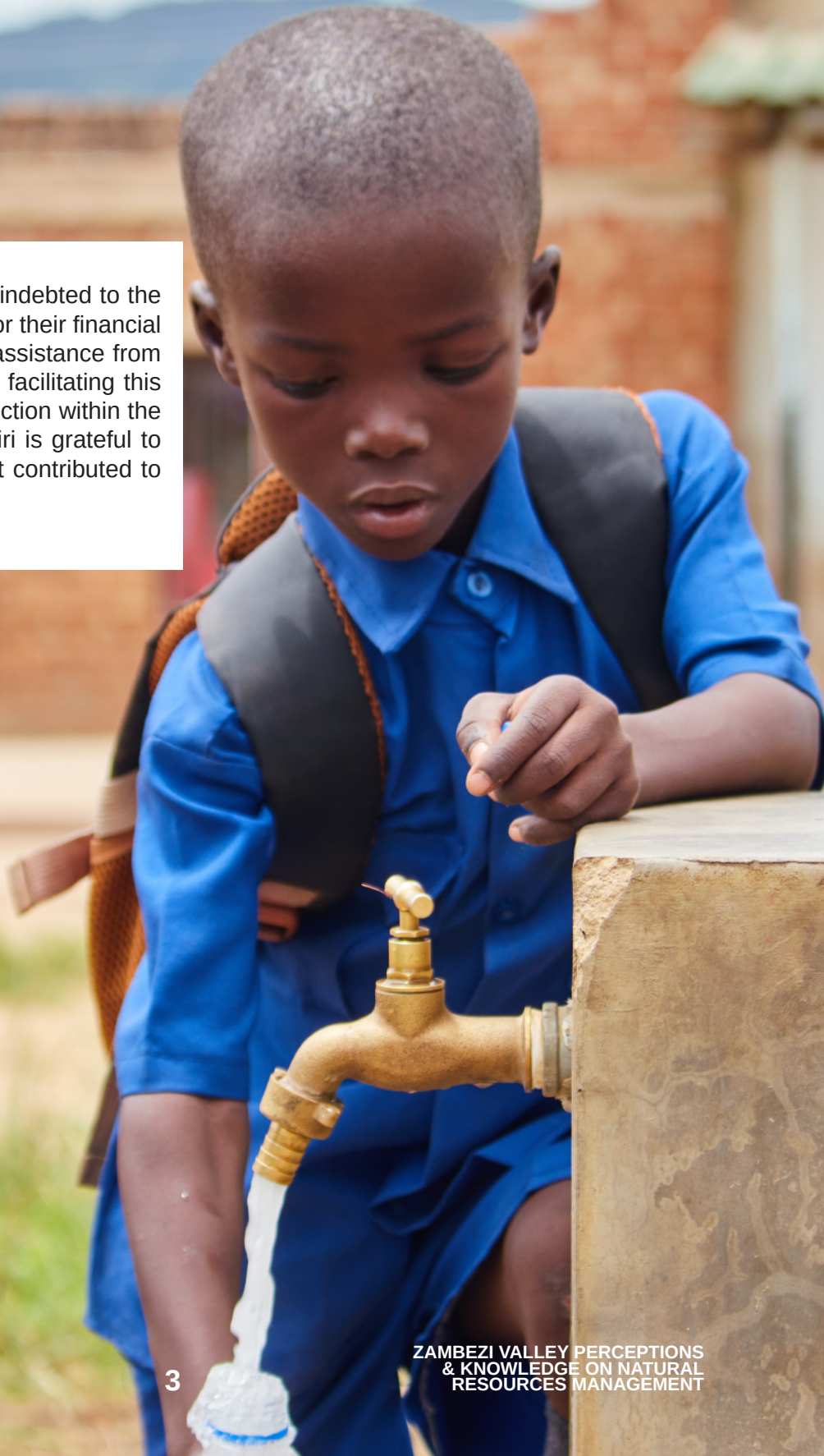


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List of Acronyms

ADRA	Adventist Development and Relief Agency
AGRITEX	Agricultural Extension Services
AWF	African Wildlife Foundation
BAT	Bushlife Africa Trust
CAMPFIRE	Communal Areas Management Programme for Indigenous Resources
CBNRM	Community Based Natural Resource Management
COTTOCO	Cotton Company of Zimbabwe
COVID-19	Corona Virus Disease of 2019
EMA	Environmental Management Agency
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
MRDC	Mbire Rural District Council or Muzarabani Rural District Council
NRDC	Nyaminyami Rural District Council
HWC	Human Wildlife Conflict
IKS	Indigenous Knowledge Systems
KII	Key Informant Interview
IWT	Illegal Wildlife Trade
MAB	Man and Biosphere Reserve
NGOs	Non-Governmental Organisations
NTFPs	Non-Timber Forest Products
PAs	Protected Areas
PWMA	Parks and Wildlife Management Authority
REDD+	Reducing Emissions from Deforestation and Degradation
RDCs	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





Introduction

Biodiversity plays a crucial role in sustaining human livelihoods globally through providing critical ecosystem goods and services, as well as nature-based solutions to climate change and problems caused by changes in the environment (Wang & Gamon, 2019). The management of natural resources, especially in biodiversity rich areas is of great importance and very often is a cause of dispute between different interests: mining, nature conservation and indigenous people's rights.

In Africa, protected areas are the cornerstone of biological conservation. As defined by the International Union for Conservation of Nature (IUCN), protected areas are clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values (Dudley, 2008). Although protected areas have usually been set aside from human exploitation, it is now increasingly recognized that they should play a role in sustaining livelihood of adjacent local communities (Hamilton et al., 2000).

The “community conservation” approach seeks to accommodate local peoples' needs and

aspirations by empowering them, promoting their active participation in local resource management, and improving their economic welfare (Songorwa, 1999; Infield and Namara, 2001). Indeed, local communities' perceptions of protected areas influence the kinds of interactions people have with them, and thereby conservation effectiveness (Ormsby and Kaplin, 2005). Their perceptions of protected areas management play also an important role in their attitudes toward them (Alexander, 2000; Adams and Hulme, 2001; Infield and Namara, 2001). Therefore, understanding residents' perceptions about conservation is the key to improve the protected areas–people relationship if protected areas are to achieve their goals (Weladji et al., 2003). Many factors influence the perceptions of the protected areas held by residents living in their periphery. These include the history of park management, the degree of awareness of protected areas existence (Ormsby and Kaplin, 2005), the education level (McClanahan et al., 2005), the reference to future generation and the gender and ethnicity (Mehta and Heinen, 2001). The understanding of all these factors is important to improve the relationship between local residents and protected areas and will improve people awareness about biodiversity conservation within these areas.



Information Sharing Meeting in Mbire, Mashonaland Central Province

Literature indicates that local communities are more likely to support conservation initiatives when they receive direct benefits (Bajracharya et al., 2006). Stakeholder engagement empowers community members to identify important issues related to natural resources and increases understating of how management can help solve socio-ecological problems (White and Vogt, 2000). It increases documentation of local knowledge, awareness and participation willingness in the management processes (Aldon et al., 2011). Indigenous knowledge and practices have always served as valuable forms of capital vital to sustainable forestry, effective conservation and ensuring the continuous flow of forest resources that contribute to local livelihoods (Chukwuone et al. 2020). It is therefore crucial to understand and incorporate indigenous knowledge in project designs and bring back stewardship to the communities.

Globally, human–wildlife conflicts (HWCs) have been widely documented in both protected and non protected areas (Abrahms, 2021), impacting social and economic aspects of human life. Generally, notable threats from wildlife on human lives, crops and livestock are most prevalent in areas adjacent to protected zones (Gandiwa et al., 2012; Zisadza–Gandiwa et al., 2016). The primary drivers of HWC are human encroachment into protected areas due to human and wildlife population growth, coupled with the expansion of wildlife territories into human settlement areas (Gandiwa et al., 2013; Kupika et al., 2019).

The Zambezi Valley remains one of the most ethnically diverse and resource-rich areas in Zimbabwe. The Valley boasts the mighty Zambezi River and related scenic landscapes that include the Matusadona and Mavuradonha escarpments, the Mana Pools National Park, a Ramsar designated wetland, the Kariba dam Africa’s largest manmade lake and a range of floristic and faunistic resources. The alluvial soils along the valley have the potential of sustaining irrigated agriculture especially sugarcane but people encounter serious biodiversity loss, climate change, degradation, over exploitation of natural resources and poverty. There is a need for strategies that support the delivery of multiple benefits from rural landscapes by increasing synergies and minimizing trade-offs among food production, biodiversity conservation, ecosystem service provision and poverty alleviation. It is therefore imperative that conservation actors advance integrated landscape or one health approaches to biodiversity protection. Approaches to integrated landscape management seek to do so by analysing, implementing, and evaluating land management decisions relative to multiple landscape objectives and stakeholders needs (Sayer et al., 2013). This bioregional approach ensures an interconnected and integrated approach to large scale interventions which enhance the linkages between microclimates, ecosystems and communities. Within this approach, collaborative, community-engagement processes for dialogue, planning, negotiating and monitoring decisions and actions should be encouraged.

Rationale and Objectives

The Utariri integrated biodiversity, climate and livelihoods programme seeks to contribute towards sustainable management and utilisation of natural resources, restoration of ecosystems, climate action, and building community resilience in the Zambezi Valley, covering the Kariba, Hurungwe, Mbire, and Muzarabani districts. The evidence gathered from this baseline research will be used to guide and inform programming and serve as baseline and reference to calibrate achievements of the Utariri biodiversity protection initiatives.

The objectives of the survey are:

- To profile the knowledge and perceptions on natural resources management held by households and the communities in the Zambezi Valley
- To identify gaps arising from community perceptions in natural resources management and the position of state natural resource management institutions
- To recommend appropriate mechanisms to addressing natural resource management challenges in the landscape



Background

On the Zimbabwean side of the Zambezi Valley, the spatially heterogeneous districts are characterized by diverse interacting patches of ecosystems, ranging from relatively natural terrestrial and aquatic systems such as forests, grasslands, rivers and lakes to human-dominated environments, including agricultural, mining and urban settings (Wu 2006). Three of Zimbabwe's seven catchments, the Sanyati, Manyame and Mazowe catchments feed into the Utariri programme areas, thus affecting the water resources in the areas. Developments in the Valley highlight that the conservation responsibility transcends geopolitical boundaries. The Valley hosts the UNESCO Middle Zambezi Biosphere Reserve (MZBR) and two transfrontier conservation areas (TFCAs); the Lower Zambezi and Mana Pools, and the Zimbabwe-Mozambique-Zambia (ZIMOZA). The most salient characteristics of landscape programming are its emphasis on the relationships between pattern, process and scale, and its focus on broad-scale ecological, social and economic issues.

With the demise of the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) co-management model, declining support for conservation, relentless encroachment into protected areas, the Zambezi Valley is threatened. For that reason, broad-based collective action is required between the formal mechanisms and the traditional systems. Utariri Programme recognises that the fragmentation of interventions, integrating wildlife conservation to climate action and livelihoods in communal lands next to protected areas and therefore sees it necessary to profile their perceptions. Communities in the landscape have been alienated from conservation, a result of colonial legacies, and post-colonial continuities. The integration of ecological systems, livelihoods, and institutions in landscape management, is considered to offer a promising framework for community-based resilience building.

There has been increased settlement encroachment into protected areas. Anecdotal evidence indicates that there has been an increase in the human population in rural areas since 2000 due to urban-rural migration brought about by economic challenges and COVID-19.

The project area covering Kariba, Hurungwe, Mbire and Muzarabani districts is mostly arid and semi-arid with communities living adjacent to these areas experiencing high levels of poverty due to poor agricultural yields. There is a great reliance on natural resources to complement agriculture-based incomes. Natural resources in the communal lands and protected areas become the next available sources of income resulting in increased pressure on natural resources. There is increased illegal activities (wildlife harvesting, mining, forest crimes) and the subsequent depletion of natural resources as communities seek to earn a living through these natural resources. In areas of high wildlife populations, there is greater interaction between people and wild animals resulting in conflicts as animals forage on crops and attack livestock further affecting already strained livelihoods. Given the increase in international illegal wildlife trade (IWT) syndicates, the protected areas require cooperation and support from local communities.

Rural communities in the landscape require coordinated planning to avoid degradation. Parks and Wildlife Management Authority and local authorities have been pushing for integrated land use plans (ILUPs) but funding for these have also been scanty. The challenges of deforestation, land degradation and biodiversity loss, climate change, human wildlife conflicts and uncontrolled artisanal mining are further weakening biodiversity protection efforts. The Zambezi Valley's vast natural resources provide a basis for social and economic transformation.

Several interventions including multiple GEF

small grants have injected resources into the landscape to ensure biodiversity protection. The GEF 6 projects have worked towards mitigating development challenges associated with biodiversity loss, ecosystem degradation, and climate change. The urgency to address poaching and illegal wildlife trade, human wildlife conflicts and retaliatory killings, deforestation, and climate change consequences (droughts, floods and veld fires has been heightened.

practices with those with lower or negligible impact. These projects are effective when they reduce the threat to a biodiversity target by changing human behaviour while improving biodiversity conservation (Lowe et al, 2019). The Utariri² Programme endeavours to use a landscape ecological approach to integrate biophysical and socioeconomic dimensions, and implement holistic perspectives across the multiple disciplines and programming orientations.

Alternative livelihood projects have been introduced to achieve biodiversity and natural resource conservation by substituting harmful



The UNDP GEF Zambezi Valley Biodiversity Project - strengthening biodiversity and ecosystems management and climate-smart landscapes in the Mid to Lower Zambezi Region of Zimbabwe focusing on reducing key threats for wildlife, habitat, and livelihoods of local communities.



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; Nyaminyami wards 3, 4 and 6 and Mbire wards 1, 2,3, 4, 9,10, 11,12,16, and 17. The perception on natural resources management baseline administered 747 questionnaires and conducted 31 key informant interviews (KIIs) and 20 focus groups discussions (FGDs). Quantitative data was collected using closed-ended questionnaires administered by enumerators. Qualitative data was collected through focus group discussions (FGD) and key informant interviews (KIIs), at ward and district level by the research team. For the quantitative data collection, enumerators were recruited from the local wards, to ease communication and ensure cultural awareness. 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 across the landscape. The questionnaires were administered to randomly chosen households members above the age of 18. Individuals were chosen using the KISH grid to ensure normal gender and age distribution. The team of researchers conducted interviews with purposively sampled key informants at ward and district levels.

Table 1: People reached during the baseline survey

	Survey Questionnaire	Key Informant Interviews	FGDs
Hurungwe	75	10	3
Mbire	229	2	6
Muzarabani	368	10	7
Nyaminyami	75	9	4
Total	747	31	20

3.1 Demographics of the Respondents

Most of the respondents were 36 to 59 years old, as shown in figure 1.

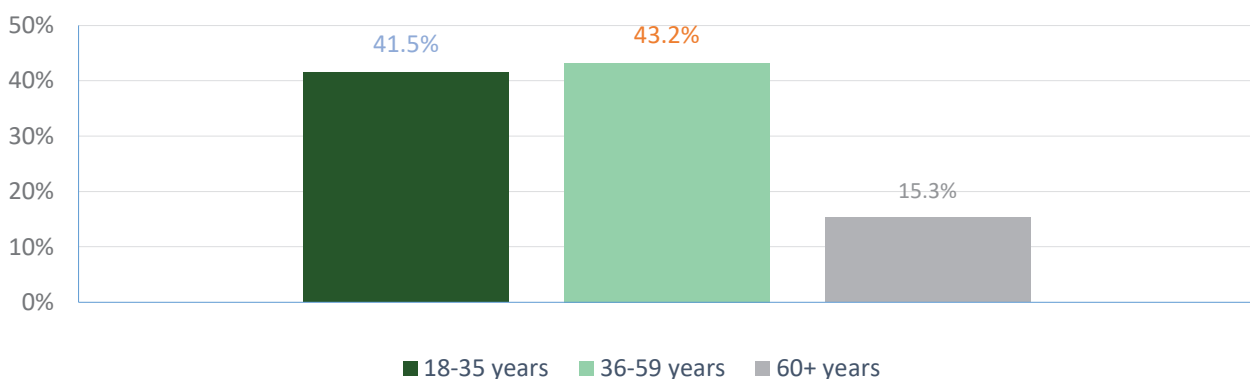


Figure 1: Age distribution of respondents

The sampled respondents reflect the ZimStats 2022 Census data, with approximately 52% female and about 48% male.

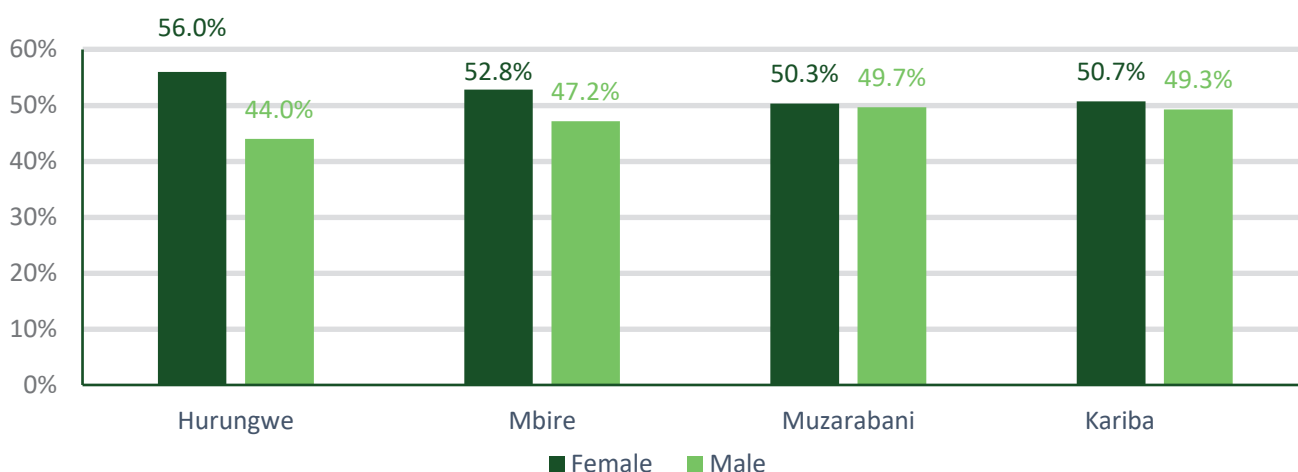


Figure 2: Sex Disaggregation by District

The majority of the respondents were married (See Table 2).

Table 2: Marital status of the respondents by district

	Divorced	Married	Separated	Single	Widowed	Total (n)
Hurungwe	1.30%	74.70%	1.30%	8.00%	14.70%	75
Mbire	1.70%	76.40%	3.10%	10.00%	8.70%	229
Muzarabani	2.40%	74.20%	3.00%	12.00%	8.40%	368
Kariba	10.70%	66.70%	5.30%	9.30%	8.00%	75
Landscape average	4.03%	73.00%	3.18%	9.83%	9.95%	747

Education

Education levels are not uniform across the districts and the high number of respondents that did not finish any level of education is alarming. Level of education can provide the basis for awareness raising in conservation education. Hurungwe was the only district with over 50% respondents with secondary and post-secondary education (See table 3)

Table 3: Education of the respondents by district

Education	None	Primary	Secondary	Tertiary	Total
Hurungwe	5.3%	37.3%	57.3%	0.0%	75
Mbire	17.9%	49.8%	30.6%	1.7%	229
Muzarabani	19.3%	37.0%	39.9%	3.8%	368
Kariba	13.3%	58.7%	26.7%	1.3%	75
Total	14.0%	45.7%	38.6%	1.7%	747

Born in the Landscape or Migrated into the Zambezi Valley

Over a third of the respondents (36.7%) were not born in the district but migrated there for various reasons, and the remaining majority were born in the district.

Reasons for moving to the Zambezi Valley

Those who moved to the Zambezi Valley did it for various reasons: family, resettlement, employment, farming, business and other. These patterns also differ by district.

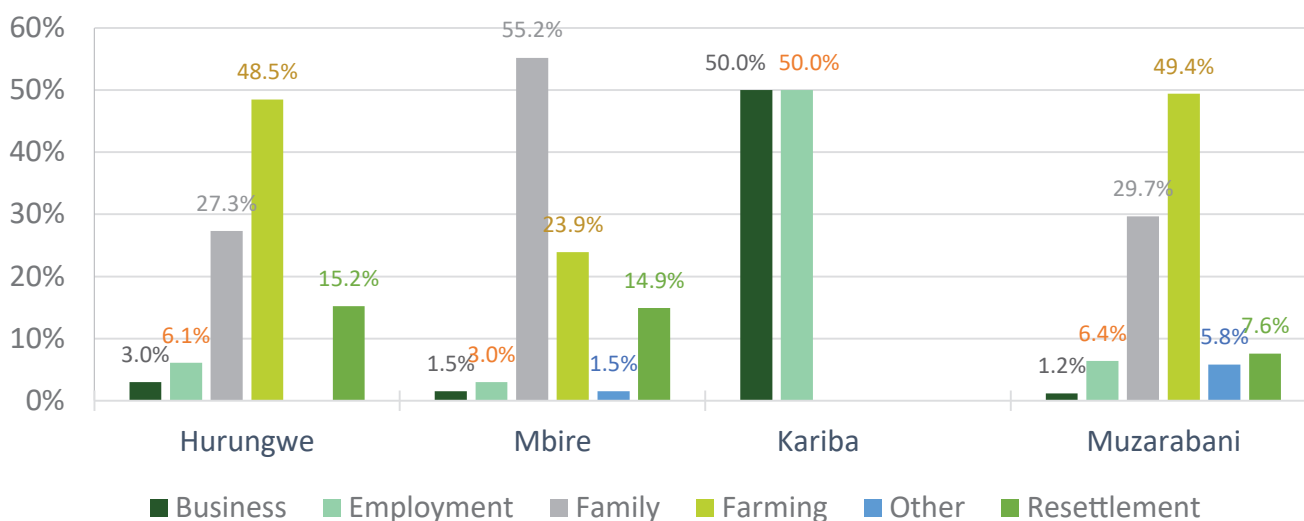


Figure 3 Reasons for coming to the Zambezi Valley per district

The average household size for the population that participated in this study was 5.35, with household sizes varying from 1 to more than 10 members. Table 4 below shows the distribution of the households by household size. The Zambezi Valley was an attractive settlement landscape because of the massive potential for cotton production, the tsetse fly elimination in the 1950s and the fact that it was sparsely populated.

Table 4: Household sizes by district

	1-5 people	6-10 people	more than 10 people	Total
Hurungwe	53.3%	40.0%	6.7%	75
Mbire	59.8%	39.3%	0.9%	229
Kariba	68.0%	32.0%	0.0%	75
Muzarabani	56.5%	39.1%	4.3%	368



A community engagement session in Nyaminyami in Mashonaland West Province



Results and Key Findings

Historical issues related to the perceptions on Natural Resources Management

From oral history, key informants and focus groups confirmed that the Zambezi Valley was once pristine with thick vegetation, bushes and plenty of wild animals even around 2000's. There have been rapid changes in the biodiversity composition (species diversity and range) across the landscape. Muzarabani only gained district status in 1984 and Mbire in 2006, after being separated from Guruve District. In the early 1950s on the other hand, the Tongas in Nyaminyami were displaced to give way for the construction of the Kariba dam. The Tongas have historically lived on the Zambezi with fishing and subsistence riverbed farming being their main livelihoods. The Zambezi Valley was largely converted into protected areas due to its arid and agriculturally unproductive characteristics, with patches of communal areas.

The establishment of protected areas and the erection of fences created platforms of exclusion and marginalisation, which local communities have resisted to date. In the 1950's the government worked hard to eradicate tsetse flies, and this eventually led to an increase of settlements in some parts of Mbire, Hurungwe and Muzarabani districts and the introduction of cattle in the area. Rain making ceremonies (*mukwerera*) and harvest ceremonies (*huruwa*) were celebrated by different ethnic groups to communicate and appeal to the spirits for rains and sustained harvests. The Chief relied on the village heads, and the chief's police to monitor the natural resources exploitation, enforce the law and raise awareness. In recent times the Rural District Councils (RDCs) have established environmental committees and Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) committees (for CAMPFIRE districts) at village level to safeguard natural resources.

Offenders are punished using the Traditional Leaders Act, provision of the Parks and Wildlife Act, the Forestry Act and the Environmental Management Act. State conservation agencies conduct trainings to village members who then cascade the knowledge to their children. With the increase of migration from urban to rural areas, chiefs are giving land to people to settle in rural areas, but according to the one chief, "the new settlers do not understand community based natural resource management. People have destroyed our traditions and sacred sites". The use of traditional ritual and rain making sites for Apostolic spiritual cleansing is also seen as a transgression on local traditions. In the past, forests had many wild fruit trees, but some tree species have been cut for curing tobacco and are currently in danger of extinction. The rivers had abundant water and were not silted. Various traditional ceremonies were done for the upkeep of the area and its resources. The biggest concern for most districts is the deterioration of forest cover, for example in the Muzarabani Wilderness, the buffer zones between protected areas and communities in Hurungwe, and the contested land between Chief Mola and Negande in Nyaminyami. Population is increasing and need resources: land to graze their cattle, firewood for tobacco curing, timber to build etc. Gold mining is rife in the catchments and these activities are also destroying the forests.

All districts have initiated some afforestation projects. Development partners like SAFIRE, Kariba REDD+, and My Trees Trust have distributed tsotso stoves in different wards in the districts to reduce the use of wood fuel when cooking. There have also been initiatives to restore erosion gullies. The tobacco sector in upper Muzarabani and Hurungwe is promoting afforestation initiatives as it is the main driver of

deforestation. Tobacco merchants pay a levy to Forestry Commission's Afforestation Fund, which is used to establish nurseries to grow eucalyptus and other tree species as part of the Tobacco Wood Energy Programme (TWEP). However, Utariri is aware that eucalyptus is an ecologically harmful species for sustainable rewilding.

The Forestry Commission, in collaboration with the Environmental Management Agency, organize tree planting and fire protection initiatives and trainings. Forestry Commission and EMA have very limited resources and have invited development partners to fund these initiatives. Very few private players are running nurseries in the districts, let alone indigenous tree nurseries. Since farmers pay a levy to Forestry Commission for the "Afforestation Fund", they think they are entitled to cut down the trees. The

Mavuradonha mountains range, some sacred pools and springs in Chief Mola and Negande territories and the places where *marende* rituals are conducted are protected by the Chiefs and are considered as sacred places. However, people have desecrated the area and conducted church ceremonies, and promoted settlement encroaching into the wilderness. When caught, local poachers are taken to the police and the courts for judgement. Farmers keep woodlots where trees are grown. *Ziziphus mauritiana* trees grow at homestead and in the gardens. It is forbidden to cut down baobab trees, if you do, you are fined by the Chief. The community is comfortable with freeing part of their land to have a protected area. School environmental clubs are being implemented to educate and bring awareness on biodiversity and natural resource conservation and management to school going children.

In Nyaminyami, key informants narrated the history of the wards with focus on wildlife (elephants).

Before 2004, we used to report these animals to the resident rangers stationed in the village. The game rangers would scare the elephants using their guns they would then flee from the village and we would be able to harvest from the fields. The game rangers left this village after 2004 and the elephants have continued to wreak havoc in the fields which has impacted on our food security. Focus group participants narrated that problem elephants were only shot if they had killed a community member.

Respondents reported that rangers across the landscape hardly respond when problem animals are reported, causing great damage to crops, especially by elephants. They cite transport challenges. FGD respondents described how local ethnic groups co-evolved with their natural resources and ecosystems. Ward 3, which is under Chief Mola, has a significant number of sacred places. Communities perform traditional ceremonies to inform the ancestors of any new

positive or negative developments to ensure the smooth proceedings. In the recent past (in 2022-3), the communities resisted the establishment of a conservancy in Ward 3. This resulted in the removal of the fence that would restrict people's passage to the Lake and to other villages. Approaches to wildlife management have changed with more anti-poaching regulations and arrests of local offenders.



Knowledge of protected areas

At a landscape level 86.2% of the research participants are aware of what protected areas are, and only 13.8% do not know. In terms of the district's patterns, Hurungwe and Nyaminyami have higher awareness levels than Mbire and Muzarabani.

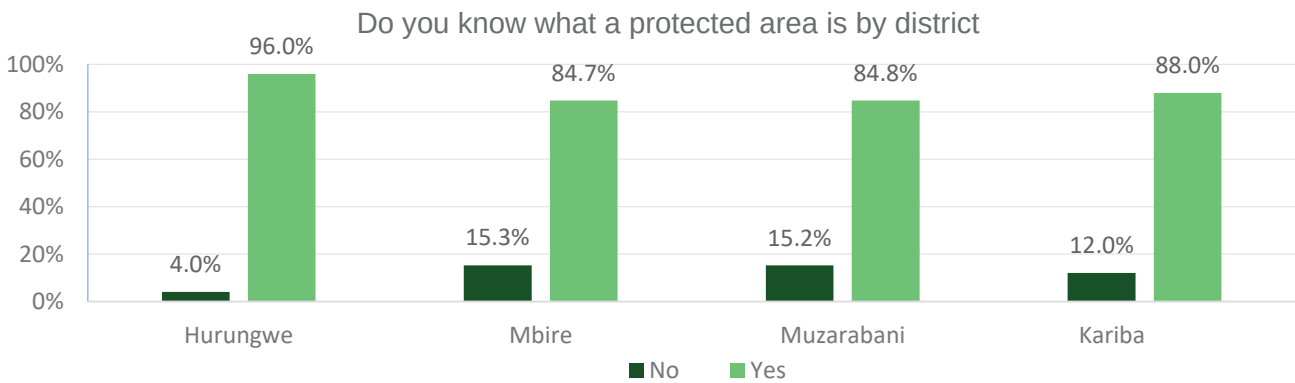
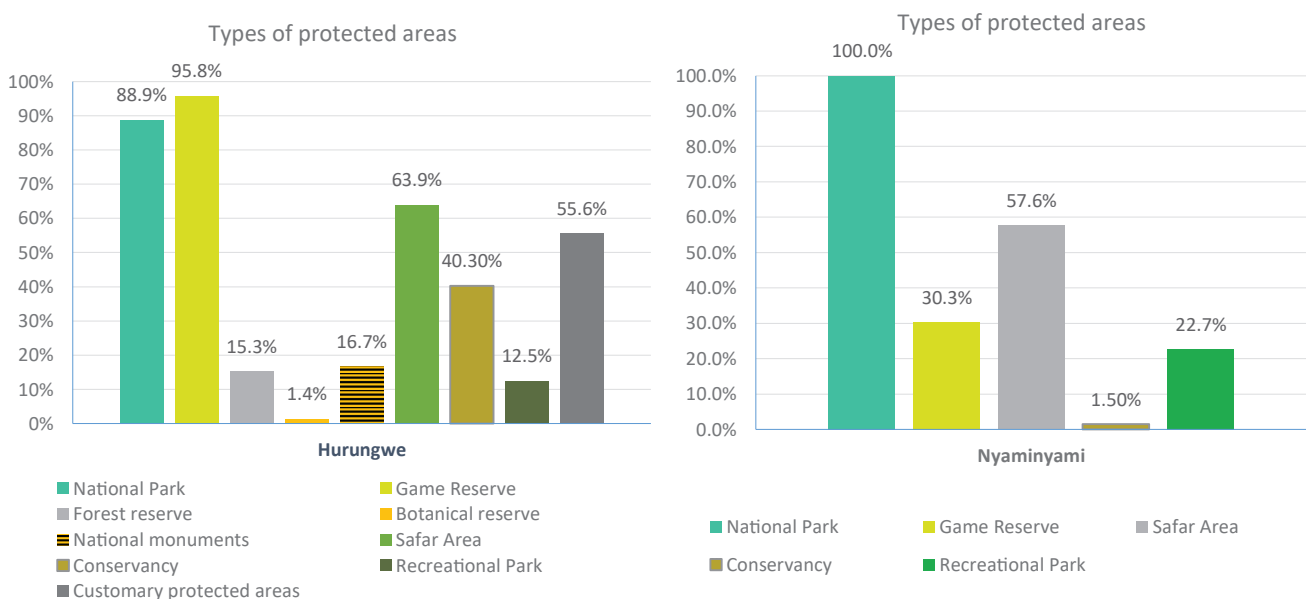


Figure 4: Awareness of what a protected area is

Although many respondents across the four districts know what a protected area is, there is limited understanding of the different types of protected areas. The baseline sought to get popular opinion on these protected areas. National parks, game reserves, forest reserves and safaris and customary protected areas are the most widely known (see figure 5) types of protected areas. Over 80% of the participants, are familiar with protected areas which are dotted within the landscape.

In Ward 3 (Mayovhe) in Nyaminyami, the community members resisted the establishment of a conservancy. They uprooted the fencing poles, claiming that the fence was blocking their access to the fishing camp. The use of fences to separate human from animals is resisted by some and supported by others. The most well-known protected areas by respondents in the landscape are national forest reserves, safari areas, national parks, and game reserves.



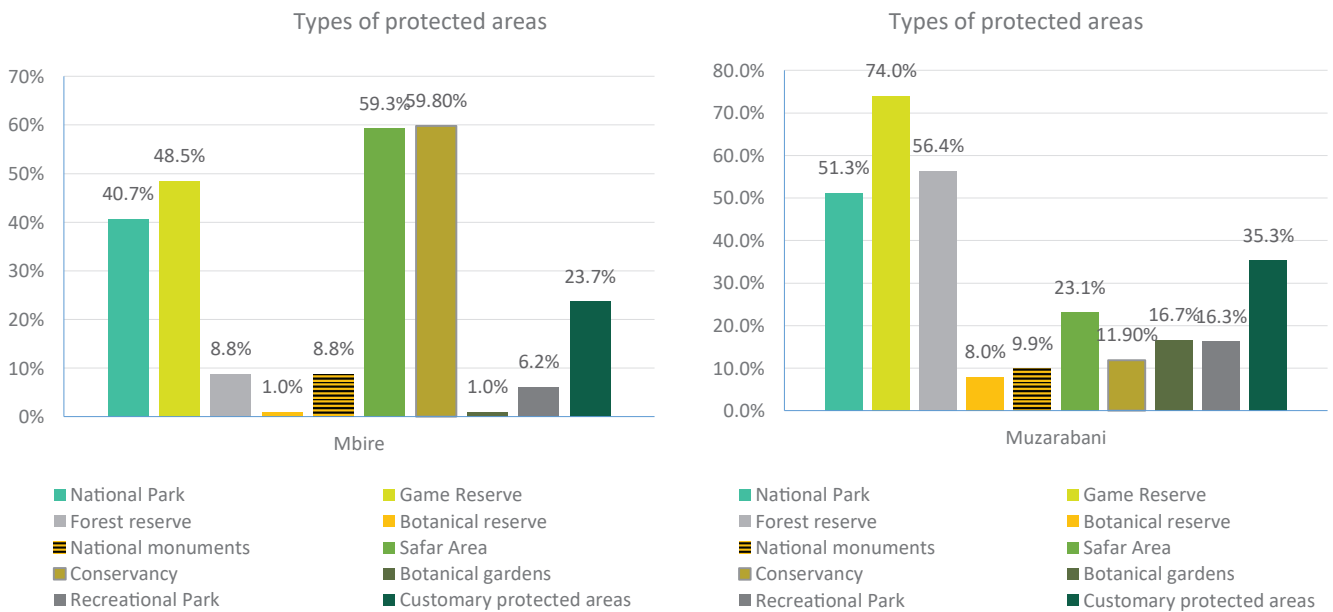


Figure 5: Types of protected areas known by respondents by district (multiple response)

Most of the respondents (96.4 %) recognized the importance of protected areas (Figure 6) and 73.3 % affirmed the protected areas influence their lives positively. Respondents think it is very important to have protected areas as a way of promoting tourism and reducing human wildlife conflict at community level.

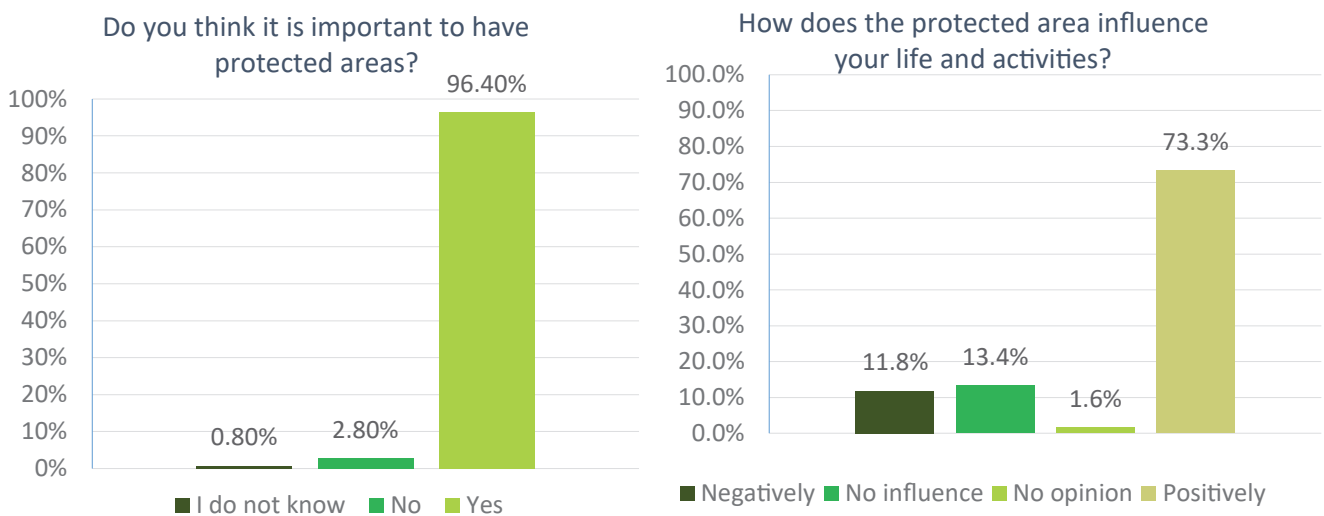


Figure 6: Importance of protected areas for respondents across the landscape

As expressed by the interviewees, human population is growing, natural resources are getting scarce, and poverty is putting pressure on natural resources. Deforestation is a big problem in the landscape. People are aware of the importance to conserve the forests, but they do not have other options than to cut down trees to clear land for farming, to use the wood for construction and energy, and for curing tobacco. People are starting fires to clear the land for farming, mostly in Upper Muzarabani and Hurungwe.

The installation of fences to separate wildlife and settlements is applauded by some and criticised by others. For most respondents the fence is seen as a tool of exclusion. In the earlier years, people used to respect the boundary fence, but people started to cut it off and use it to make snares to trap animals. In cases where electric fences are in use, communities feel that it is a safe way of keeping animals away.

4.3.2 Customary Practice and Beliefs

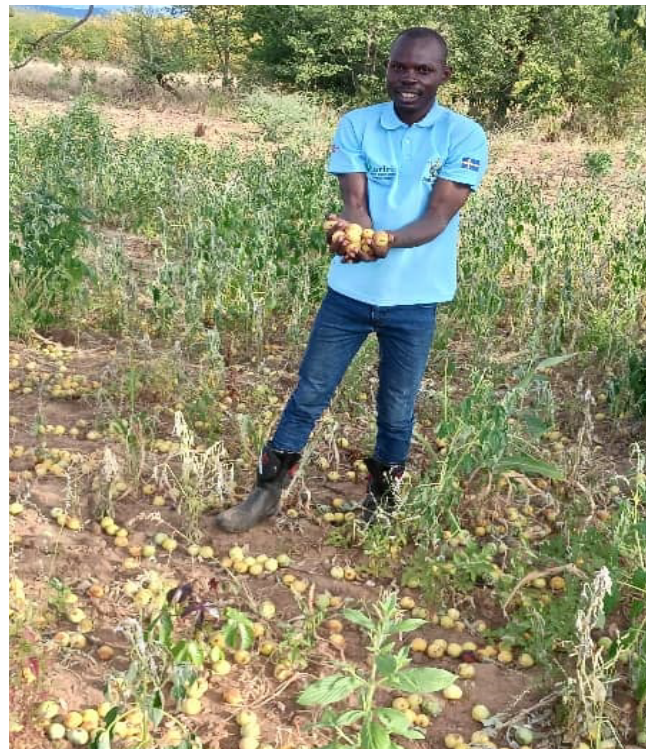
Across the landscape there are several practices and beliefs that have been central in protecting natural resources. In Nyaminyami, the Tonga still link developments in their life to the spirit of Nyaminyani. According to Tonga folklore, Nyaminyami used to provide them with food, fish as long as people followed its guidance. The Tonga tradition implored the villagers to put their harvest together to appease and thank the spirits. The villager would conduct these rituals with the guidance of spiritual leaders who would advise on how to conduct rain making ceremonies and spiritually protecting their fields from vermin. Disrespect of the spirits would attract disasters. To date the elders, claim that there are wells that do not run dry and they are sources of community survival during droughts. Sacred pools, and springs and forests are well protected by local people and fishing in Lake Kariba is controlled by both customary and modern law. In Muzarabani, a couple of places are sacred such as Marema Hills, Chindungaire. Musengezi River used to have many sacred pools. In Hurungwe, the despoliation of sacred places is seen as the reason for poor rains. Research participants from Mbire have started getting benefits from wildlife through community conservancies and many of them think that coexisting with wildlife is possible.

In terms of indigenous customs, there are a number of practices that people follow:

- People are prohibited from cutting trees in sacred places and mountains,.
- People are advised to use their hands and not metal tins to fetch water in those hills.
- When people see unusual things; they are not allowed to laugh.
- People should clap hands when taking wild resources to show respect and accessing these resources.
- In most cases people are encouraged to pick fruits that would have dropped as opposed to stoning down unripe fruits.
- In some cases, the tradition advises to eat the fruits in the forests and not take them out of the forest.



Phyllogeiton discolor known as bird plum or brown ivory in English. The fruit and leaves can be used as fodder. The juice from the fruit can be used to treat bleeding gums. The wood, which is yellow-brown and hard is suitable for furniture and walking sticks. It makes good firewood.



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

4.5 Involvement in and out of Protected Areas

Before independence, the management of protected areas was based on a technocentric and segregationist approach. Indigenous people's views and wisdoms were generally ignored and not incorporated into wildlife conservation activities, notwithstanding the fact that it is the indigenous people who have a long organic relationship with the local wildlife. Efforts to bring back local communities into conservation have been slow and resisted by wildlife actors with colonial historical links. Since the establishment of community based natural resource management (CBNRM) structures in communities in the late 1980s, such as CAMPFIRE committees, communities have increasingly participated in protected areas activities. At a landscape level 71.7% of the participants confirmed that they take part in protected areas activities while 28.3% do not. Four key activities that people take part in are general meetings, voluntary work, reporting illegal activities and employment (see Fig 7)

Table 5: Involvement in protected areas across the landscape

	Yes	No
Hurungwe	65.3%	34.7%
Mbire	74.2%	25.8%
Kariba	84.8%	15.2%
Muzarabani	68.9%	31.1%
Landscape average	71.7%	28.3%

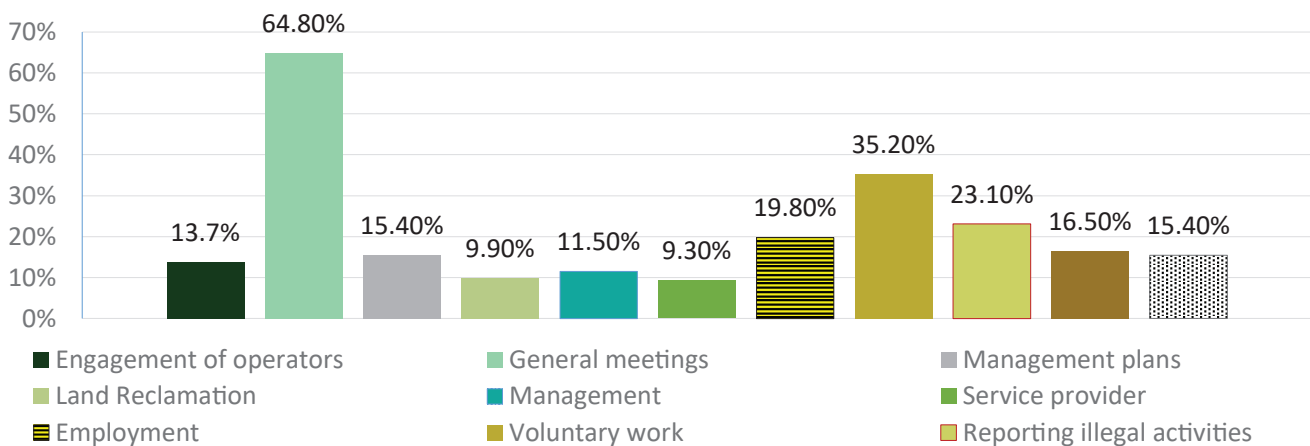


Figure 7: Protected area activities that households are involved in across the landscape.

Natural Resources Management in the Landscape

From the focus groups discussions, several observations were made regarding protection of biodiversity. Respondents were asked whether they understood their responsibilities in terms of protecting natural resources and biodiversity.

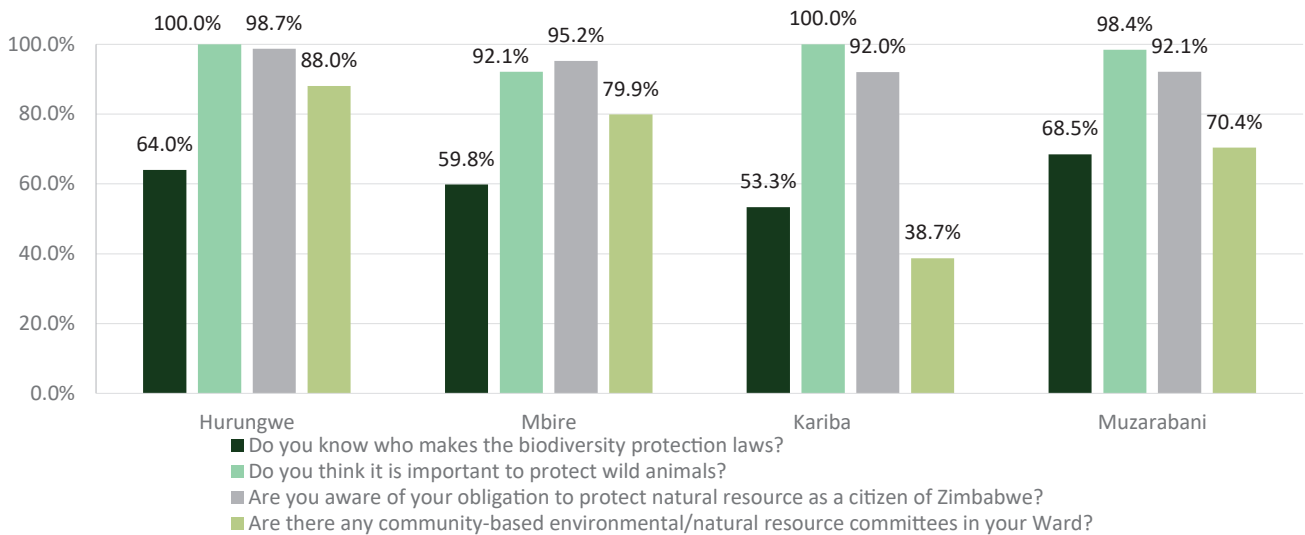


Figure 8: Percentage of respondents who said Yes to some biodiversity protection issues

Communities are not very sure about their role in shaping and enforcing laws and bylaws in their districts. Many of the communities just hear from authorities the prohibitions and penalties associated with state laws. Communities see the enforcement of these laws as very weak given that rangers and key resource managers stay far and the district offices have little presence in the communities. They are aware that the rangers and scouts are usually under resourced.

Unsustainable Natural Resources Management Practices

Several households were pruning the mopane woodland around their homesteads in Nyaminyami allowing the trees to grow and develop a wider canopy. In terms of perceived threats to biodiversity by community members, poaching and overhunting, population and settlement expansion, and climate changes are the most concerning threats. Poisoning wildlife, overharvesting, and over-commercialising are less prevalent. Mining also threatens habitats through deforestation and siltation of water bodies.

Threats to biodiversity are seen differently across the landscape. For Hurungwe and Mbire respondents, climate change is the most serious threat. For Kariba, poaching and population growth are the biggest threats to biodiversity. The threat of poisoning wildlife was not reported in Hurungwe District and alluvial mining was not reported in Kariba (Figure 9). These responses depend on the wards where the questionnaires were administered.

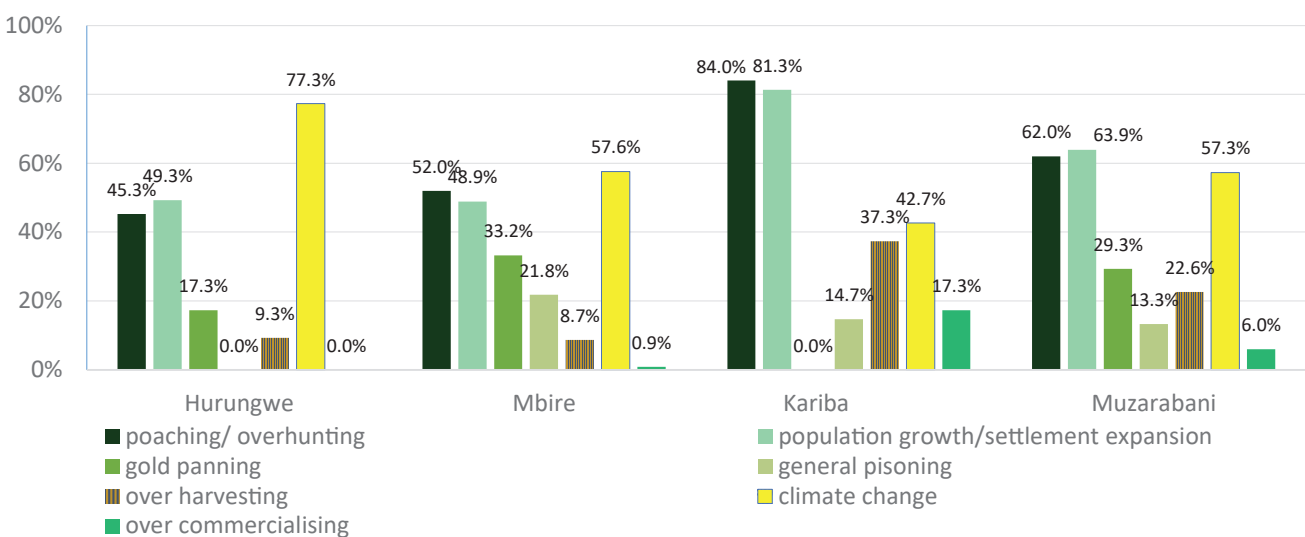


Figure 9 Threats to biodiversity by district

The respondents also indicated that despite practising conservation methods, they are also engaging in unsustainable practices at household level. Cutting down trees was the most prevalent practice, followed by riverbank cultivation (see figure 10) and 23.2 % of the respondents claimed not to practise any unsustainable practices.

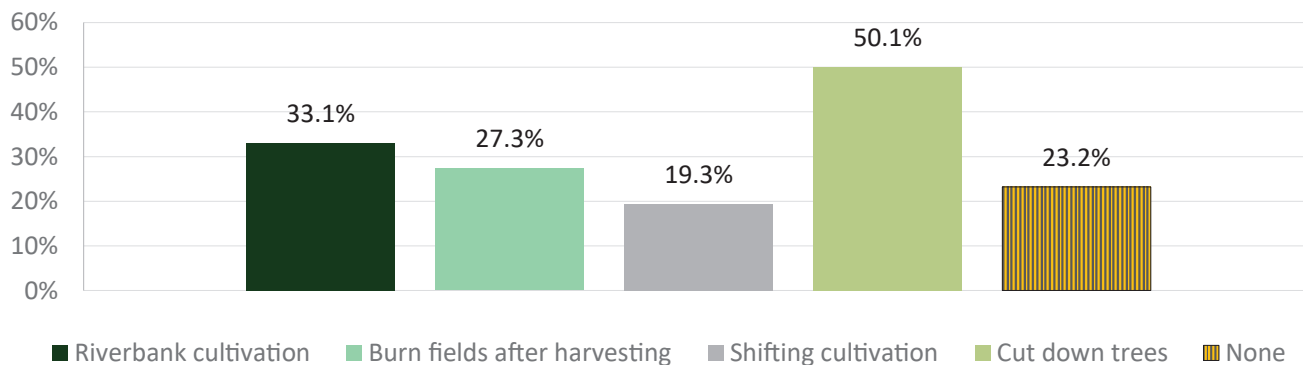


Figure 10: Unsustainable and detrimental practices (multiple response)



Summary of Unsustainable Practices Mentioned During Focus Group Discussions

- Settlement encroachment into the protected areas e.g. in the Mavuradonha Wilderness, where people cut trees. In Kabidza area in ward 8 in Hurungwe, people have been living inside the game area since 1980s, claiming and they now think they are legitimate landowners.
- Conflicts between traditional leadership's land allocation and conservation have resulted in people settling on protected area's boundaries.
- Unsustainable mining along rivers in Hurungwe pollute the rivers, especially along the Angwa river that borders with Mbire, Kazangarare ward 9 and along the Musengezi River in Muzarabani. There have been efforts by some foreign mining companies to mine in the Muzarabani Wilderness.
- In Hurungwe and Muzarabani districts, field expansion for tobacco farming and tree cutting for tobacco curing are key drivers of deforestation and habitat destruction. The use of pesticides, fungicides and synthetic fertilisers for tobacco production poison the soil and the water courses. Tobacco has serious social impacts e.g. driving up gender-based violence as benefits are disproportionately shared between women and men.
- Disrespect of sacred shrines by churches that are desecrating some ritual sites and doing their spiritual cleansing within the traditional ritual sites for example, in Chikomo CheHurungwe, where rainmaking ceremonies are conducted under Chief Chundu.
- Poaching fish on Lake Kariba, especially during the night.

Sustainable Biodiversity Practices and Efforts

The respondents indicated a range of conservation activities practiced in their communities. If well implemented, these activities can assist in the restoration of the environment. Most of the respondents indicated that they participate in tree planting, enforcing the law against those who indiscriminately cut trees, and break the law and practice poaching (Figure 11).

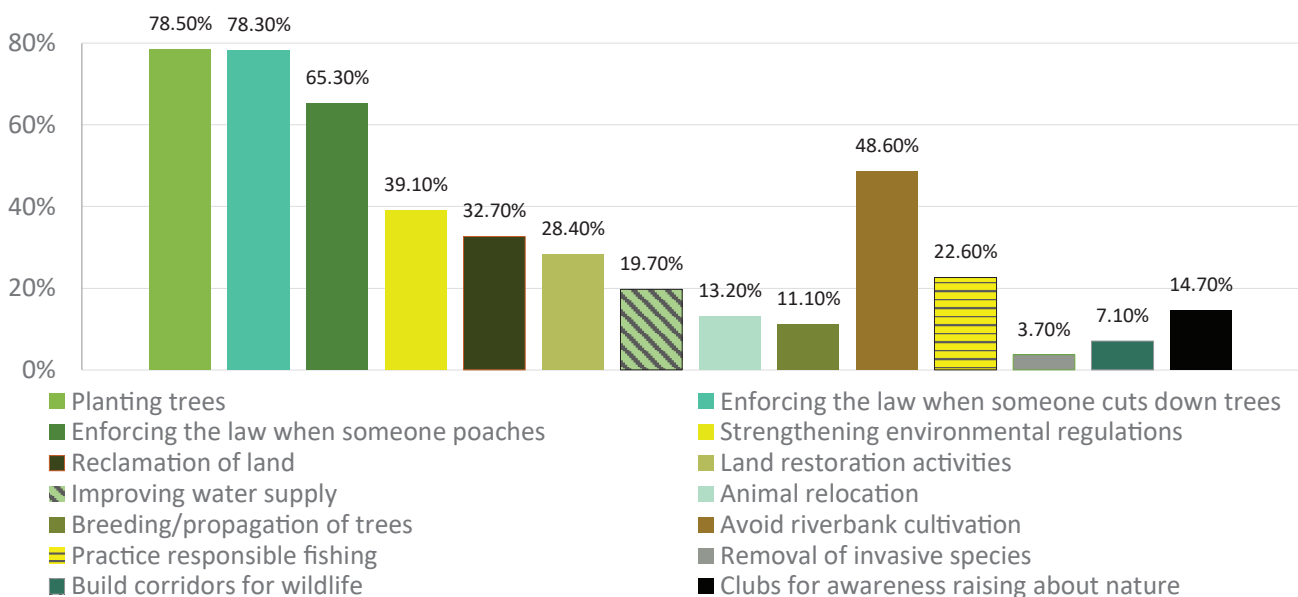


Figure 11: Conservation practices in the landscape (Aggregated)

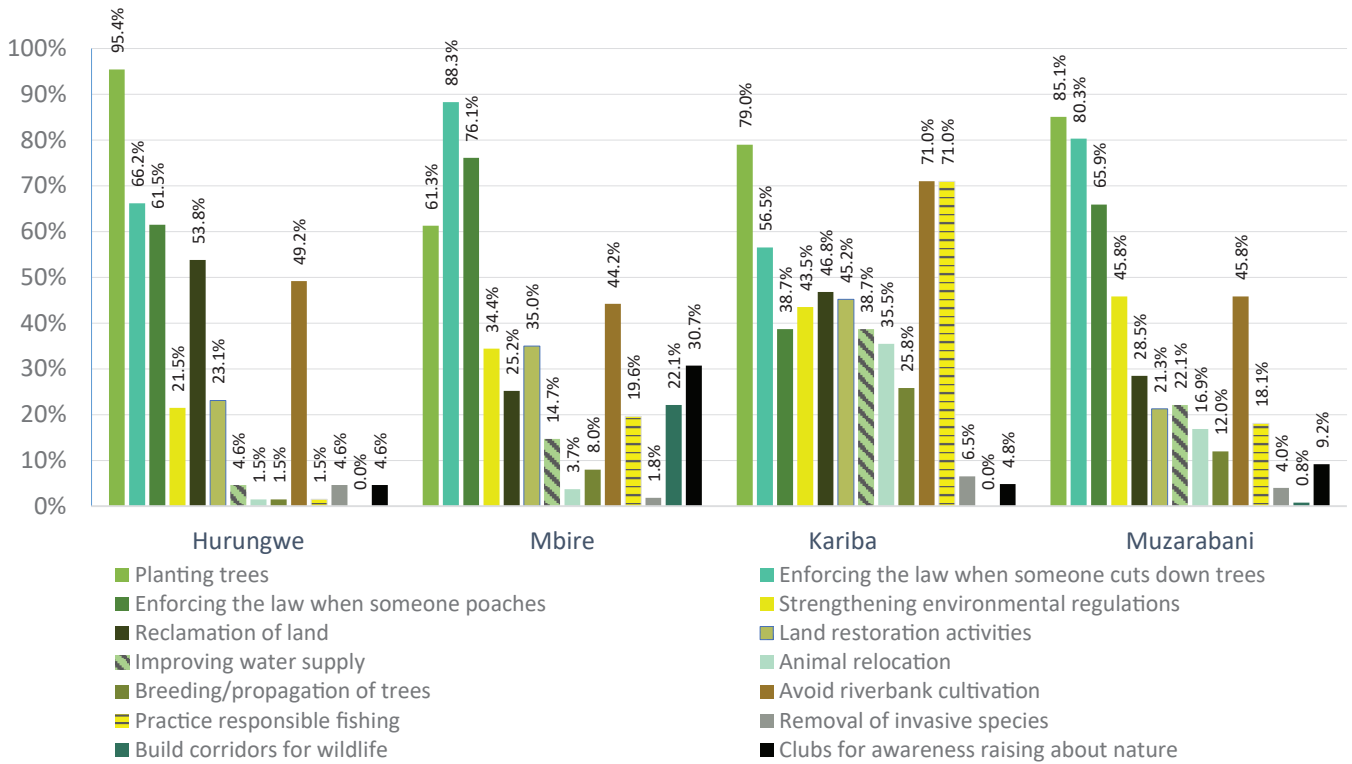


Figure 12: Conservation practices in the districts at community level

Most households plant trees and establish fireguards for fire control. These practices are recommended by agriculture extension workers. There is an increasing uptake of agroecology practises especially under Government’s pfumvudza approach.

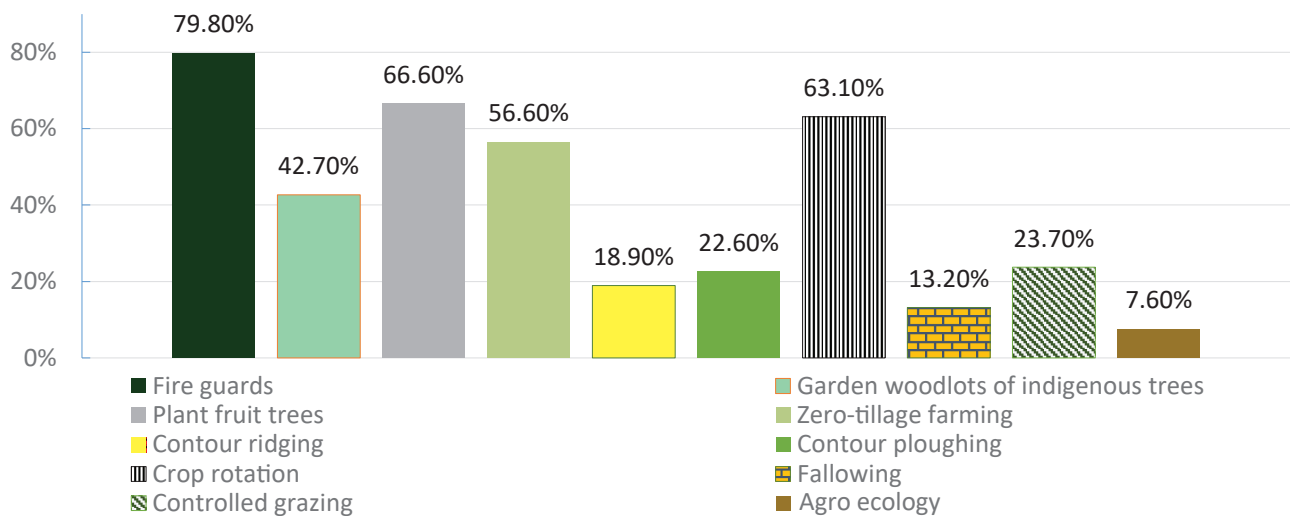


Figure 13: Conservation practices at household level

During the field observation, it was established that most households are managing woodlots through proper pruning. Most of the woodlots are the natural mopani trees which are managed especially around the homesteads.

Summary of Positive Nature Conservation Practices

- Poaching is outlawed and reported in the landscape just like anywhere else in the country.

- There are lots of efforts to save trees including the adoption of tsotso stoves to reduce the use of firewood, and solar panels.

- The Parks and Wildlife Management Authority has set up base camps for rangers to quickly respond to problem animals and illegal wildlife hunting.

- School environmental clubs are being implemented to educate and bring awareness of biodiversity and natural resource conservation and management.

- Tree planting and herbs gardens are promoted across the four districts, e.g. the Kahungwe School nursery in Muzarabani and Chitindiva School nursery in Hurungwe. My Trees Trust has successfully implemented afforestation and rewilding of the area connecting Karuru to Huyo creating a thicket that is becoming a wildlife corridor.

- EMA resource monitors, traditional leaders (chiefs, village heads, spirit mediums) and CAMPFIRE have invested great effort towards resource and biodiversity protection.

- The harvest of medicinal parts of the trees (bark, roots, leaves) should be done sustainably. It is prohibited to cut down trees.

- The sustainable harvesting of NTFPs, dispersing the seeds of the fruits trees and safeguarding their fruit is being promoted.

- Traditions and sacred places such as natural pools, springs, ritual sites are protected, and communities observe sacred days. Rain making sites like Chikomo cheHurungwe and *marende*³ sites in Tonga are protected and visited only by those that are spiritually responsible. Traditional leaders also enforce prohibitions like bringing laundry and pots to water points as these are seen as going against customs.

- Household members usually teach each other about the importance of natural resources.

- The rangers monitor illegal fishing and patrol the lake shore.

- A fence was once put up around the Mavhuradonha wilderness area to protect the area and its resources.

- There is woodlot preservation whereby *Ziziphus mauritiana* trees are managed at homestead and in the gardens. It is forbidden to cut baobab trees, if you do you are fined by the Chief.

Awareness on Natural Resource Management/Conservation Laws

There is a generally good understanding of the laws that govern the exploitation of natural resources as shown in figure 14 below. The community demonstrated awareness of the existing laws which include the Forest Act, Environmental Management Act and Parks and Wildlife Act. These laws regulate access, utilization, management, and conservation of natural resources. However, communities highlighted that they should be consulted before laws are passed/made by the government or local authorities since they are the custodians of the natural resources. There are laws in place and punishments for unnecessary cutting down of trees and protected tree species, anti-poaching laws. Concerns about veld fires and deforestation were repeatedly mentioned by the participants in the FGD and KIIs. As one interviewee said, “veld fires caused by offenders may end up destroying the vegetation thereby reducing the species diversity per unit area”.

³ Place or ritual where rainmaking and gratitude for good harvests are made through offerings to ancestors. This ritual is also protects the harvest from vermin, predators or wildlife

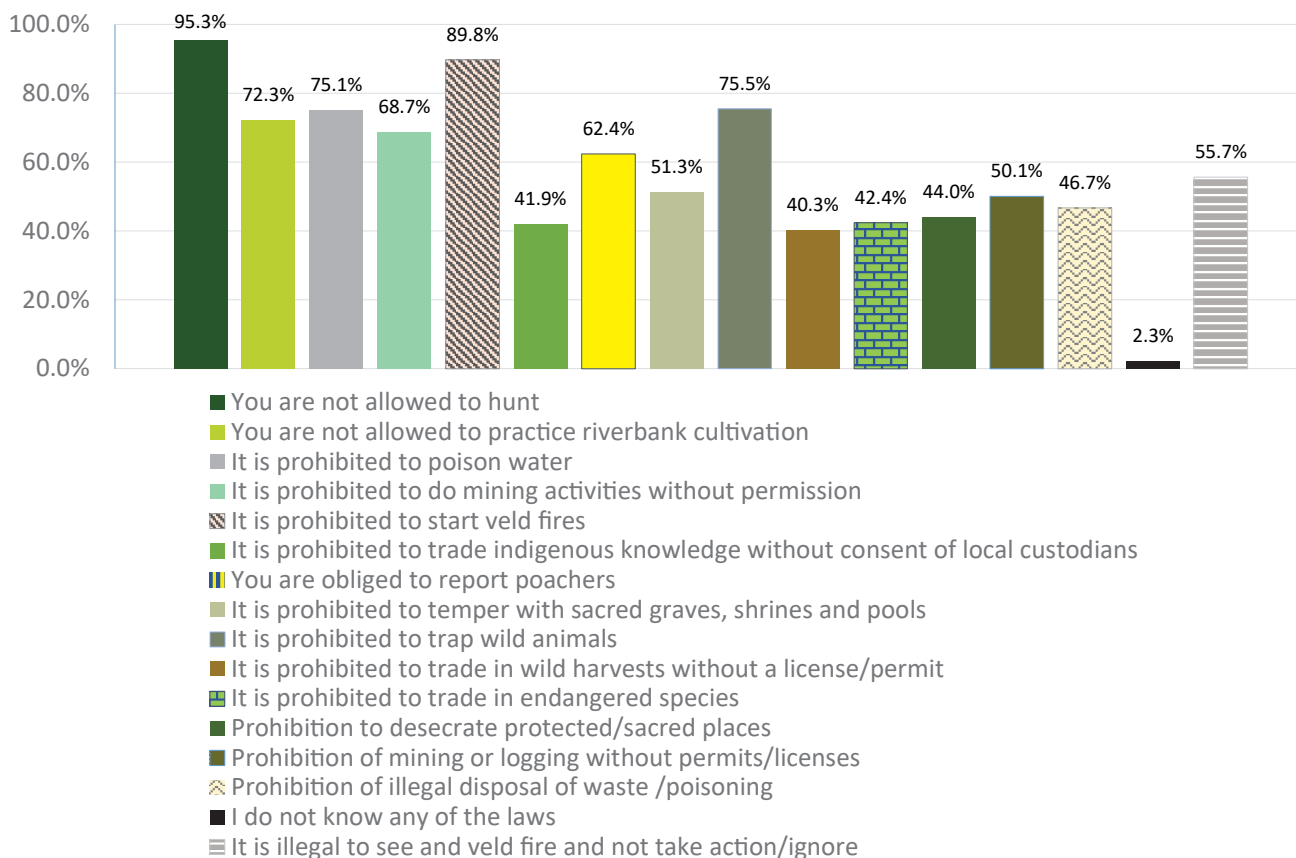


Figure 14: Knowledge of existing laws across the landscape

Penalties for Violating Conservation Natural Resource Management Laws

While communities basically are aware of the prohibitions related to biodiversity conservation, they are largely informed about what they face if they break the laws. Most of them are aware of the risk of being arrested, the possibility of a fine or being sentenced to jail (figure 15). Participants acknowledged that they were aware of local authority's bylaws which are usually enforced by scouts.

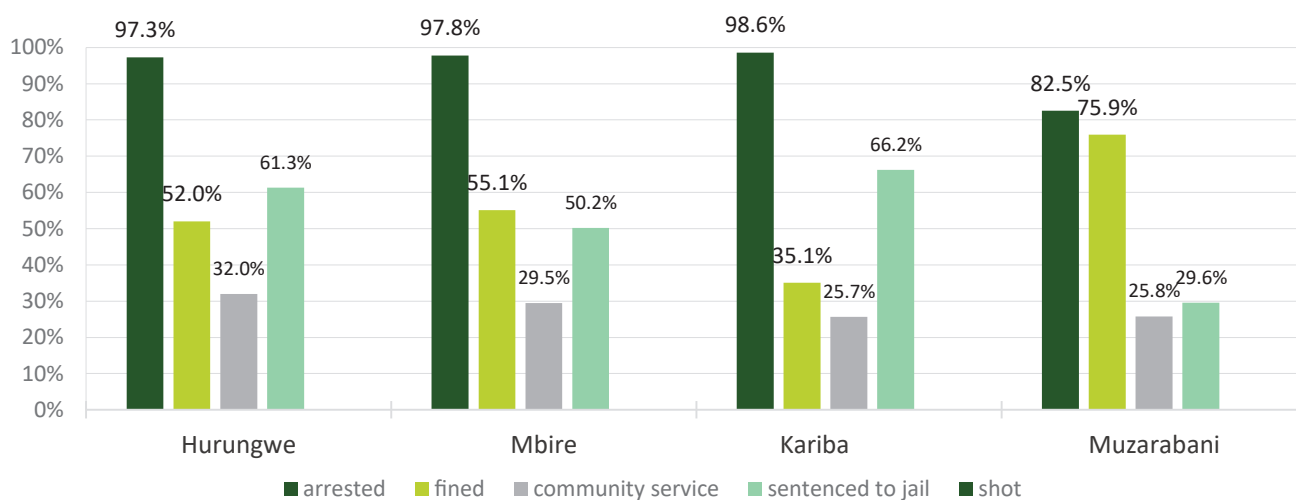


Figure 15: State penalties for violating conservation laws



Customary laws have different ways of handling transgressions to biodiversity conservation. When people commit grave offences, they may be asked to leave the chiefdom (eviction), paying a beast /monetary equivalence, pay in grain, performing spiritual cleansing, blacklisting offenders among other measures. In all the districts visited, the chiefs, headmen and village heads command substantial authority and local people hold them with respect.

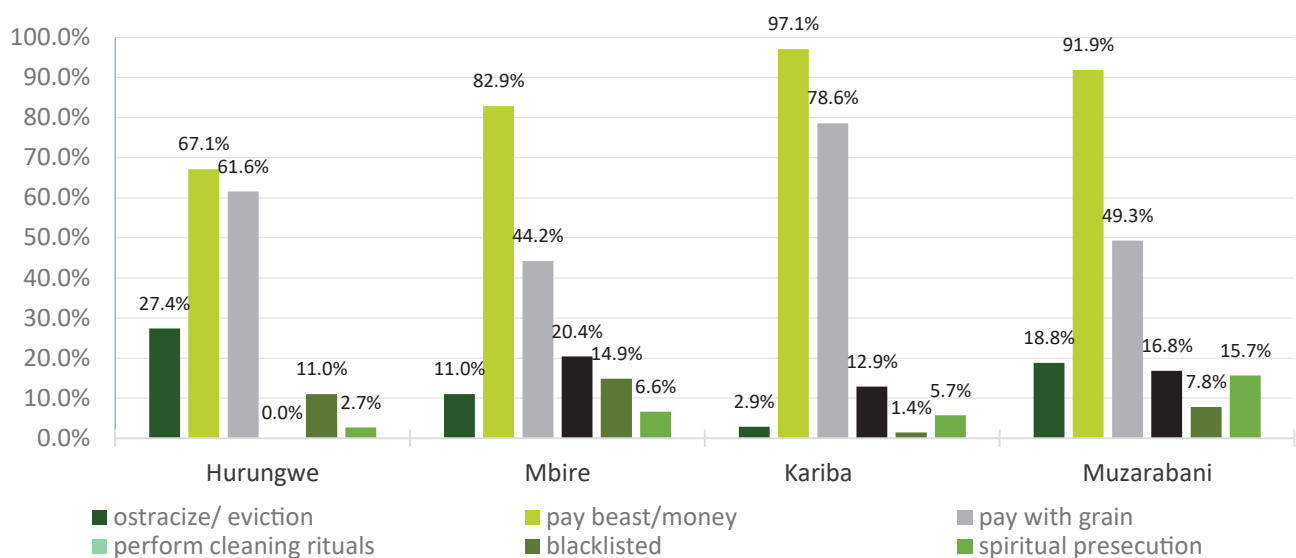


Figure 16: Traditional penalties for violating conservation laws

Awareness of conservation agencies

Environmental management agencies are very well known in the landscape. The most popular agency was EMA followed by ZimParks (figure 17).

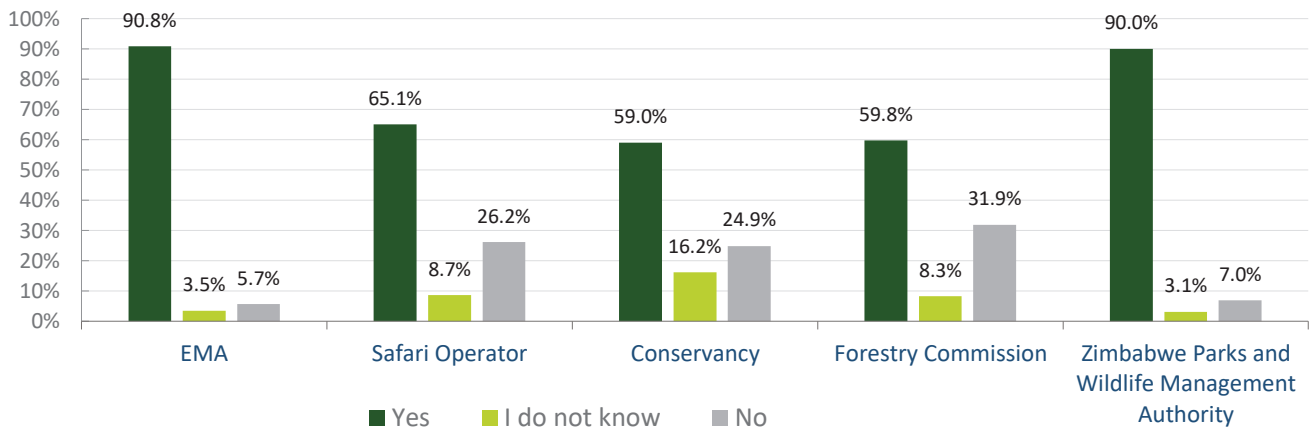


Figure 17: Familiarity with conservation institutions

Community-based Structure for Natural Resource Management

Based on FGDs and KIIs, participants indicated that they had environmental committees in all wards, but community scouts are only found in wards with high HWC incidence. Both environmental committees and community scouts have the key role of raising community awareness on how to respond in the event of wild animal intruding into communities. The RDCs have community scouts that patrol in a bid to protect natural resources. There is a camp site in the ward to respond to any cases of HWC but Council does not have enough resources to serve its purpose. The community feels there is a need to increase the number of scouts and provide them with a working and efficient radio system since network connectivity is a challenge, and vehicle/motorbike for ease of mobility which should be locally position. Community-based wildlife committees exist in HWC prone areas and margins of protected areas where they raise awareness on HWC.

Are there any community-based environmental/natural resource committees in your Ward?

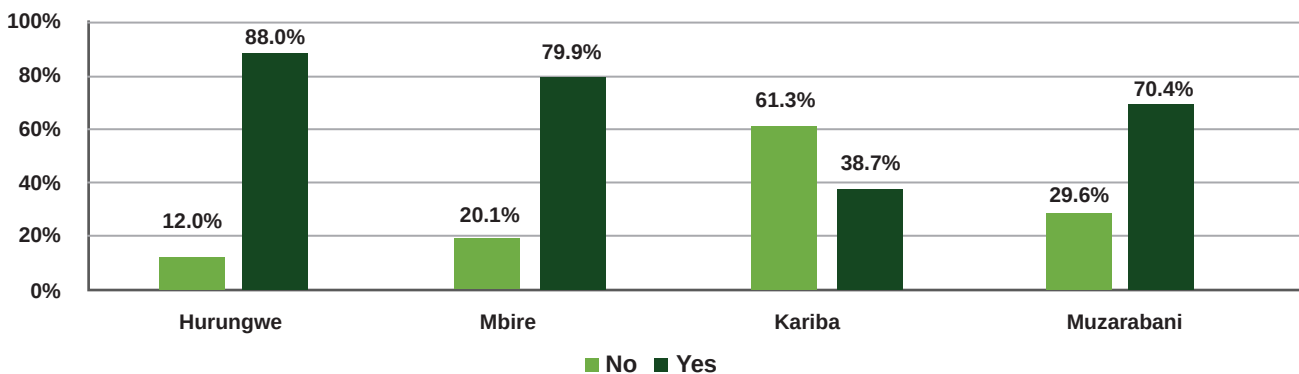


Figure 18: Knowledge about the existence of environmental/natural resource committees

In Hurungwe, Mbire and Muzarabani districts, most of the respondents are aware of the existence of environmental committees. In Kariba District however, the majority of the respondents affirmed there were no environmental committees in the ward (see figure 18). Slightly over 75% of the respondents confirmed that there are scouts/ rangers in their wards, 15 % said there are none.

Human Wildlife Conflicts Prevalence in the Landscape

Of the 747 people interviewed, 71.5% indicated that they had experience HWC before while 28.5% had not. Exposure to HWC is context specific, respondents in Nyaminyami experience more water related conflict with hippos and crocodiles and confrontation with game protection unities (wards and rangers).

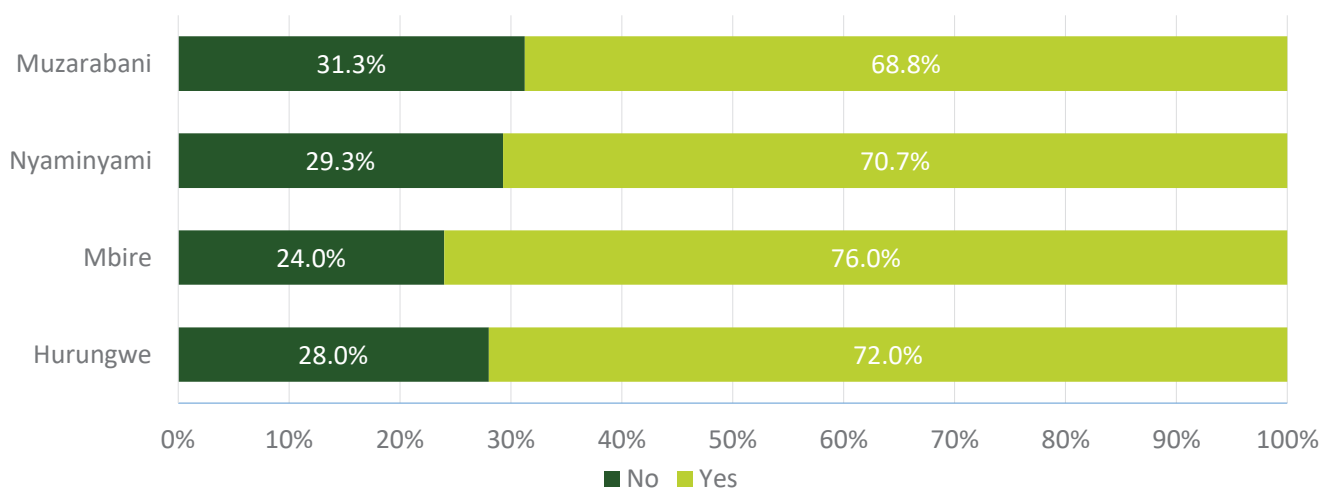


Figure 19: Experience of Human Wildlife Conflicts

Almost all respondents recommend that wildlife should be fenced off. Among those who said wildlife should be fenced off, a vast majority (78.3 %) suggested the use of electric fences is best. Unfortunately, electric fences are expensive to install and maintain.

Table 6: Type of fence to fence off wild animals

	Barbed wire	Beehives	Branches	Chilly fence	Electric fence	No fence	Other	Thorny bushes
Hurungwe	20.0%	0.0%	0.0%	1.3%	78.7%	0.0%	0.0%	0.0%
Mbire	15.1%	0.9%	2.3%	1.4%	71.6%	3.7%	3.7%	1.4%
Kariba	1.6%	0.0%	0.0%	0.0%	98.4%	0.0%	0.0%	0.0%
Muzarabani	16.3%	0.8%	0.8%	0.8%	78.3%	0.3%	1.1%	1.4%

There are several reasons for the wildlife to be fenced off as shown in fig 20. The principal reasons mentioned are because wildlife destroy crop fields (98.6 %) and kill people (83.1 %) among others.

Table 7: Reasons for fencing off wildlife

	Hurungwe	Mbire	Nyaminyami	Muzarabani	Landscape average
They destroy the fields	100.0%	97.7%	98.4%	98.6%	98.50%
They destroy my assets	90.7%	51.4%	57.1%	55.8%	58.20%
They kill people	84.0%	86.7%	100.0%	83.1%	85.80%
They should be protected	29.3%	30.3%	6.3%	52.7%	39.20%
They can get extinct due to killing	17.3%	14.2%	15.9%	34.1%	24.60%
Rabies transmission or other diseases	2.7%	23.4%	20.6%	36.9%	27.70%
They attract more tourists	6.7%	10.6%	0.0%	31.8%	19.80%

Among those who think wildlife should not be fenced off, the main reasons are because then they will not be able to access firewood and because they will be restricted in accessing wildlife and forests (Figure 20).

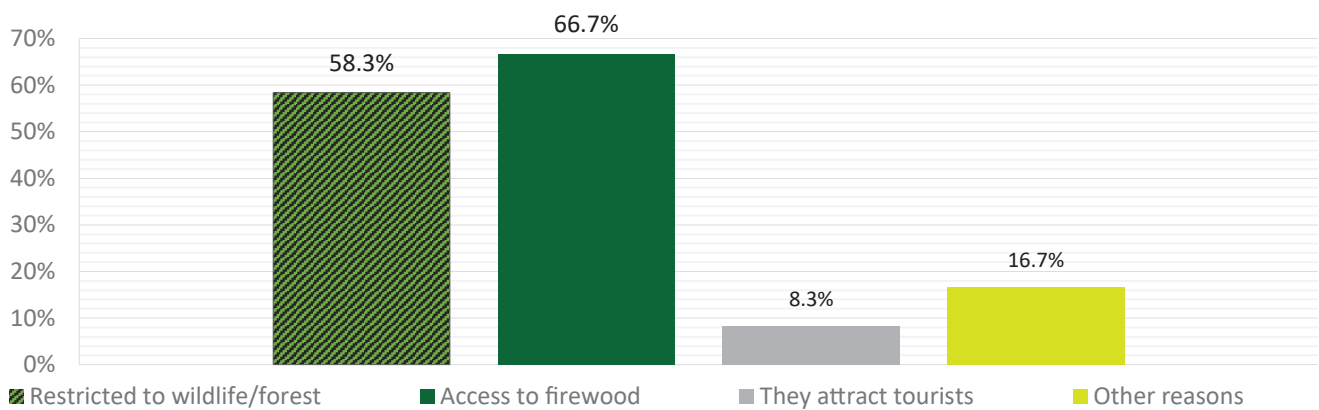


Figure 20: Reasons for not fencing off wild animals

Table 8 shows the reasons that respondents gave for not favouring fencing. Hurungwe District is not shown here because all the respondents supported fencing off wild animals.

Table 8: Reasons for not fencing off wild animals by district

	Restricted to wildlife/forest	Access to firewood	They attract tourists	Other reasons
Mbire	45.5%	54.5%	9.1%	36.4%
Kariba	83.3%	91.7%	0.0%	8.3%
Muzarabani	46.2%	53.8%	15.4%	7.7%
Landscape average	58.3%	66.7%	8.3%	16.7%

Patterns of Predation (season, time, and place)

In terms of livestock predation, most participants (42.1%) think that predation happens all year round and 41% expressed that predation happens during the hot wet season. Only 16.8% of the respondents mentioned that wild animals usually attack livestock in the cold dry season (Table 9).

Table 9: Time of the year where the most predation happens

	All year round	Dry/Cold Season	Hot Rainy/Summer Season
Hurungwe	34.1%	22.0%	43.9%
Mbire	46.5%	34.4%	19.1%
Kariba	76.5%	13.7%	9.8%
Muzarabani	44.7%	23.4%	32.0%
Average	47.1%	21.0%	31.9%

The interviewed households indicated that they use different approaches to protect their livestock against wild animal attacks. The most popular approaches are the use of a kraal (86.1%) and dogs (36.8%). Patrolling at night (24.2%), using sounds (22.4%) and fire (22.9%) are practices used by the communities to deter predators from attacking livestock.

According to the respondents, chicken, goats, and cattle are the most widely affected livestock by wild animal attacks (see Table 10).

Table 10 Most frequently attacked livestock

In case of livestock predation, what animals were killed/attacked?	Percent
Chicken	71.80%
Goat	60.60%
Cattle	35.70%
Sheep	16.10%
Dogs	10.70%
Donkey	7.40%

The most common form of protection used against carnivore predation was the kraal (86.1%), which is an enclosure made of poles and horizontal bars. They can be constructed using different materials. Dogs (26.3%), sounds (22.4%) and fire (22.9%) are used to protect the cattle against carnivores.

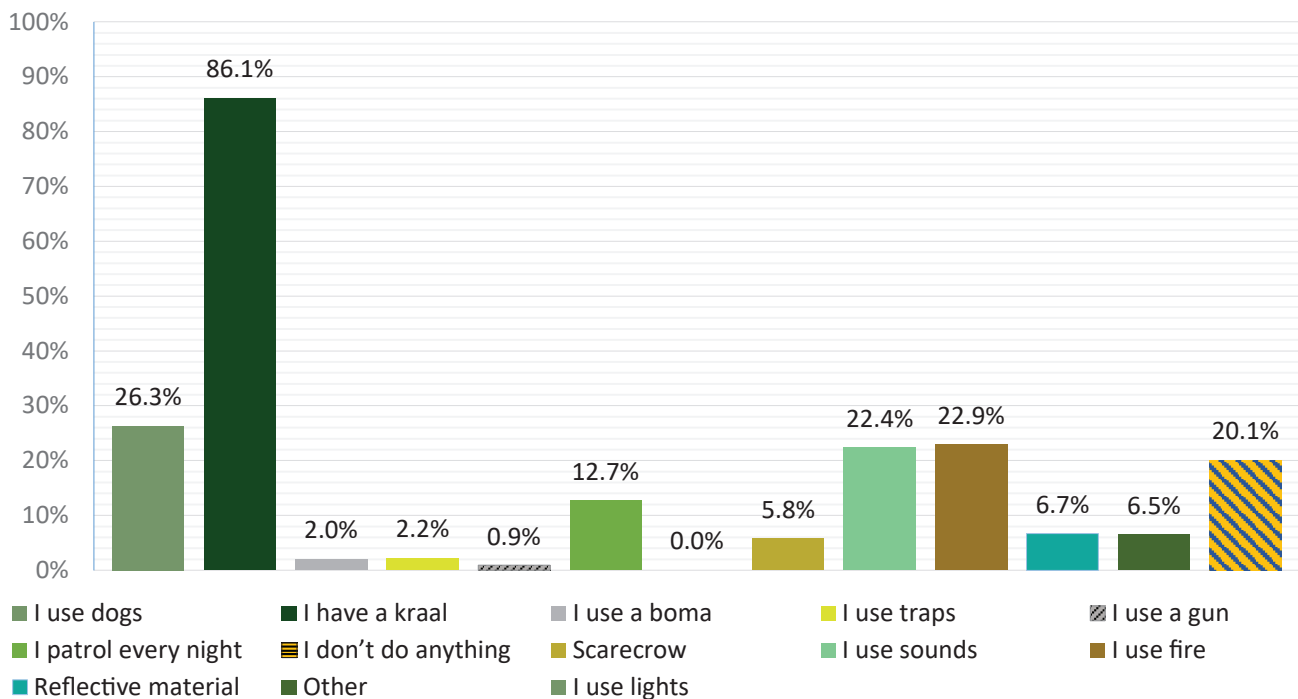


Figure 21: Methods used to protect livestock against carnivore predation

Very few respondents use guns (0.9%), bomas (2.0%) and traps (2.2%) and no one does nothing in the event of carnivore predators. In Hurungwe small holder farmers have resisted the uptake of collective bomas because they feel that other farmer will use juju to steal their wealth.

Table 11: Strategies to protect livestock against predator's attacks

	Hurungwe	Mbire	Nyaminyami	Muzarabani	Landscape average
I use dogs	12.0%	25.8%	20.0%	47.4%	26.3%
I have a kraal	89.3%	85.8%	81.3%	89.0%	86.1%
I use a boma	2.7%	0.4%	8.0%	0.6%	2.0%
I use traps	0.0%	1.3%	0.0%	5.5%	2.2%
I use a gun	0.0%	0.9%	0.0%	1.4%	0.9%
I patrol every night	5.3%	18.7%	2.7%	24.2%	12.7%
Scarecrow	6.7%	5.8%	0.0%	10.2%	5.8%
I use sounds	12.0%	17.3%	45.3%	22.0%	22.4%
I use fire	2.7%	13.8%	41.3%	22.0%	22.9%
Reflective material	1.3%	4.4%	33.3%	0.6%	6.7%
I use lights	4.0%	28.9%	41.3%	4.7%	6.5%
Other	13.3%	11.1%	0.0%	6.1%	20.1%

With regards to the responsiveness of the responsible authorities to wildlife predation, the majority of the respondents (29.4%) think that officials are slightly responsive, 24.4% think that officials are moderately responsive while only 17.9% think that officials are very responsive. Those who think the officials were not responsive and very unresponsive account to a total of 28.2%.

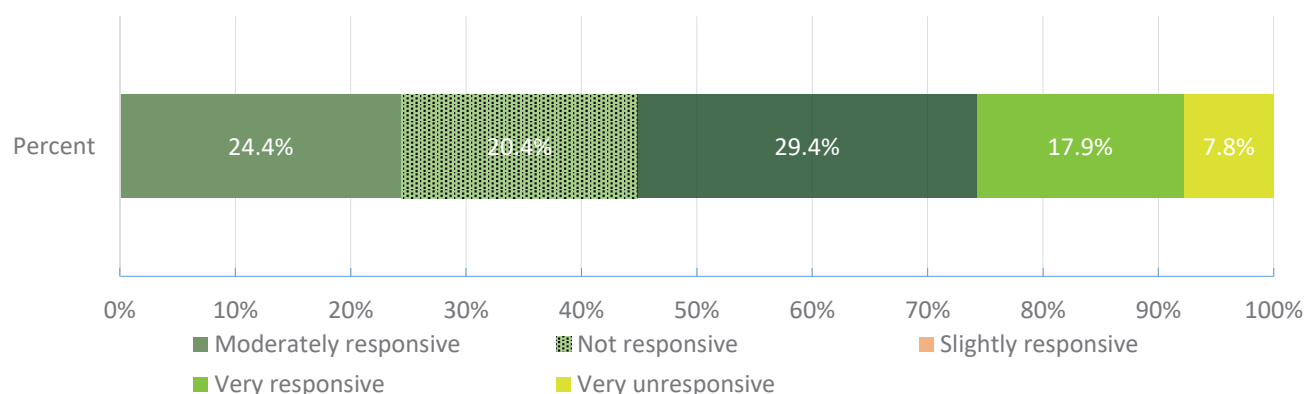


Figure 22: Responsiveness of the officials to livestock predation and crop raiding problems

Crop Damages by Wildlife (type of crops, quantity, type of predator)

Maize, sorghum and green vegetables are the crops that suffer the most from wildlife damage. The prominent species that raid crops are elephants, baboons, monkeys and quelea birds. According to Fig 23 below, crop attacks are more prevalent during the hot wet season, which is the summer cropping season. As soon as the harvest period ends, and the dry season starts, wild animals encroach human settlement in search of leftovers.

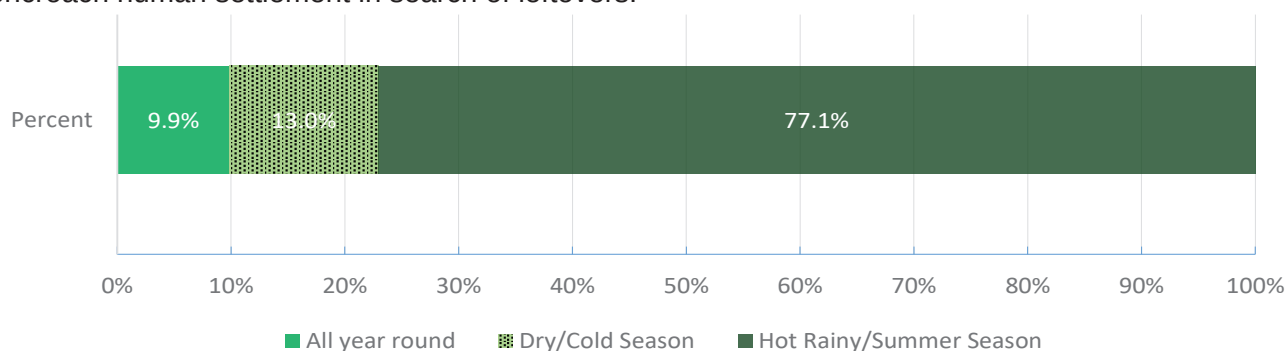


Figure 23: Seasonality of HWC-related crop damage

Season when most of the crops are damaged by wildlife by district

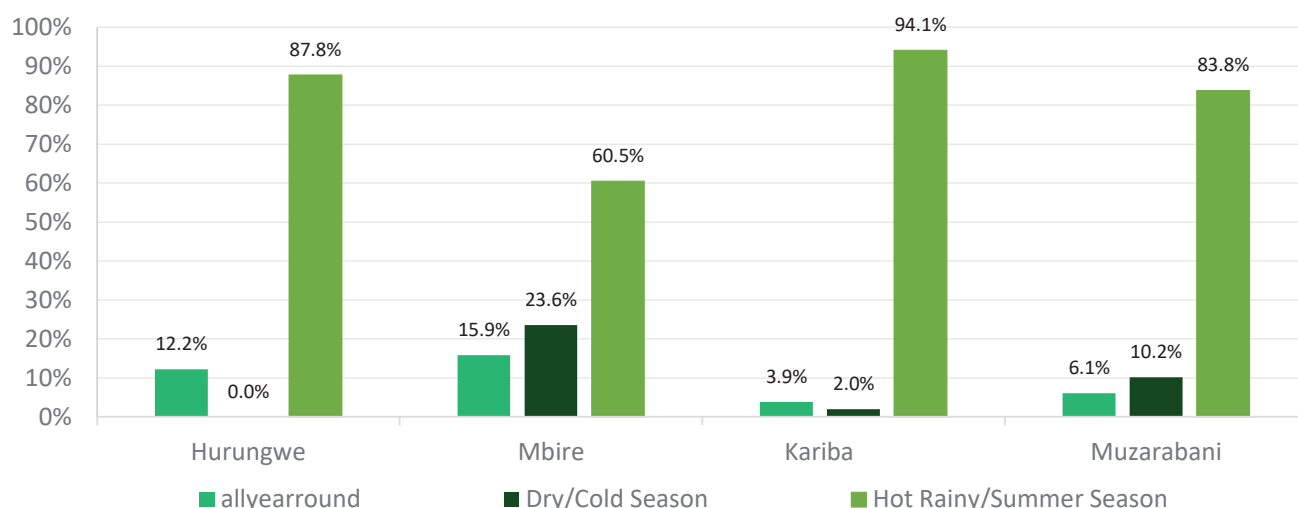


Figure 24: Season when most of the crops are damaged by wildlife



Maize Field destroyed by Bush pigs in November Village in Nyamakate Ward 7, Hurungwe District

Protection of crops and livestock against predation

The most common materials used in the area for fencing are natural, 60.6% of the respondents use thorny bushes followed by branches (42.8%). It is very interesting to find that none of the farmers are using beehives as a deterrent mechanism against elephants, and only 3.3% have adopted the use of chili to deter elephants.

Table 12: Materials used for fencing fields and gardens

	Branches	Barbed wire	Thorny bushes	Chili fence	Beehive	No fence
Hurungwe	4.0%	34.7%	4.0%	0.0%	0.0%	61.3%
Mbire	39.7%	9.2%	72.1%	1.7%	0.9%	20.1%
Kariba	66.7%	5.3%	58.7%	0.0%	0.0%	29.3%
Muzarabani	47.8%	32.3%	65.5%	5.7%	0.0%	13.0%
Landscape average	42.8%	22.8%	60.6%	3.3%	0.3%	21.7%

Different techniques are used to protect the crops from wildlife damage as seen in figure 25 below. The most common ones are self-patrolling, beating drums and using fire to scare animals. Research participants from the KIIs and focus groups indicated that most of these strategies have to be combined in order to be effective. For example, some people claimed that the chili bricks become less effective when it is raining. Moreover, what works for some animals may not work for others. chili bricks cannot be used against other animals than elephants. At the same time, these strategies are not adopted uniformly in the landscape. Whereas individual patrols work well in some areas and for some animals beating drums may give better results elsewhere.

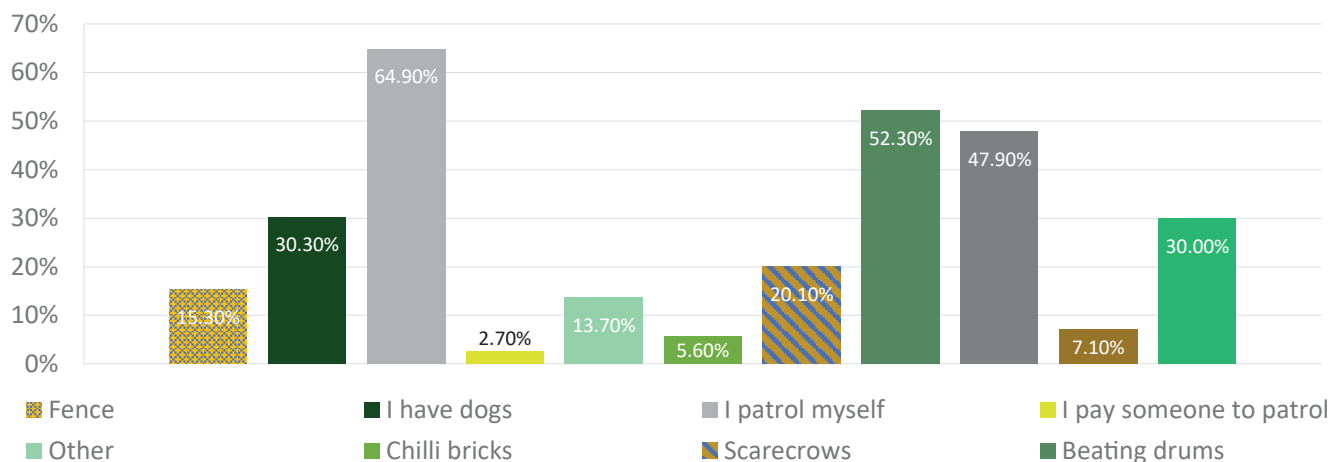


Figure 25: Crop Protection against herbivore predation

The respondents indicated that maize and sorghum are the most widely damaged crops while okra and sugar cane are the least damaged crops (see table 13).

Table 13: Crops that are damaged by wild animals

In the case of crop damage, which crops were damaged?	Percent
Maize	64.9%
Sorghum	45.2%
Green vegetables (small gardens vegetables)	34.1%
Sweet potatoes	17.1%
Cotton	16.5%
Fruits	15.9%
Tobacco	8.4%
Beans	7.6%
Millet	5.6%
Okra	5.1%
Sugar cane	2.9%

Farmer Nurse Lunga in her Sorghum field in Negande Ward 6, Kariba District, Mashonaland West Province



Communities deal with crop predation in different ways. The most common practice is patrolling in the fields, followed by beating drums and shouting and the least popular are paying for someone to patrol and the use of energized toys.

Table 14: Crop protection against herbivore predation

	Hurungwe	Mbire	Nyaminyami	Muzarabani	Average
Fence	2.7%	8.3%	12.0%	22.8%	15.3%
Use of dogs	9.3%	21.8%	2.7%	45.4%	30.3%
I patrol myself	80.0%	69.4%	5.3%	71.2%	64.9%
I pay someone to patrol	1.3%	1.7%	0.0%	4.1%	2.7%
Chili bricks	2.7%	11.8%	10.7%	1.4%	5.6%
Scarecrows	26.7%	20.5%	0.0%	22.6%	20.1%
Beating drums	44.0%	60.3%	66.7%	46.2%	52.3%
Shouting	42.7%	41.5%	84.0%	45.7%	47.9%
Energizer	0.0%	10.5%	17.3%	4.3%	7.1%
Use of fire	6.7%	40.2%	56.0%	23.1%	30.0%
Other	18.7%	20.5%	2.7%	10.6%	13.7%

Most of the respondents reported problem animals to their councillors, followed by their village heads (Figure 38). Communities experience delayed response from ZimParks after reporting problem animals. In most wildlife affected areas, there are few rangers to cover extensive areas and there is only one vehicle available for the rangers to react. There are collaborations between ZimParks' rangers and RDC's scouts especially where reinforcements are required. The problem animal handling process seems to be the key area of conflict between communities and other conservation actors.

Reporting of problem animals across the landscape

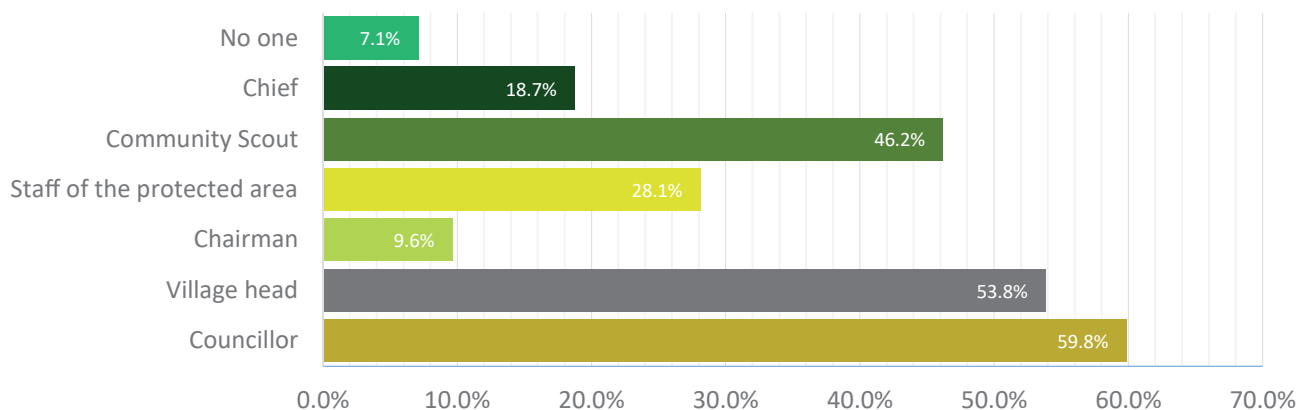


Figure 26: Responsiveness to HWC grievances (Landscape)

Table 15: To whom do you report problem animals (disaggregated by district)

	Councillor	Village head	Chairman	Staff of the protected area	Community Scout	Chief	No one
Hurungwe	17.3%	70.7%	1.3%	62.7%	46.7%	4.0%	8.0%
Mbire	51.1%	34.9%	5.2%	19.2%	74.2%	17.0%	1.7%
Kariba	68.0%	56.0%	1.3%	32.0%	52.0%	29.3%	0.0%
Muzarabani	72.3%	61.7%	15.8%	25.8%	27.4%	20.7%	11.7%
Average	59.8%	53.8%	9.6%	28.1%	46.2%	18.7%	7.1%

From the views of the respondents, it was established that the councillors, community scouts/rangers are usually more responsive to HWC reports and grievances.

Table 16: Who is the most responsive- respondents across the valley

Office/Institution	Percent
Chairman	0.4%
Chief	1.3%
Community Scout	21.4%
Councillor	32.3%
No one	12.6%
Staff of the protected area	11.1%
Village head	16.6%

The place where respondents experience conflicts with wildlife more often is in their fields, followed by their homesteads. Fetching water from the river poses a risk of being attacked by wild animals (16.7 %). Since this activity is dominated by women and girls, the attacks, mostly by crocodiles, are very gender skewed. When the dry season approaches and water sources diminish, people tend to visit the Musengezi river for water access. This exposes people to attacks by crocodiles.

Where do you experience conflicts with wildlife more often across the Zambezi Valley

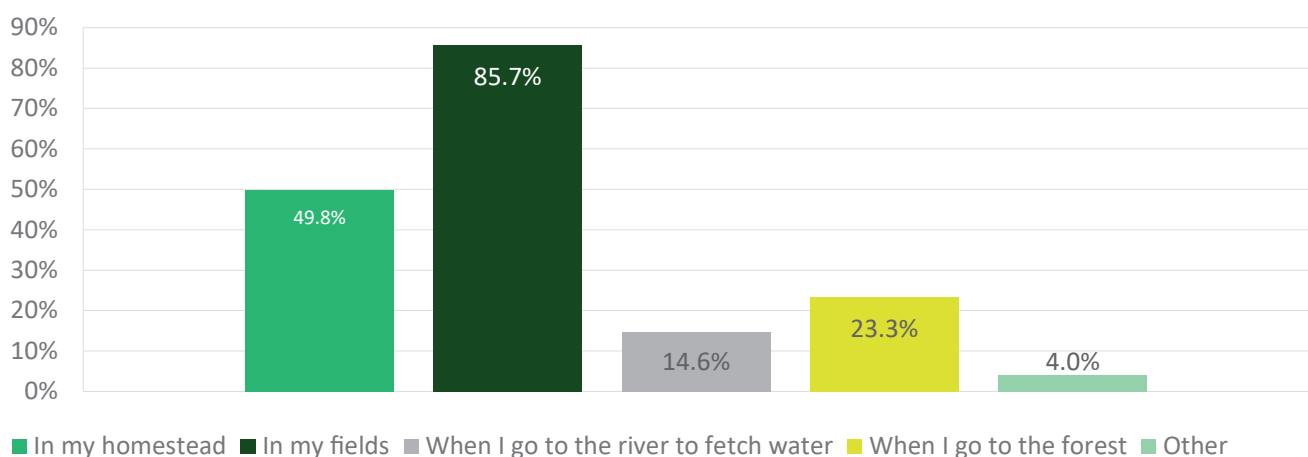


Figure 27: Where is HWC experienced? (Landscape Patterns)

Table 17: Where do you experience conflicts with wildlife more often across the Zambezi Valley

	In my homestead	In my fields	When I go to the river to fetch water	When I go to the forest	Other
Hurungwe	35.0%	95.0%	2.5%	0.0%	2.5%
Mbire	51.0%	79.0%	16.6%	22.9%	10.2%
Kariba	88.2%	88.2%	9.8%	5.9%	0.0%
Muzarabani	42.3%	89.3%	16.8%	33.2%	0.5%
Landscape average	50.0%	86.0%	14.6%	23.4%	4.1%

CAMPFIRE and Conservancy Work

Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) was designed by the then Department of National Parks & Wild Life Management (DNPWLM, now the Parks & Wildlife Management Authority, PWMA) in the mid-1980s (Martin 1986). The cornerstone of CAMPFIRE was the devolution of rights to manage, use, dispose of, and benefit from natural resources. Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) was designed by the then Department of National Parks & Wild Life Management (DNPWLM, now the Parks & Wildlife Management Authority, PWMA) in the mid-1980s (Martin 1986). The cornerstone of CAMPFIRE was the devolution of rights to manage, use, dispose of, and benefit from natural resources.

Regarding the understanding of CAMPFIRE, 64.1 % of the respondents indicated they know what it is, and the remainder does not know. The common agreement, especially among elderly respondents is that during the first years of implementation of the CAMPFIRE programs, communities received more benefits, and these were more frequent. The spread of biodiversity management projects such as those under the CAMPFIRE is limited. According to District officials, some of the conservation projects do not bring high revenues. During the first years of CAMPFIRE, the local authorities fenced protected areas to prevent the direct interaction between humans and wildlife. Communities have destroyed perimeter fences around the protected areas.

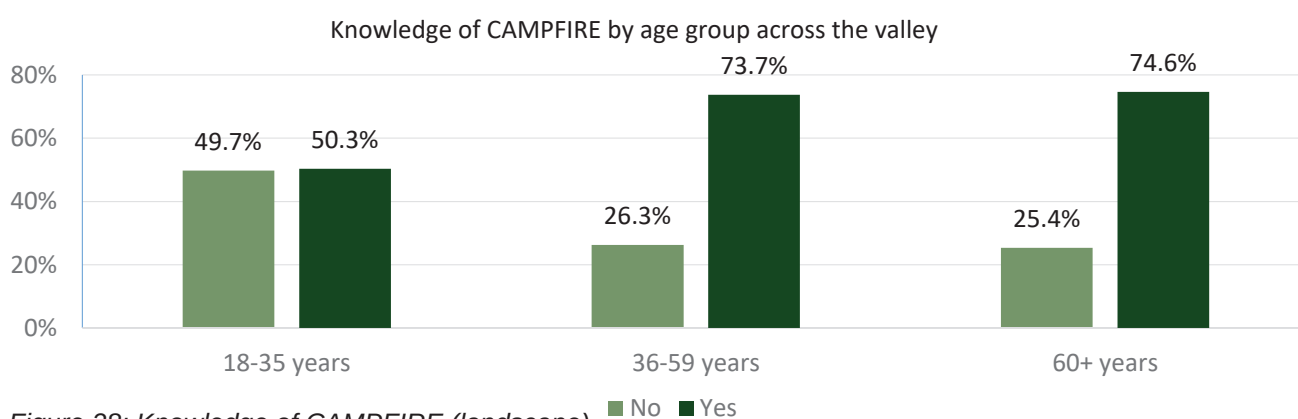


Figure 28: Knowledge of CAMPFIRE (landscape)

Table 18: Knowledge of CAMPFIRE by age categories and by districts

	Hurungwe	Nyaminyami	Muzarabani	Mbire	Landscape Average
18-35 years	77.8%	54.8%	39.6%	59.8%	50.3%
36-59 years	97.1%	80.0%	66.0%	76.1%	73.7%
60+ years	95.7%	77.8%	71.2%	63.3%	74.6%

Across the landscape, the community conservation efforts such as CAMPFIRE are well known. The younger people are less knowledgeable about CAMPFIRE because the project started to decline during the early to mid-2000s.

The majority of the respondents generally regard CAMPFIRE as a programme geared towards the conservation of nature. Others regard CAMPFIRE as a co-management facility while others see the programme as empowering communities.

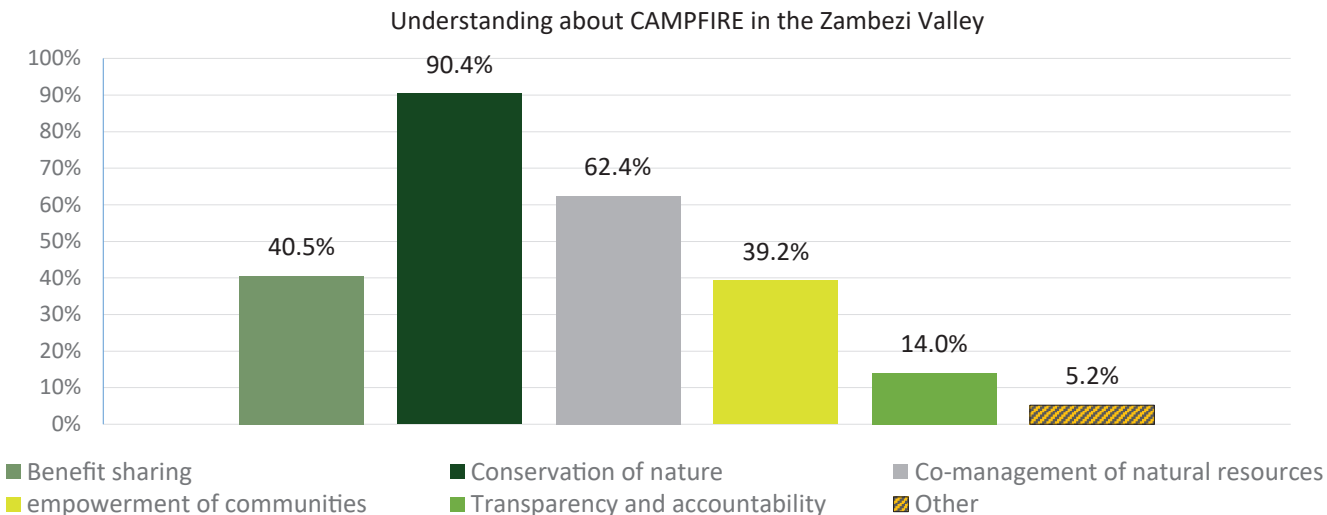


Figure 29: Communities’ knowledge about CAMPFIRE in the landscape

Only 50.1% of the respondents indicated that they have attended CAMPFIRE meetings.

Table 19: Attendance to CAMPFIRE or Conservancy meetings

Have you attended a CAMPFIRE or Conservancy meeting?		
	Frequency	Percent
No	239	49.9%
Yes	240	50.1%
Total	479	100.0%

Table 20: Attendance to CAMPFIRE or Conservancy meetings by district

Have you discussed about CAMPFIRE or Conservancy operations at ward or district meetings?		
	No	Yes
Hurungwe	44.9%	55.1%
Mbire	41.8%	58.2%
Kariba	69.2%	30.8%
Muzarabani	42.9%	57.1%
Average	45.70%	54.30%

Across the landscape, 54.3% of the respondents discuss issues related to CAMPFIRE during wards and district meetings. In Kariba, close to 70% of the respondents said they do not discuss CAMPFIRE at all.

Benefits from CAMPFIRE/ Conservancy

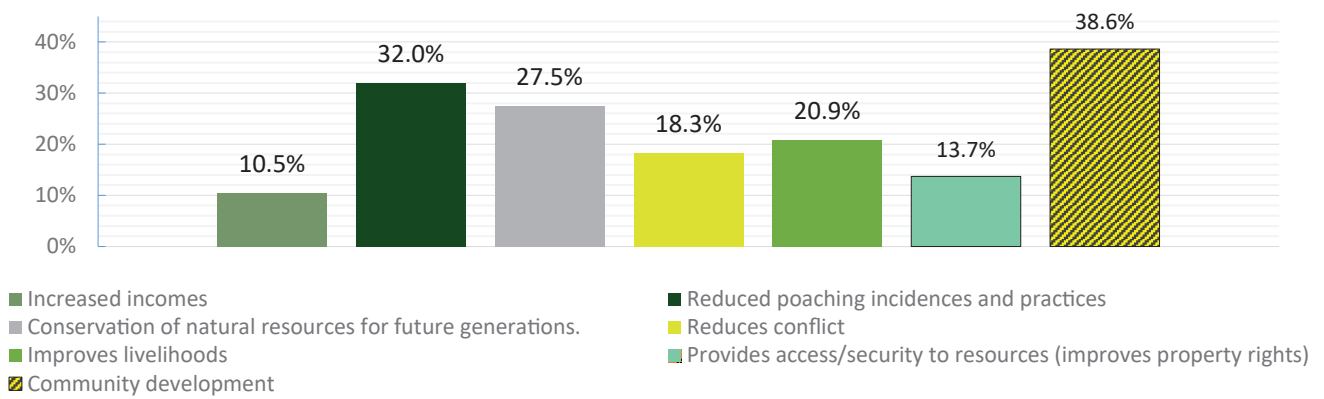


Figure 30: Perceived benefits of CAMPFIRE

In terms of the CAMPFIRE Programme and community conservancies, most of the respondents acknowledged that it promoted development and reduced incidents of poaching among other benefits illustrated in Fig 30 above. Mbire district is the most successful district in terms of the community conservancies. Because of the benefits they accrue from wildlife, respondent indicated that they are very protective of their wildlife. In some communities however, the communities indicated that government agencies deceive them by telling them that they are the custodians of the wildlife and when one animal is killed the game rangers descend heavily on them.



Natural Resources and Biodiversity Management Actors in the Landscape.

Traditional leaders conduct rain making ceremonies (*mukwerera*) to invoke the God of rain and request him to send down rain. The chiefs call on their village heads to monitor the natural resources, to enforce the laws and customs. The CAMPFIRE committees at village level serve to safeguard the abuse or misuse of natural resources. Offenders are punished using the traditional Leadership Act. Traditional leaders raise awareness on indiscriminate deforestation, especially wild fruit trees. **“Unfortunately, chiefs are giving land to people to settle and unfortunately the settled people indiscriminately cut trees. People have destroyed their traditions and do not appreciate natural resources”**. Development practitioners have distributed *tsotso* stoves in different wards. There have been initiatives towards land reclamation in different parts of the landscape and from different actors. State agencies: EMA, Forestry Commission, PWMA

are generally confronted with declining fiscal support which weakens the regulatory and monitoring efforts. The state agencies, however, still boast with the human capacity for conducting community trainings.

Forestry Commission, private safari operators, conservancies and Agritex in collaboration with EMA organize awareness campaigns on tree planting and veldfire protection. However, the Zambezi Valley together with other parts of the country have faced serious veldfires. Although many respondents (over 70%) claimed that they practise tree planting, there are few private nurseries in the district. Tobacco farmers pay a levy that goes to Forestry Commission for the “Afforestation Fund”, so they think they are entitled to cut down trees. The fund is used to establish nurseries to grow eucalyptus and other tree species.

The key actors in biodiversity protection practices in the landscape are:

- EMA,
- ZimParks
- Safari Operators
- Local Authority,
- Traditional Leaders.
- NGOs
- Tobacco companies
- AGRITEX
- Forestry Commission

Forestry Commission have trained community members that are acting as neighbourhood watch, aimed at protecting biodiversity. The Environmental Management Agency (EMA) does frequent patrols in the forest to check if there is any unlawful activity such as veld fires initiation. The Zambezi Valley Conservation Network is contributing towards the conservation of natural resources such as trees and wild animals.

Indigenous trees. Korekore and Tonga knowledge and practices have a long history of

protecting natural resources in Muzarabani, Mbire and Hurungwe e.g. the use of soap at sacred water points is prohibited. Understanding laws and natural resource governance structures including HWC, PAC are among the most relevant issues for the communities. There are base camps in Rwindi and Museredza wards where game rangers operate from. In Museredza ward, HWC and problem animals are more prevalent. Some of the efforts being implemented in the district include control for livestock movement out of the district, protection of endangered species

against illegal hunting through the deployment of scouts and establishment of firefighting committees. There has been great adoption of *tsotso* stoves and users testify that the stoves are efficient. *Tsotso* stoves require low quantity of firewood and significantly reduce the level of tree cutting at household level. The use of the stoves also depends on the size of the household. Smaller households are more amenable to use *tsotso* stoves than larger ones

Communities feel that they are not the real owners of the natural resources, because some of the natural resources (like wild animals) are destroying the crops and livestock and they have very little or no control over them. A range of ecosystem services are enjoyed from the available natural resources. Such services include the provision of food, soil protection, wind breaks, medicinal plants etc. Up until the late 1990s and early 2000s, communities and the local councils received direct benefits from the CAMPFIRE programme.

Knowledge, Perceptions and Attitudes on Natural Resources Management

In the 1950s, Muzarabani, Mbire and Hurungwe were less populated with a lot of forests and resources including wild animals. The forests had a lot of wild fruit trees, but some tree species have been cut down for tobacco curing and are currently in danger of becoming extinct in the area. The rivers had abundant water and were not silted. The biggest concern for the Muzarabani authorities is the deterioration of the wilderness in the Mavuradonha mountain. Tree cutting for charcoal is a key driver of deforestation in Mbire. Farmers are cutting down the trees to cure their tobacco and new settlers are encroaching into the wilderness. In both Hurungwe and Muzarabani, farmers have started moving their tobacco to forested areas to ease curing costs. Due to increased population, there is growing demand for resources such as land to graze their cattle, firewood for tobacco curing, timber to build etc. There is gold panning along the Mukorodzi river.

Traditional subsistence hunting is now outlawed and is now treated as poaching. When farmers settled in lower Muzarabani from Masvingo around 2003, they did not require fertilizers, but the soils have become poorer over the years. Various traditional ceremonies were done for the upkeep of the area and its resources. There was thick vegetation, bushes and plenty of wild animals. People used to mark their route with an axe going to the bush to mark the way back home. There were no major developments. There was one school in Muzungu, now Muzarabani. The major water source for drinking was Musengezi River. The government worked hard to eradicate tsetse flies over the years and now people can have cattle. The communities hardly benefit from tourism since the only income to the district comes from the lease of the Wilderness.

Custodians of Knowledge and Attitudes Around Biodiversity.

EMA resource monitors, traditional leaders (chiefs, village heads, spirit mediums) and CAMPFIRE scouts have invested great effort towards resource and biodiversity protection. The Mavhuradonha mountains range was sacred, but people have lost values and norms leading to encroachment. In the Kariba Dam, fisheries people without fishing permits also practice nocturnal fishing to avoid being caught. The lawbreakers feel that if they are not seen cutting down trees, they cannot be fined. When caught, local poachers are taken to the police and the courts for judgement. The fence around the protected areas, in Hurungwe and Mavhuradonha was vandalised and the authorities have not managed to replace it. There

is woodlot preservation whereby *maswau* trees are managed at homestead and in the gardens. It is forbidden to cut baobab trees, if you do you are fined by the Chief. The community is comfortable with freeing part of their land to have a protected area. School environmental clubs programme is being implemented to educate and bring awareness on biodiversity and natural resource conservation and management.

In terms of the trade-off between livelihoods and biodiversity, respondents indicated that they would prioritise livelihoods. Those who grow tobacco for example continue to cut down trees for field expansion and curing.



Students from Chitindiva Primary School in Hurungwe District, Mashonaland West Province

Biodiversity Protection Practices in the Area

No poaching is allowed in the districts. If wild animals are accidentally killed on the road, they should be left to be eaten by other animals. No poisons or nets are allowed for fishing. The harvest of medicinal parts of the trees (bark, roots, leaves) should be done sustainably. It is prohibited to cut down trees that are alive. Firefighting committees should have basic firefighting equipment. Tree planting is being practised through the establishment of nurseries such as the Kahungwe nursery in Muzarabani. Sacred places are treated as protected sites. No tree cutting is permitted at burial sites. Observing resting days like Chisi (Sunday). Hunting and poaching are prohibited. Some of the community members were trained by the Forestry Commission on the best practices of trees conservation and this has played a critical role in the reduction of deforestation. Household members usually teach each other about the importance of natural resources. There are community woodlot associations in upper Muzarabani. There are lots of efforts to save trees including the adoption of *tso*so stoves and solar panels to reduce the use of firewood.

The majority of the respondents are of the view the communities are performing average, good and very good work (totalling 81.1%) in terms of biodiversity conservation work. However, there could be some bias since the communities are self-evaluating. One key positive practice undertaken by households was the woodlot management with 70.1% of the households having a woodlot.

What do you think about the biodiversity conservation practices that your community is doing?

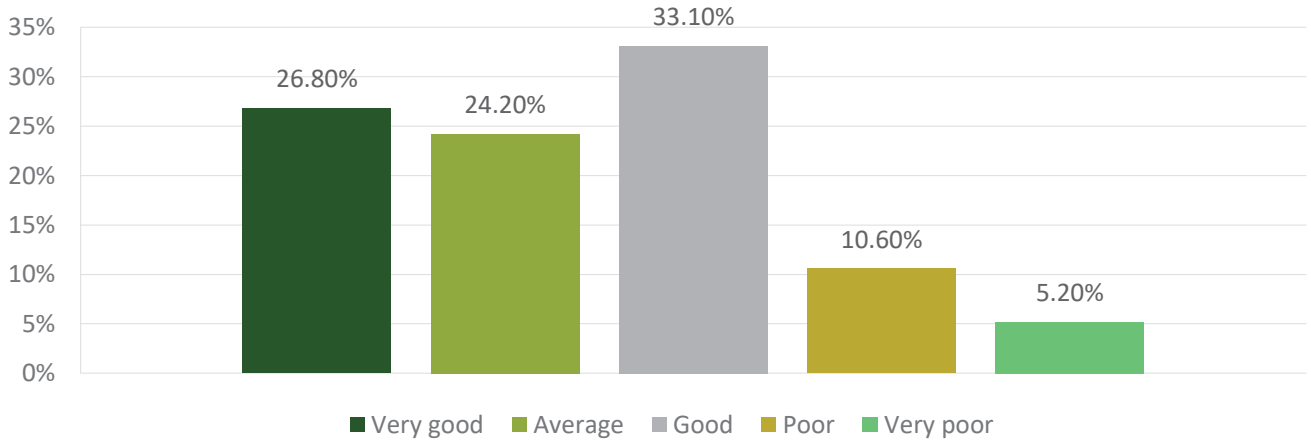


Figure 31: What do you think about the biodiversity conservation practices that your community is doing?

The interviewed households revealed that they engage in some negative conservation practices. The most widely practiced negative practice is cutting down trees (50.15) and this is largely because of the reliance on firewood for energy.

Familiarity with the roles and functions institutions involved in wildlife management

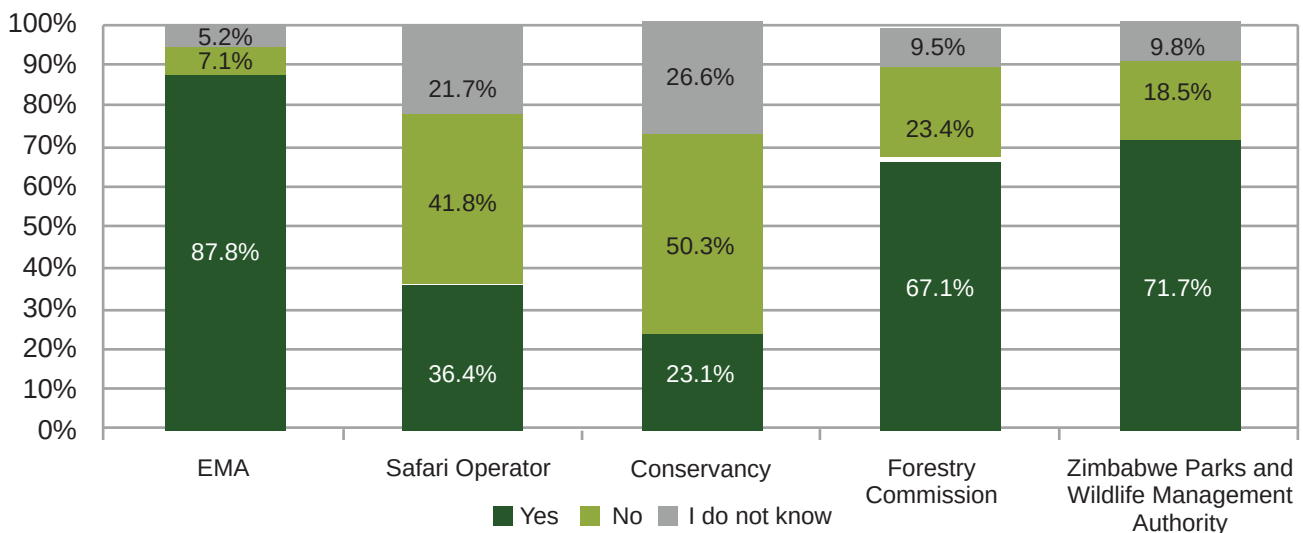


Figure 32: Familiarity with the roles and functions of institutions involved in wildlife management

During the FGDs and KIIs, respondents hinted that their relationship with National Parks and EMA was very sour. This is because EMA and ZimParks have had many people arrested and taken to jail.

Environmental Valuation

To establish how respondent value natural resources, they were asked whether they would give their land to increase biodiversity habitat. 50.9% of the respondents agree and strongly agree to give away their land to increase habitat.

Ecosystem service evaluation

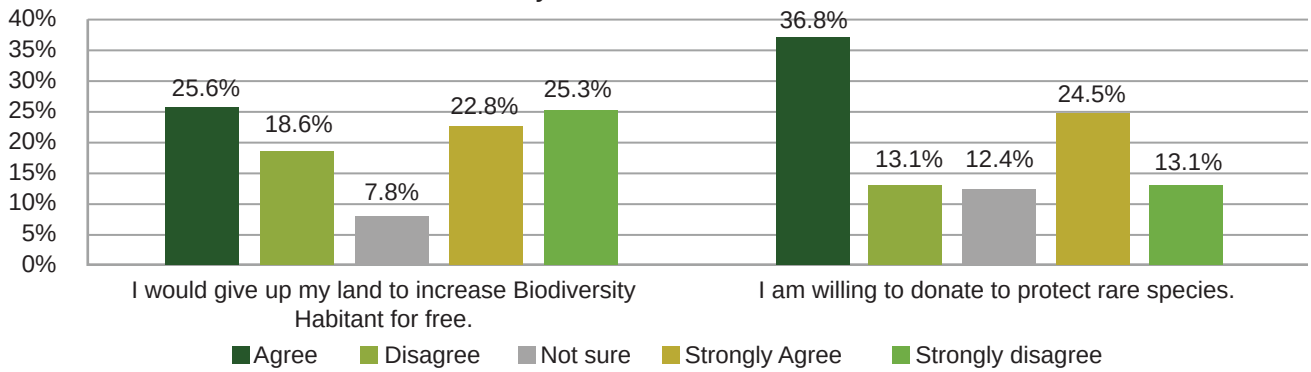


Figure 33: Familiarity with the roles and functions of institutions involved in wildlife management

When disaggregated by age, there is an indication that the older generations are more willing to give up their land to increase biodiversity.

I would give up my land to increase Biodiversity habitat for free					
	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
18-35 years	21.30%	24.50%	9.00%	18.40%	26.80%
36-59 years	24.10%	25.10%	7.10%	17.60%	26.00%
60+ years	22.80%	29.80%	6.10%	21.90%	19.30%

In terms of rare species protection, the majority of the people expressed their willingness to donate for the protection of rare species.

I am willing to donate to protect rare species.

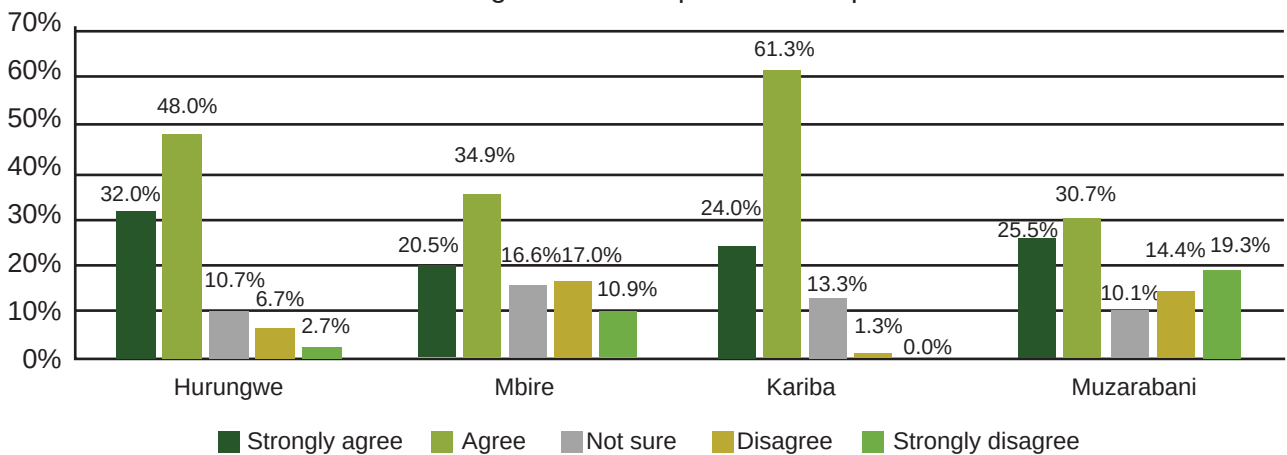


Figure 34: Familiarity with the roles and functions of institutions involved in wildlife management



Youth in attendance at the 2023 International Day of Forests in Muzarabani. Mashonaland Central Province



Conclusions

Understanding the perception and knowledge of these communities in natural resource management is essential for effective and sustainable practices. It allows for development of policies and strategies that align with local needs, traditions, and ecological nuances. The majority of the research participants showed awareness of the protected areas and acknowledged their importance. Respondents recognised that some areas have suffered from encroachment and illegal exploitation. The Mavuradonha Wilderness and parts of Mana Pools National Park for instance, have persistently witnessed more people settling on their margins and people grazing their cattle inside the area after vandalizing the perimeter fences. Illegal hunting and deforestation intensified in and around protected areas since the year 2000 after the arrival of resettled farmers and former farm workers who relocated to communal areas. While there is encroachment on one end, destruction of habitats has triggered intensification of human wildlife conflicts. Wild animals are damaging field crops and domestic animals while expansion of fields and extraction

of wood fuel is degrading habitats. Various methods with varied success rates are employed to mitigate and control conflicts between humans and wild animals e.g., patrolling fields, using dogs to scare animals, organizing group patrols, beating drums, burning chili bricks and setting up chili lines etc. Communities have a strong feeling that wild animal should be fenced off and the scouts should be sufficiently equipped to ward off the marauding animals.

All people understand that illegal hunting of game and extraction of protected flora is criminal and there are stiff penalties for such offences. Communities play a crucial role in shaping and enforcing laws and bylaws. Ideally, they contribute by providing input during the legislative process, participating in public hearings, and fostering a shared sense of responsibility for adherence to local regulations. Additionally, community involvement promotes a sense of unity and collaboration, ensuring that laws reflect the diverse needs and values of the people they govern.



Celebrations during the 2023 graduation Ceremony of Community Scouts trained by ZimParks under the Utariri Programme

Involving the community enhances cooperation and compliance, fostering a sense of ownership and stewardship. Furthermore, tapping into indigenous knowledge can contribute valuable insights for more holistic and culturally sensitive resource management approaches.

Tonga and Korekore traditional institutions and knowledge systems which prevail in the landscape are central to biodiversity conservation. Among the practices are the uses of totems, taboos and spiritualism. For instance, traditions implore communities to protect sacred sites, pools mountains species and desecrating these attract wrath from the spirits. Working on the land is regulated through the observation of sacred days and funeral days.

Across the four districts, tsotso stoves have been successfully adopted to increase energy efficiency and ultimately save the forests. More tsotso stoves could be provided to households. Schools have started afforestation projects but there are not enough woodlots at household level to offset the tree cutting for firewood and tobacco curing. Households still practice tree cutting for firewood and charcoal production, but burn the grass and stream bank cultivation among other negative practices that affect biodiversity. In some cases, tobacco which is grown in unforested areas is shipped for curing in forested areas. Honey hunters in the communities use bee smokers from cow dung to collect wild honey which trigger veldfires.

On a positive note, households collect indigenous tree seeds for tree planting. There is some reservation over the massive extraction and seeds away from their habitat which reduces propagation. In other areas, especially in Kariba, pruning of trees is undertaken as a way of woodlot management. Fireguards are established around forests and fields, but these are not collectively done meaning that other areas will still experience fires. For fencing against game, communities use shrubs, fences, bees and chili smoke. Safari operators use electric fencing, but lack of stable power supply on the grid is a challenge. Game scouts monitor the game fence and do repairs, but these may also come too late. One key observation is that Hurungwe and Mbire have conservancies. The community conservancies in Mbire indicate the success of integrating communities in conservation while also sharing benefits with them.



86 year old former schoolteacher, a recipient of a tsotso stove in Kariba District, Mashonaland West Province



Recommendations and Way Forward

The management of community natural resources generally requires the participation of all stakeholders if communities are to achieve significant regeneration and restoration. To achieve sustainability, individuals, households and communities need to coordinate their activities if comprehensive common property resources management is to succeed. The disproportionate level of capacity, commitment and resourcing towards biodiversity protection between individuals and state agencies makes most collective outcomes complex to achieve. From the research conducted, the following recommendations arised:

- Traditional leaders, because of their proximity to communities, should be further empowered to enforce their traditional systems of sanctions and incentives to ensure legitimate regulatory arrangements for biodiversity protection and conservation.
- Community leaders must be resourced, capacitated and educated on natural resource management and conservation so that land allocation, sacred spaces, ecosystems protection and problem animal control activities are handled in an integrated and inclusive manner.
- Human wildlife conflict mitigation measures should be shared with the communities and effectively implemented by ZimParks and other relevant actors.
- Improve the channels of communication for HWC relief actions.
- Involve Agritex officers, collaborate with other stakeholders, especially tobacco companies to train the officers that are into tobacco to have better environmental management and engage in legislation change to force tobacco farmers to plant trees.
- Support ward development and use development coordinators for raising awareness of biodiversity management.
- Train community rangers and scouts to help deal with biodiversity conservation and increase the number of scouts and vehicles for patrolling. Provide them with enough resources e.g fuel, binoculars, motor bikes, appropriate uniforms and enough bullets.
- Address HWC by supplying water to the animals.
- Repair the boundary weir in Mavhuradonha.
- Promote crocodile farming. There is need to educate communities on how to respond when confronted by marauding wild animals
- Find alternative sources of heat to cure tobacco e.g. use biogas barns.
- Educate communities in the importance of natural resources to human wellbeing.
- Continue promoting conservation agriculture practices through Government's Pfumzvudza programme.

- Build the capacity of scouts and CAMPFIRE committees, and provide them with necessary resources and equipment.
- Promote the planting of indigenous trees as part of habitat and ecological restoration.
- The RDCs and Forest Commission should nominate ambassadors of natural resources from the community that will help towards biodiversity management.
- The project to assist in introducing bylaws awareness, structures in terms of reducing HWC to in communities.





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