# NATURAL RESOURCE MANAGEMENT BARRIERS AND MOTIVATIONS STUDY

## AMALIMA LOKO STUDY REPORT

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Cover Photo: Sorghum field in Chisuma village in Hwange district

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| Agritex | Agricultural Advisory Service |
| BHA | Bureau for Humanitarian Assistance |
| CAMPFIRE | Communal Areas Management Programme for Indigenous Resources |
| DVLS | Department of Veterinary and Livestock Services |
| EMA | Environmental Management Agency |
| FGD | Focus group discussion |
| FTLRP | Fast Track Land Reform Programme |
| KII | Key informant interview |
| NRM | Natural resource management |
| SBC | Social behavior change |
| RDC | Rural District Council |

# EXECUTIVE SUMMARY

The Amalima Loko program is a five-year USAID/Bureau for Humanitarian Assistance (BHA)-funded Resilience Food Security Activity (RFSA) designed to improve food and nutrition security in Zimbabwe through increased food access and sustainable watershed management. The program is implemented in Matabeleland North by a consortium led by CNFA and comprised of the Organisation of Rural Associations for Progress, Dabane Water Workshops, The Manoff Group, International Medical Corps, and Mercy Corps.

### *Introduction*

In 2021, Amalima Loko undertook a natural resource management (NRM) barriers and motivation study to understand what leads to or prevents the adoption of improved NRM practices by households, communities, market actors, and government entities. The specific objectives of the study were to:

1. Identify the factors that contribute to, motivate, and hinder individual and community value of natural resources and cooperation in managing natural resources.
2. Increase understanding of the contextual factors and specific practices by government and market-actors that contribute to land degradation and unsustainable water use.
3. Determine the factors that will influence stakeholder groups with vested interests to adopt and support new actions that are necessary to restore watersheds.
4. Use the findings to inform the design of capacity building plans for strengthening the knowledge, skills, and abilities of individuals, households, and communities to adopt NRM best practices and better manage natural resources for the long-term future.

### *Methodology*

The study was conducted in Nkayi, Binga, and Hwange. These were selected as being most representative of the five project districts. A team of eight researchers, accompanied by the consultant, collected data through 39 key informant interviews (KIIs) at district and ward level and 24 focus group discussions (FGDs) in the selected study wards during September 2021. Within each study district, two wards were randomly selected as study sites.

Key informants were purposively selected from each district and ward and included representatives of government departments, private sector companies, market actors, and traditional and church leaders. FGD participants were selected from each study ward to include four demographic groups in the community: men over 35 years, women over 35 years, men 18-35 years, and women 18-35 years. Groups were segregated by gender and age to enable free expression of views on natural resources and avoid impedance related to cultural norms.

In total, 24 FGDs (12 women and 12 men) were conducted, transcribed, and coded for analysis. There were 199 total focus group participants (105 women and 94 men). Eleven of the 24 total FGDs involved only youth. Two of the men's FGDs had both youth and middle-aged adults. One women's FGD had both youth and middle-aged adults. Most key informants at both district and ward level were middle-aged men. In this study, "youth" refers to those 18-35 years of age and "middle-aged" refers to those over 35 years of age.

The consultant trained the research team on the study methods and the data collection tools were tested at a site in Lupane district. The team collected data in September 2021, carried out transcription and translation in October, and analysed the data in October/November. The team then developed a code book and coded the data using Dedoose software, which enables systematic and thematic data analysis.

### *Key Findings*

Table 1 summarises the key study findings in terms of the research questions.

**Table 1: Key findings by research question**

| Research question | Key findings |
|---|---|
| **1. What natural resources are valued and why?** | The ten most listed valued resources were trees and forest products, water sources, soil, wild animals, wild foods, grass and grazing areas, livestock, and materials used in construction (stones and gravel, pit sand, and soil for building). Trees was the most frequently mentioned and was also the first valuable resource mentioned in most of the FGDs.<br><br>The main reasons for valuing natural resources were income, ecosystem regulation, food/nutrition, cultural and social uses, balance of the ecosystem, indigenous knowledge, traditional medicine, barter trade, and because human life depends on it. The range of responses showed how deeply communities understand and appreciate their natural resources both in terms of instrumental and intrinsic value. |
| **2. What are the behaviours being practiced that lead to natural resource degradation?** | The main degradation **behaviours** people identified were tree cutting/ deforestation, soil damage leading to gullies and related problems, poaching and wildlife decline, streambank cultivation, water pollution, overfishing, unsustainable harvesting of wild fruit, sand and gravel extraction, use of sleighs (to transport heavy items such as firewood), and charcoal production.<br><br>The main perceived **impacts** of these were siltation, reduced grazing land, water shortages, human-wildlife conflict, livestock deaths, and health impacts from pollution. |
| **3. Who is responsible for the degradation?** | Participants attributed specific types of degradation to all land users, including:<br><br>**Young men** - mining, sand extraction and brickmaking, firewood, and charcoal.<br><br>**Young women** - wild fruit harvesting and basketry.<br><br>**Middle-aged men** - deforestation, sand extraction, brickmaking, and wildlife poaching.<br><br>**Middle-aged women** - stream-bank cultivation.<br><br>**Rich people** with many cattle - degrading grazing areas.<br><br>**Private companies** assisted by councils and traditional leaders - water pollution from mining (in Hwange), degradation of rivers through sand extraction (mainly in Hwange), and over-fishing (in Binga). |

| Research question | Key findings |
|---|---|
| | There are few young people in rural communities, but they are physically active, so people feel that they do a lot of damage. Also, adults said that because young people do not participate in development projects, they are less likely to follow community NRM rules. |
| **4. Are individuals and communities aware of how and why natural resources are being degraded?** | Almost everyone consulted, from community to government departments, showed a broad and deep understanding of environmental systems and their importance. |
| **5. What are the reasons and motivations for the current practices that contribute to land degradation and unsustainable use of water by market actors, communities, and households?** | The main reasons and motivations identified by participants include basic survival, lack of land (in Binga, due to the hilly terrain), livestock overpopulation and poor management, lack of knowledge and awareness about alternatives, poor governance, lack of fertile soil, and the rise of Christianity causing decline in power of traditional leaders and traditional resource management. |
| **6. What are the NRM best practices identified by community members and other stakeholders that can be implemented in the project area?** | The main best practices people identified include conservation agriculture, tree planting and protection, soil conservation works, livestock grazing plans, planting vegetation to stabilize soil, streambank and wetland protection, veld-fire prevention, soil fertility improvement, dam scooping and dam construction, water-harvesting, beekeeping, and irrigated gardens. |
| **7. What are the barriers to implementing these practices?** | The main barriers to implementing these practices participants identified include negative attitudes (such as not caring, laziness, or dependency), labour issues, poor governance, lack of knowledge of alternatives, cultural norms toward cattle, lack of uptake, problems relating to the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE), lack of community cohesion, and climate change. |
| **8. What are the factors that will convince different stakeholders to adopt promoted NRM practices?** | The motivations and supports that participants identified were better governance, more training, education and awareness-raising, capacity-building of traditional leaders, free agricultural inputs, food for work/ assets, encouraging collective action, developing more income generating projects, targeting young people, and giving recognition to environmental resource monitors and community champions through competitions and exchange visits, demonstrations, and field days. |

| Research question | Key findings |
|---|---|
| **9. Who are the priority groups and the influencing groups regarding the practice of specific behaviours both positive and negative?** | **Priority groups** include all land-users, particularly women as they interact daily with resources; men as resource users and community decision-makers; the elderly as repositories of traditional knowledge; and youth who are viewed as "key perpetrators" according to FGDs. Participants recommended engaging these priority groups and to increase their sense of belonging and reduce their exploitation by private sector.<br><br>**Influencing groups** include traditional leaders, church leaders, youth peer leaders, community elders, councillors, Agricultural Advisory Service (Agritex) officers, Environmental Management Agency (EMA) officers, environmental resource monitors, and Rural District Council (RDC) representatives. Traditional leaders and youth are blamed for causing problems but are also seen as key change agents. |
| **10. What action can communities take to promote behaviours that enable sustainable natural resource management amongst members?** | Covered in responses to question 6. |
| **11. Which wild edible plants, fruits, and animals are commonly consumed at the household and at what level of consumption?** | This varies from ward to ward and between districts and is also likely to vary from year to year. Wild fruits, vegetables, mushrooms, honey, insects, lizards, small mammals, and birds are collected for food; and certain species are sold or exchanged in barter trade within the community or with buyers from urban areas. The number of harvested fruit tree species was similar for the three districts. The species most consumed and sold were notably quite similar across the three districts. Hwange participants mentioned a wide variety of wild harvested vegetable species and stated that this was the only district where they are sold. Hwange also had the largest number of insect and animal species for consumption and sale. Respondents across all three districts reported that they consume and sell wild honey and wild mushrooms. It was not possible to determine the level of consumption. |
| **12. What practices related to the harvesting of wild edible plants, fruits, and wildlife are prevalent?** | Wildlife poaching, overfishing, and overharvesting of wild fruits are problems identified by respondents. Illegal hunting of game in Nkayi has eradicated most antelope and other non-predator species according to respondents. Respondents also said poaching has been successfully controlled in Binga thanks to the CAMPFIRE programme. In some areas, harvesting wild fruit for sale is unsustainable, but in other areas respondents said that those who harvest for sale take better care of the trees. |

# 1. Background and Introduction

The Amalima Loko program is a five-year USAID/ Bureau for Humanitarian Assistance (BHA)-funded Resilience Food Security Activity designed to improve food and nutrition security in Zimbabwe through increased food access and sustainable watershed management. The program is implemented in Matabeleland North by a consortium led by Cultivating New Frontiers in Agriculture (CNFA) and comprised of the Organisation of Rural Associations for Progress, Dabane Water Workshops, The Manoff Group, International Medical Corps, and Mercy Corps.

A major component of Amalima Loko is integrated water resources management linked to improved natural resource management (NRM) along micro-catchments in five districts in Matabeleland North. Achieving Purpose 2 of the program, "Improved health and availability of soil, water, and plant resources within the watershed" will require engagement and commitment at the government, market actor, community, and household levels to adopt improved agriculture and NRM practices and sustain the infrastructure investments and coordination processes that the program will help establish. The Amalima Loko Institutional Dynamics Assessment investigated government functions, barriers and motivations and more broadly, but more information is needed to understand these dynamics as they relate specifically to NRM and at the market actor, community, and household levels. Therefore, the NRM Barriers and Motivations study seeks to understand community perspectives and perceptions to land degradation and identify behavioral determinants that limit the adoption of sustainable NRM practices. By identifying the factors that contribute to, motivate, or hinder individual and community buy-in towards sustainable natural resource management, this study supports the refinement of the Amalima Loko NRM and social behavior change (SBC) strategies to improve use of watershed resources for lives and livelihoods (SP2.2) and improve community ownership of watershed resource governance (SP2.1). The Amalima Loko program undertook the NRM Barriers and Motivations study. The specific objectives of the study were to:

1. Identify the factors that contribute to, motivate, and hinder individual and community value of natural resources and cooperation in managing natural resources.
2. Increase understanding of the contextual factors and specific practices by government and market-actors that contribute to land degradation and unsustainable water use.
3. Determine the factors that will influence stakeholder groups with vested interests to adopt and support new actions that are necessary to restore watersheds.
4. Use the finding to inform the design of capacity building plans for strengthening the knowledge, skills, and abilities of individuals, households, and communities to adopt NRM best practices and better manage natural resources for the long-term future.

The study will be used to address information gaps to refine the TOC, including priority behaviours. found in Annex A.

The study was conducted in three of the project districts: Nkayi, Binga, and Hwange. The lead investigator consultant and Amalima Loko team collaboratively developed a scope of work (SOW) detailing the research methodology, which was approved by BHA. The study included a literature review, which involved a context analysis of the historical and governance situation with respect to NRM in Zimbabwe. A behaviour change literature review helped inform the methodology and theoretical framework for the study. A team of researchers collected data through key informant interviews (KIIs) at district and ward level and focus group discussions (FGDs) in the selected study wards during September 2021. The data was coded using Dedoose software and analysed. The findings and project recommendations are presented in this report.

## 1.1 Historical context

Zimbabwe has a rich stock of natural resources, which the economy is heavily dependent on. More than 67 percent of people live in rural areas with agriculture and natural resource linked livelihoods.[1] The country has a highly variable climate with a single rainy season making agriculture vulnerable to periodic droughts exacerbated by climate change. Most of the country's soils (70 percent) are sandy, inherently low in fertility, pH and moisture retention capacity, and highly prone to erosion.[2] Surface water resources are limited. Most rivers are seasonal, and dams and irrigation schemes are not widespread. Dependence on limited groundwater is high for domestic, irrigation, and commercial activities.[3] All rural communities rely heavily on forests for fuel, timber, and non-timber products for food and income.[4] Due to cultural norms, women and children provide agricultural labour and are responsible for water and fuelwood collection. This makes them most vulnerable to environmental degradation and climate change impacts.[5] It is necessary to explore the history context in order to understand the current land degradation and natural resource exploitation in Matabeleland North.

### *Early environmental governance*

According to the literature, pre-colonial Zimbabweans lived in close synchronicity with their natural environment and developed complex social and cultural systems for environmental governance.[6] Under traditional African beliefs systems, humans are considered part of the environment. The concept of natural resources as valued only in terms of their use by people is alien to this belief system. Interaction with the environment was controlled by traditional and religious leaders through promotion of taboos, rules, sacred sites, and family totems. Environmental abuses were punished by the supreme being (often manifesting as drought) and threats from spiritual beings such as water spirits. Community cohesion was cemented through communal ceremonies and collective action including *amalima*.[7] Women, especially the elderly, midwives, and herbalists, understood the importance of environmental management because of their direct interaction with resources in terms of food processing and soil management, and collecting water, firewood, and wild plant and animal products.[8] They were also involved with intergenerational transfer of indigenous knowledge related to environmental management through storytelling.

### *Colonial influences*

Traditional governance and belief systems declined in the colonial era from the late 1800s, due to the introduction of Christianity and colonial values. Missionaries preached that man should have dominion over the environment and science superseded indigenous knowledge.[9] The state took control of resource management and resource protection was linked to economic value. When land-use technologies were introduced by the state, men were invariably targeted.[10] The colonial government reorganised the national settlement pattern through land redistribution acts, the creation of National Parks, and the Kariba dam displacing communities into new areas to claim the most productive land for

[1] Zimstat, 2017
[2] Dhliwayo *et al*., n.d.
[3] FAO, 2016
[4] GOZ, n.d Fifth National Biodiversity Communication
[5] FAO, 2017
[6] Mapara, 2009
[7] Amalima is the Ndebele word for the social contract by which community members come together to help each other engage in productive activities such as land cultivation, livestock tending, and asset building.
[8] Manyonganise and Museka, 2020
[9] Mapara, 2009
[10] Page and Page, 1991

white commercial farmers. Africans were pushed into Tribal Trust Lands in marginal areas with poor soil and climate.[11] The Tonga lost their traditional flood plain farming methods while the San lost access to wild foods.[12] Populations of people and livestock in the Tribal Trust Lands (now called Communal Areas) increased but land was not expanded. This led to severe environmental degradation which has intensified since then.[13]

The Rhodesian agricultural extension service was developed in the 1920s and the plough was introduced, leading to the expansion of field size through large-scale deforestation.[14] Ploughing led to very high soil erosion rates in most areas.[15] There were no national markets for small grains and since Africans had to pay land tax, they were quickly pulled into the maize cash economy even though maize is unsuitable for cultivation in most parts of Zimbabwe.[16] The Master Farmer certified training scheme was introduced in the 1930s to encourage farming excellence but only men could qualify. The scheme is still in existence and since independence, it has been open to women and expanded to Advanced Master Farming level.[17] Master farming criteria included that fields had to be cleared of all trees and crop monoculture practiced.[18] Draconian conservation measures were introduced through the Natural Resources Act in 1941 and the Native Land Husbandry Act in 1951. These included including centralisation of settlements and grazing areas, enforced de-stocking of cattle, and introduction of contour ridges.[19] Women were usually tasked with construction of contour ridges, which increased their already high labour burden. The measures were enforced by the Natural Resources Board (a precursor to the Environmental Management Agency (EMA)). These compulsory measures made environmental conservation extremely unpopular and a highly politicised issue up to this day. As noted by Whitlow "the bitter resentment of peasant farmers to forced reduction of cattle numbers hardly provided a sound basis for encouraging participation in future conservation programmes."[20]

### *Post-independence*

The post-independence era (after 1981) saw a focus on developing health, education, and the national economy with a deterioration of implementation of laws and policies protecting natural resources. The new government carried forward the repressive, authoritarian governance style and protectionist economic controls of the pre-independence regime. Political compliance in Matabeleland and Midlands was ensured through the state organised Gukuruhundi massacres where over 20,000 people were killed between 1984-87.[21] The massacres significantly impacted the provinces' local economies and were followed by decades of lack of investment. Land redistribution was slow and ineffective and population density continued to increase in the extremely degraded communal areas.[22]

Economic Structural Adjustment Plans introduced to liberalise the economy in the 1990s led to the collapse of local industry, widespread unemployment, and increased poverty and inequality.[23] Post-independence resettlement programmes have relocated about 500,000 families. Most of these were part of the Fast Track Land Reform Programme (FTLRP) in the 2000s where land was forcibly removed from white owners in rapid, uncoordinated, and often violent bouts implemented mainly by war veterans, and

[11] Whitlow, 1988
[12] Mashingaidze, 2020; Chingwe, in Kangira et al, 2019
[13] Whitlow, 1988
[14] Alvord, 1927
[15] Elwell, n.d
[16] Whitlow, 1988; van Engelen et al, 2004
[17] FAO, n.d
[18] Page and Page, 1991
[19] Whitlow, 1988, 10-12
[20] Whitlow, 1988, 10
[21] Muzondidya, 2009
[22] Dore, 2001; Zinyama and Whitlow, 1986
[23] Raftopoulos, 2009

was sanctioned by government. These resettlement programmes have eased population pressure to some extent but have intensified environmental degradation. As noted by Chimhowu, the FTLRP changed the "dynamics of environmental stewardship, and attitudes and patterns of resource use in Zimbabwe".[24] The FTLRP radically shifted Zimbabwe's economy away from large-scale commercial agriculture causing huge contraction of per capita gross domestic product (GDP) and fiscal revenue, crippling service provision and leading to pervasive rural and urban poverty.[25]. Widespread livelihood instability has led rural communities to increasingly exploit natural resources in unsustainable, uncontrolled, and often illegal ways.[26] The assumption is that the Covid-19 lockdown has dramatically exacerbated these problems in the last two years.

Currently, most of the rural population is still concentrated in the increasingly marginal communal areas.[27] Policies to revitalise the ailing economy[28] have focused on expanding cash cropping and the mining sector which accounts for over 12 percent of gross domestic product and 55 percent of foreign currency earnings.[29] The rapid and unregulated growth of these sectors has had an extremely negative impact on the environment.[30] The precedence given to private sector resource exploitation has led to additional community displacement, over-exploitation of resources, and contamination of soil, water, and air, particularly in the districts selected for this study.[31] Zimbabwe is experiencing threats to forests and wildlife species and a serious decline in the quality of soil, air, and water resources.[32] Expansion of agriculture, unsustainable exploitation of fuelwood, infrastructural developments, wildfires, invasive species, overharvesting of non-timber forest products, and climate change have led to forest biodiversity loss.[33] Soil loss from rangeland erosion ranges from 3 to 75 tons per hectare per year, and 15 to 50 tons per hectare per year from arable lands.[34] The country is currently losing ten percent of its forests per decade.[35] Forest cover has declined from 53.2 percent of total land area in 1992 to 36 percent. Wetlands are drying due to overgrazing, cultivation, and climate change. Uncontrolled mining (small and large-scale) and streambank cultivation ran rife leading to soil erosion, landslides, siltation, and water pollution and a decline in fisheries.[36] Human-wildlife conflicts are increasing as settlements encroach on national parks and wildlife seek food in farming areas in drought years. According to a recent USAID study, the main drivers of natural resource degradation in Zimbabwe are poverty, reliance on unsustainable livelihoods, food insecurity, population growth, institutional and economic failures, corruption and patronage, insecure land tenure and inconsistent execution of land reform, poor governance capacity and lack of political will to enforce existing laws, growing energy demand, international demand for natural resources, and lack of mapping and other critical data inputs.[37]

Zimbabwe has become one of the most vulnerable and least prepared countries in the face of climate shocks and hazards.[38] Resource degradation is exacerbating climate change impacts and increasing vulnerability, particularly in Matabeleland North. Further problems in Matabeleland relate to historical pre- and post-independence land redistribution causing an influx of displaced or resettled people from

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[24] Chimhowu et al, 2010, 5
[25] World Bank, 2019; Zimstat, 2017
[26] GOZ, 2014
[27] Swinkles et al, 2019
[28] such as the National Development Strategy 1, 2021-2025; the Transitional Stabilisation Policy, 2018; and the National Agriculture Policy Framework 2021-2030
[29] Deloitte, 2020
[30] Åkesson et al, 2016
[31] Nkomo, 2021; Nare, 2020
[32] GOZ, n.d. Fifth National Biodiversity Communication
[33] USAID, 2021
[34] GOZ, 2017
[35] GOZ, n.d.
[36] GOZ, 2017
[37] Ibid
[38] https://gain-new.crc.nd.edu/country/zimbabwe

other parts of Zimbabwe, reducing social cohesion.[39] The failure to recognise the need to designate grazing areas in the resettlement process in the Matabeleland context has compounded degradation there.[40]

## 1.2 Governance context

### *Policy and legislation governing natural resources*

The Environmental Management Act (2002) provides a basic governance framework. Zimbabwe has a forestry policy, a water policy and strategy, a climate change policy and strategy, a national biodiversity strategy and action plan, and is a signatory to the United Nations Convention to Combat Desertification and Drought. However, Zimbabwe lacks an overarching NRM policy and governance frameworks are fragmented. Several ministries are tasked with enforcing environmental legislation resulting in confusion on responsibilities, weak monitoring of degradation, and poor enforcement. Further problems include lack of awareness among the judiciary and police, lack of a holistic approach to development, and lack of transparency, accountability and political will to address environmental abuses.[41]

### *Governing bodies*

This section is derived from the literature review with clarification given by key informants during the study. Nationally, under the Ministry of Environment Tourism and Hospitality Industry, the EMA has the mandate of regulating, monitoring, and promoting sustainable NRM and environmental protection. It is responsible for guiding the development of national environmental management plans and local environmental action plans; conducting, reviewing, and approving environmental impact assessments; regulating and monitoring the management and utilization of ecologically fragile ecosystems; developing and implementing incentives for protection of the environment; and undertaking environmental protection activities. The Forestry Commission is responsible for overseeing management of resources in designated state-protected forests as well as communal area forests and offers community-based training in forestry techniques. The Parks and Wildlife Management Authority (ZimParks) is responsible for regulating the management of resources within national parks and recreation areas, including wildlife and fisheries in Lake Kariba. The Ministry of Lands, Agriculture, Water, Climate, and Rural Resettlement also plays a role in NRM mainly through the Agriculture Advisory Service (Agritex), the Department of Research and Specialist Services, the Zimbabwe National Water Authority, and the Department for Fisheries and Aquatic Resources. The Ministry of Health and Child Care also plays a role through the Environmental Public Health Department. All these departments are represented at national, provincial, and district level. However, only Agritex and the Environmental Public Health Department are represented by officers at ward level.

The Rural District Council (RDC) is responsible for NRM in the district through District Development Committees and can develop NRM bylaws. According to the Rural District Councils Act, RDCs are meant to convene district environment committees headed by an Environmental Officer or Natural Resources Officer (in districts with wildlife). The district environment committee should set up ward and village level environment committees that are meant to identify community-based environmental resource monitors—volunteers who draw attention to resource abuses and raise awareness of NRM for both the EMA and the Forestry Commission. Due to lack of incentives and support, these resource monitors appear inactive in most districts. However, in some places, they are more motivated when

[39] Alexander and McGregor, 2002
[40] Mabhena, 2014
[41] Akesson et al, 2016

supported and trained by NGOs. Annex C presents a diagram of the NRM governance structures in the study districts.

### *CAMPFIRE*

In some districts, the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE), —initiated by the Government through the Department of National Parks and Wildlife in 1989 with USAID funding—provides a mechanism for community-based NRM. Through this scheme, RDCs allow safari operators to exploit wildlife and a share of the profits is invested into community development projects by the RDC. The lead coordinating agency is the CAMPFIRE Association, a registered Private Voluntary Organization (PVO). The CAMPFIRE Association is the umbrella association of RDCs implementing CAMPFIRE. The Association receives revenue from RDC membership fees, donor grant funds, and potentially, funds from the CAMPFIRE Trust. The Association uses its revenue to represent and promote the interests of its members at the national, regional, and international level. According to CAMPFIRE Revenue Sharing Guidelines, 55 percent (minimum limit) of income is allocated to communities, 26 percent to the RDC to support costs attributable to CAMPFIRE activities, 15 percent for general RDC administration, and four percent as a levy to the Association.[42]

Of the 60 RDCs in Zimbabwe, not all are CAMPFIRE members; and if an RDC is part of CAMPFIRE, this does not mean that every village/ward in that district will be engaged in CAMPFIRE activities. Therefore, the performance of CAMPFIRE varies, as benefits are determined by the size of land free from human settlement and livelihood activities, and on which CAMPFIRE related income generating activities can be administered. Population density in most districts today is more than 20 people per square kilometre, whereas it was ten people per square kilometre when CAMPFIRE was started.

The programme has been heavily criticised for widespread corruption and its failure to ensure that communities benefit directly. In some districts, most CAMPFIRE proceeds have been used to prop up RDCs, which have suffered from dwindling national finance.[43] USAID withdrew support to the

**Environmental resource monitors**

These are community volunteers recruited by the RDC in liaison with EMA, Forestry Commission, or CAMPFIRE (depending on the predominant resource issues in a district) to promote environmental rights as set in section 4 (1) of the Environmental Management Act (Chap 20:27) and the environmental principles of the Act section 4 (2) (d). They can be called different things in different places (such as NRM monitors or CAMPFIRE monitors) but they have essentially the same function - as focal points for liaison between environmental governance bodies and the community.

Although they do not seem to do much monitoring, they are environmental role models in their locality. They assess the state of resources and chart the progress or decline of degradation through:

- Initiating environmental rehabilitation projects,
- Initiating environmental awareness-raising, and
- Reporting environmental crimes.

They are not EMA or RDC employees and can work with any other individual or institution (including NGOs) promoting environmental management and protection.

They may get incentives from EMA (when their budget permits), such as a reflector bib, which helps the monitors to be recognised for their environmental role in the community. The reflector remains the property of EMA and can be withdrawn. They wear the reflector when undertaking environmental management and protection duties under the guidance of EMA staff, traditional leadership, environment committees and sub-committee members, or the local authority.

They do not enforce environmental laws but alert the relevant authorities of abuses. Their term of office is determined by their willingness and performance.

[42] https://www.campfirezimbabwe.org/article/what-we-do
[43] Frost and Bond, 2008

programme in 2005. CAMPFIRE proved successful in some areas with new methods of benefit-sharing including direct payments of dividends to community accounts and revolving funds.[44] There have been calls for the programme to decentralise to the community level[45] and diversify its focus beyond wildlife to include forest and mineral resources. The government has recently committed to reviving the programme.[46] In Lupane and Nkayi, CAMPFIRE committees do not exist. This is most likely a result of past failures of the project which exacerbated land-tenure and resource access disputes between communities, councils, and the Forestry Commission.[47]

### *Traditional leaders*

NRM at the community level is meant to be administered by traditional leaders (in line with the Traditional Leaders Act, 1999) with support from local authorities and various government departments.[48] The village assembly, under the village head, is responsible for enforcement of all environmental planning and conservation bylaws on behalf of the chief, RDC, and national government. Both government and traditional institutions are severely lacking in resources and capacity to implement policies and legislation. Regarding the RDC, this has encouraged revenue from local resources, such as wildlife, to be diverted to benefit councils rather than local communities. The role of traditional leaders has been undermined by successive governments; and communities often accuse both local government and traditional leaders of corruption and mismanagement, e.g., allowing foreign and local companies to conduct uncontrolled mining, logging, and wildlife exploitation.[49]

## 2. Methodology

The study was conducted in three of the five of the project districts: Nkayi, Binga, and Hwange. The three districts were selected by placing all five project implementation districts into three unique district clusters, which were grouped together because of cultural, ethnic, ecological, livelihood, and other similarities. The three clusters are: 1) Lupane and Nkayi, 2) Hwange and Tsholotsho, and 3) Binga. A team of eight researchers accompanied by the consultant, collected data through KIIs at district and ward level and FGDs in the selected study wards during September 2021. The team included project staff Louise Nkomo (Watershed Lead), Mkhokheli Sithole and Qondani-enkosini Sibanda (NRM Coordinators), Munyaradzi Ziburawa (Resilience Coordinator), Sambulisiwe Maseko (GIS Specialist), Vusumuzi Mlilo (Environmental Officer) and two NRM field officers per district namely Zibusiso Mpofu, Sithabile Bafana, Shackson Ncube, Mxolisi Dlodlo, and Skhulile Dube. The research team developed a study methodology and workplan, which was approved by BHA. The data was coded using Dedoose software and analysed. The findings are presented in section 4 of this report.

[44] Chimhowu, et al 2010
[45] https://www.zimbabwesituation.com/news/decentralise-campfire-programme-in-matland/
[46] https://allafrica.com/stories/202109280377.html
[47] Alexander and McGregor, 2002
[48] Including the environmental management agency, the national water authority and departments responsible for forestry, national parks and wildlife and agricultural extension, ministry responsible for mines.
[49] Chigwata, T. 2016. The role of traditional leaders in Zimbabwe: are they still relevant? Law, Democracy and Development. Volume 20, 2016

## 2.1 Sampling

Within each study district, two wards were randomly selected as study sites. Key informants, linked to NRM, were purposively selected from each district and ward. These included representatives of government departments, private sector companies, market actors, and traditional and church leaders.

**District level key informants** included representatives from the following government departments: EMA, Forestry Commission, Zimbabwe National Water Agency (ZINWA), The Ministry of Small to Medium Enterprises, Ministry of Women's Affairs, and Agritex. In total, 14 in-depth KIIs were carried out.

**Ward level informants** included the ward-based Agritex officers, traditional leaders, market actors representing the crops and livestock sector, Environmental Health Technicians, Natural Resource Management committee members, and Disaster Risk Reduction committee members. In total, 25 semi-structured KIIs were carried out.

**FGD participants** were selected from each study ward to include four demographic groups deemed to be representative of genders and age groups in the community: men over 35 years, women over 35 years, men 18-35 years, and women 18-35 years. Groups were segregated by gender and age to enable free expression of views on natural resources and avoid impedance related to cultural norms. In total, 24 FGDs were carried out.

## 2.2 Development of data collection tools

The research team consulted with the Amalima Loko SBC team to develop an FGD guide and interview guides for semi-structured and in-depth interviews for district and ward level respondents. These guides were based on the study research questions detailed in the SOW.

### *Research questions*

1. What natural resources do people value and why?
2. What are the behaviours being practiced that lead to natural resource degradation?
3. Who is responsible for the degradation?
4. Are individuals and communities aware of how and why natural resources are being degraded?
5. What are the reasons and motivations for the current practices that contribute to land degradation and unstainable use of water by market actors, communities, and households (including mining, deforestation, overgrazing, and unsustainable agricultural practices)?
6. What are the NRM best practices identified by community members and other stakeholders that can be implemented in the project area?
7. What are the barriers to implementing these practices?
8. What are the factors that will convince different stakeholders to adopt promoted NRM practices?

9. Who are the priority groups[50] and the influencing groups[51] regarding the practice of specific behaviours both positive and negative?
10. What action can communities take to promote behaviours that enable sustainable natural resources management amongst members?
11. Which wild edible plants, fruits and animals are commonly consumed at the household and at what level of consumption?
12. What practices related to the harvesting of wild edible plants, fruits, and wildlife are prevalent?

### *Testing and finalizing the tools*

The consultant trained the research team in the research methods and the data collection tools were tested at a site in Lupane district. Testing involved conducting two FGDs and three KIIs. The team then refined and translated the tools into Ndebele, Nambya, and Tonga.

## 2.3 Data collection and analysis

Data collection was carried out in September 2021 and transcription and translation were carried out in October. The enumerators recorded the interviews and FGDs and the research team used the audio files and notes to develop the final transcripts. The team collected data in line with the guidelines stipulated in the SOW with respect to ethics, confidentiality, safety, and Covid-19 protocols. In total, 24 FGD transcripts, 25 ward KII transcripts, and 14 district KII transcripts were coded. A code book was developed, and coding carried out using Dedoose. This enabled systematic and thematic analysis of the data.

## 2.4 Study limitations

In general, the data collection process went smoothly according to the workplan. Four of the scheduled KIIs could not be conducted due to informants not being available for the interview at the appointed time. However, based on the large amount of data collected from other informants, the research team does not see this as a major limitation to the study.

The team found that data collection on wild foods could not be done consistently and effectively using focus groups. It took a very long time and community members found it hard to recall numbers and types of wild foods consumed and sold, possibly due to the highly seasonal nature of the foods and the variation between years. Translation of names of wild fruits, vegetables, and other products from Nambya and Tonga could not be done in the given timeframe for the study so there is a gap in this section of the analysis. The translation will need to be done by a professional botanist who can speak Nambya/ Tonga and who can give the Latin names of the plant and insect species. To do justice to this important topic, the research team recommends conducting a longitudinal study with selected community members who regularly eat or sell wild foods.

[50] group of people who will perform the positive behaviour – for example dryland farmers, livestock farmers
[51] people who influence the priority group regarding the behaviour, who can either support or prevent the priority group from adopting the positive behaviour – for example, local leaders

## 2.5 Theoretical framework

Social scientists maintain that social and behavioural barriers can prevent people from conserving natural resources even though they know that conservation is important, that they value the resources, and that they want to conserve them.[52] Fear of the negative consequences of abusing natural resources (in terms of legal punishment or long-term decline in soil and water quality) does not necessarily prevent people from abusing resources. The factors influencing behaviour can be summarised using the Social Ecological framework[53] shown in Annex B (adapted for the Amalima Loko context). The model shows that behaviour is influenced by many factors, which include characteristics of individuals, their family and friends, the wider community, and the general enabling environment. There are also cross-cutting factors, which include factors related to information, motivation, ability to act, and societal norms. This framework was used to analyse the data collected in this study.

# 3. Findings

The following section presents the findings of the study organized by the research questions on which the study was based.

### *Study demographics*

In total, 24 FGDs (12 women and 12 men) were conducted, transcribed, and coded for analysis. There were 199 total focus group participants (105 women and 94 men). Eleven of the 24 total FGDs involved only youth. Two of the men's FGDs had both youth and middle-aged adults. One women's FGD had both youth and middle-aged adults. Most key informants at both district and ward level were middle-aged men.

The first ten research questions relate to NRM behaviour. The last two questions are specifically related to wild foods. The findings are thus presented in this order.

## 3.1 What natural resources do people value and why?

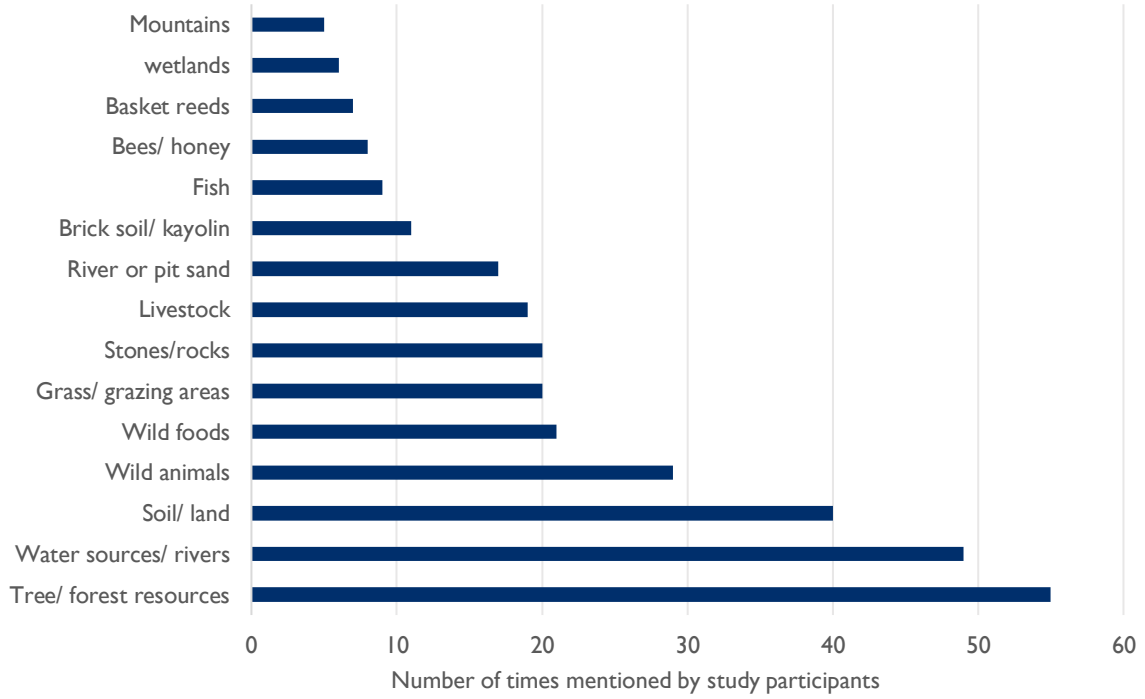
The study found that participants across all three districts value a wide range of natural resources. Figure 1 presents the most frequently mentioned resources by FGD and KII participants.

The most frequently listed valued resources were trees, water, soil, wild animals, and wild foods (including edible fruits, vegetables, and insects). When listing valuable resources, participants mentioned trees first in ten of the 24 FGDs and mentioned water first in five FGDs. Trees were likely mentioned first because they have economic value and multiple uses.

[52] Kollmuss and Agyeman, 2002

[53] https://sbccimplementationkits.org/sbcc-in-emergencies/learn-about-sbcc-and-emergencies/what-is-social-and-behavior-change-communication/

**Figure 1: Most frequently mentioned valued resources**




The most frequently mentioned benefits of trees by FGD participants were fuel, construction materials, wild fruits and edible leaves, fodder for livestock and wild animals, and traditional medicine. Some of the less expected uses included production of oxygen (mentioned 19 times), use as a windbreak (mentioned 15 times) use as shade (mentioned ten times), for soil conservation (mentioned six times), for soil fertility improvement (mentioned four times), production of rainfall (mentioned three times), as carbon sinks/ absorbing carbon dioxide (mentioned three times), and protection from ozone (mentioned twice).

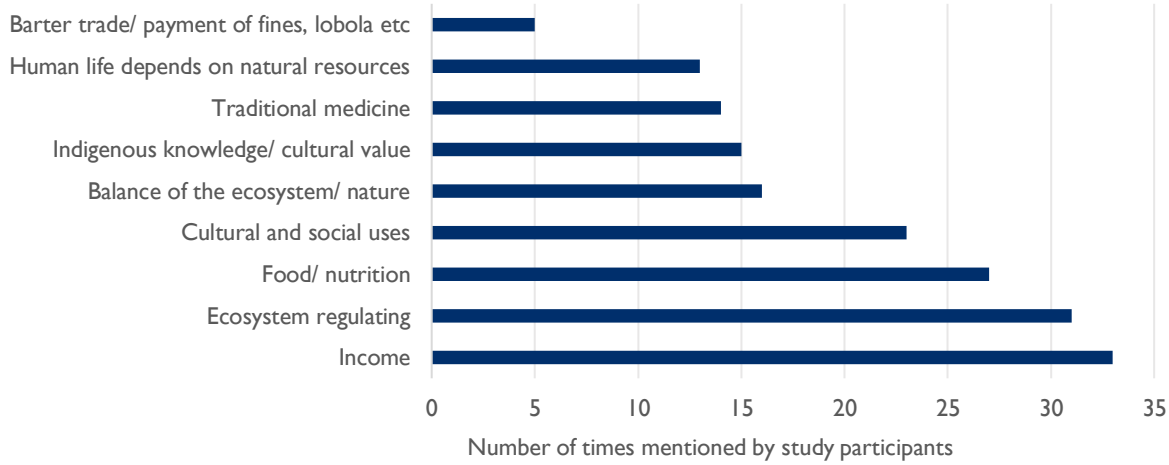
The most frequently mentioned tree species were fruit trees and mopane trees, which are valued because of their strength, straightness (useful for construction), and their effectiveness as a fuel in terms of firewood and charcoal. A few focus group participants and KIIs mentioned that some tree species are conserved because they are considered sacred (e.g., used in rainmaking ceremonies) and traditional leaders prohibit their destruction.

Livestock were considered a natural resource in most focus groups and are valued not only for their products and draught power but also to store wealth and for cultural reasons. In the FGDs, men frequently mentioned trees, honey, and livestock as valuable while women frequently mentioned water sources, grass/ grazing areas, mountains, wild animals, wild foods, and fish. Interestingly, women mentioned stones, pit sand, and soil for brick-making more frequently than men did in the focus groups. These resources are normally associated with men's activities.

Older people listed more valued resources than youth participants. However, the youth FGDs mentioned pit sand and soil/ land more frequently than the middle-aged adult FGDs did.

Trees, water, and soil were the top mentioned valued resources in all three districts. Basket reeds, honey, fish, wild foods, and mountains were mentioned more frequently in Binga than the other districts.

**Figure 3: Most frequently mentioned reasons for valuing resources**



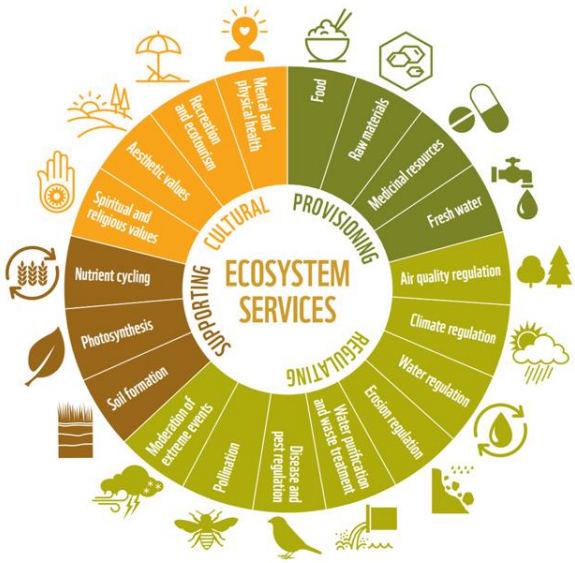

Livestock, river/pit sand, stones/ rocks, trees, and wild animals were mentioned more frequently in Hwange. Grass and grazing areas were mentioned more frequently in Nkayi.

The main reasons given for valuing these resources (figure 2) were income; ecosystems services (figure 3) including provisioning, cultural, and regulating services (such as trees providing oxygen, shade, and windbreaks); food production and nutrition; and cultural and social uses (such as sites for rainmaking ceremonies).

Several FGD participants mentioned that natural resources, particularly trees and water, are crucial because human life depends on them. Participants also frequently mentioned the "balance of nature".

Examples of responses showed how deeply FGD participants understand and appreciate the range of ecosystem services (in terms of provisioning, regulating, supporting, and cultural services) provided by their environment. A FGD of middle-aged women in Hwange stated: *"Trees provide poles for construction, firewood for household use and burning bricks, construction of livestock pens, wild fruits, fencing… [they] provide oxygen, wind*

**Figure 2: Ecosystem services**




Ecosystem services are the direct and indirect contributions of the environment to human well-being. They can be divided into:

- provisioning services - the products obtained from ecosystems,
- regulating services - benefits obtained from the regulation of ecosystem processes,
- cultural services - nonmaterial benefits people obtain from ecosystems, and
- supporting services - services necessary for the production of all other ecosystem services.

*Source: World Wide Fund for Nature: Living Plante report 2016. Adapted from the Millennium Ecosystem Assessment, 2005.*

*breaks, shade, carvings, add humus to the soil through shedding leaves… medicine, soil protection, and fruits."*

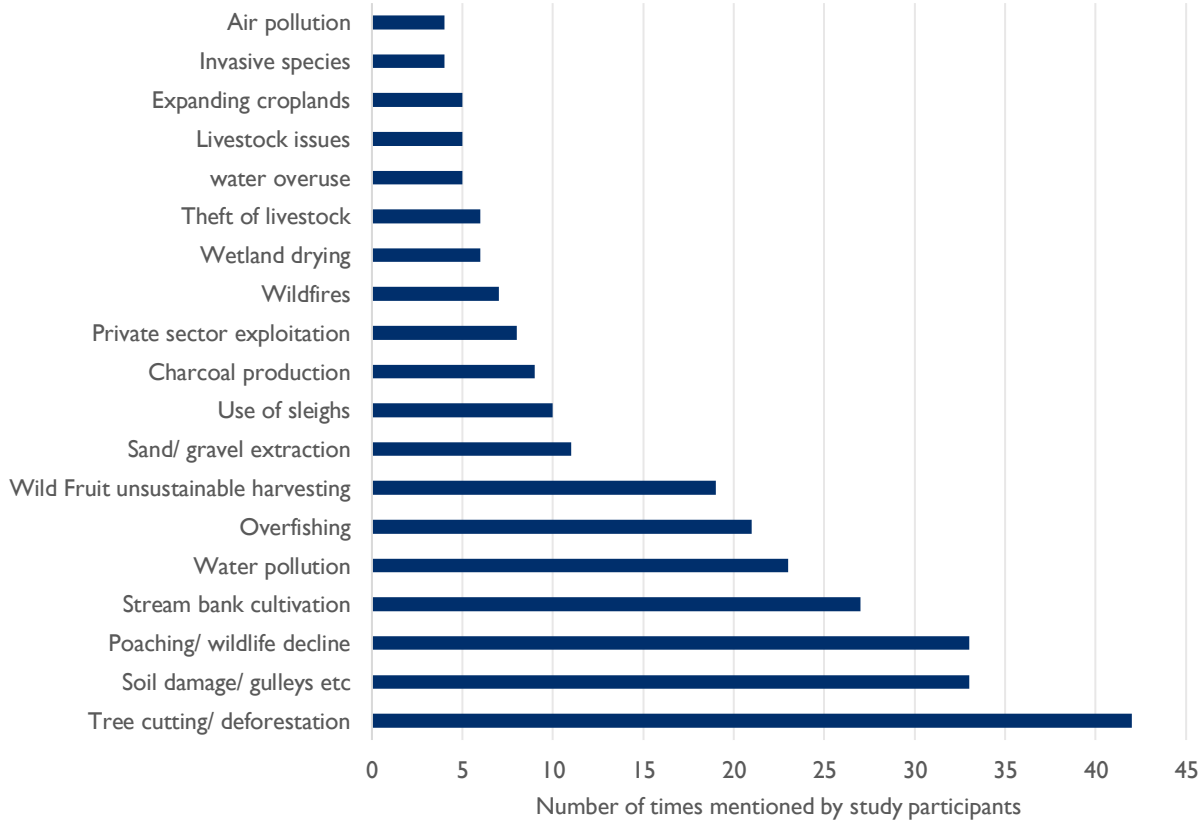
A FGD of middle-aged men in Hwange stated: "*It is important to protect and improve natural resources to sustain human nature. If they are not managed future generations will not have the privilege of seeing and using most of the resources that we saw and used… Management of natural resources enhances the balance of nature… As a community our livelihoods depend on natural resources so we should manage and use them sustainably."*

Most youth FGDs gave detailed responses to this question, refuting the perception held by several key informants that young people do not care about natural resources. For example, a focus group of young women in Hwange said: "*Natural resources are a source of our livelihoods without them our lives would be faced with many hardships and challenges; literally we cannot live without them… All the resources should be protected to balance the ecosystem. Our lives are dependent on the natural resources because we get services and products."*

## 3.2 What are the behaviours being practiced that lead to natural resource degradation?

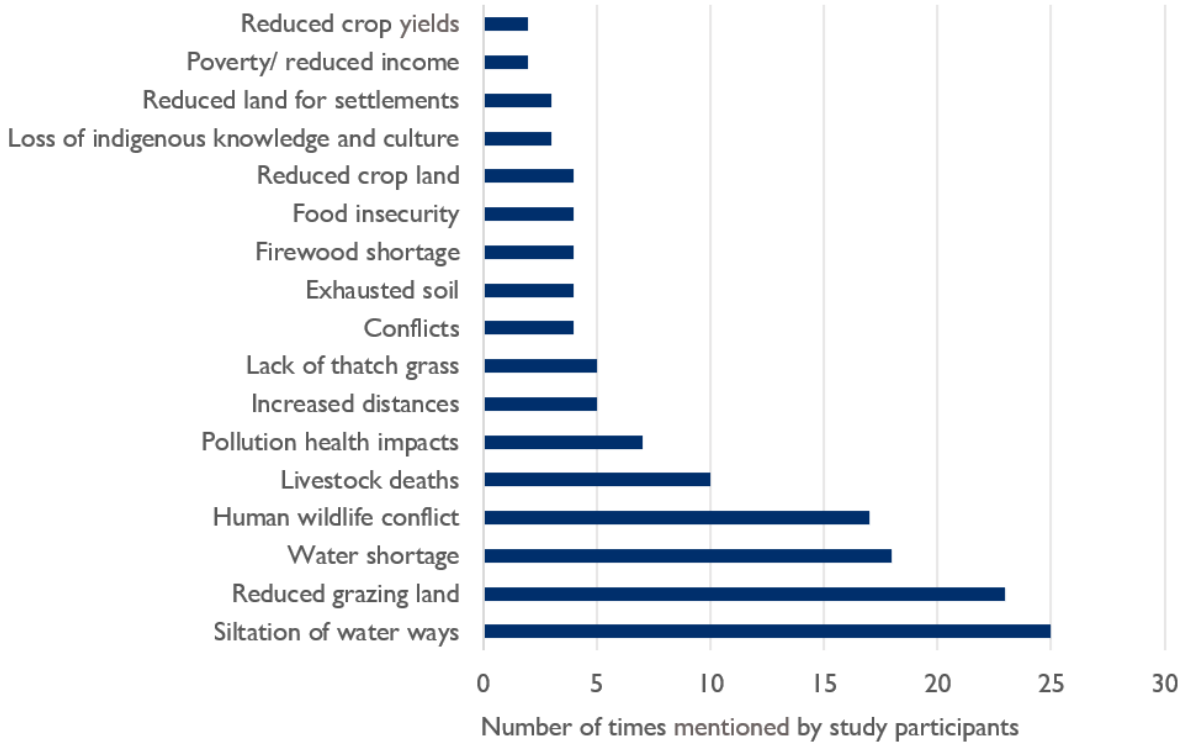
Study participants mention a wide range of resource degradation actions that are practiced in the study districts (as shown in figure 4). Figure 5 shows the associated negative impacts mentioned by study participants.

**Figure 4: The most common forms of resource degradation**



*If a family does not own a scotch cart, traditional wooden sleighs are used to transport heavy items such as firewood or harvested crops. The sleighs are dragged across the landscape causing serious de-vegetation and soil erosion.

**Figure 5: The perceived impacts of resource degradation**




In general, study participants said resource degradation is serious in their communities. The exception was the issue of deforestation in Nkayi, which community respondents did not perceive to be a problem. This is despite a 2018 study showing that between 1990 to 2017, woodland in the district declined by 11 percent due to clearance for crop land.[54] The Forestry Commission representative in the district suggested that because trees are so abundant there, communities think they will never run out. The research team suggests the reason could also be that deforestation is a very gradual process and hard for communities to appreciate unless they are monitoring it.

**Deforestation** was reported by respondents to be notably worse in Hwange resettlement areas, which the team did not visit as it was not part of the sample area. The Forestry Commission representative in Hwange said that these areas have been almost completely cleared of all mopane trees, which were cut to produce charcoal for sale. Although this practice is illegal, it is rapidly increasing even in the districts the team visited. An FGD of older women in Hwange noted: "*The mopane trees are being cut in unsustainable manner to make charcoal. Our children will never know the Mopane tree…The unsustainable cutting of trees causes a lot of problems in our village. Our village is now almost a desert with no trees for shade and protection of the soil. Strong winds also affect our homesteads.*" Charcoal is produced by burning the whole tree, which kills the tree and prevents coppicing (sprouting new branches after being cut). This practice also leads to wildfires according to respondents.

[54] Chimira, Ncube and Vanrooyen, 2018

Study participants noted mopane cutting for firewood sale as a problem in Binga. Participants also frequently identified clearing of forest to expand cropping areas as r problem. Study participants identified the negative impacts of deforestation as soil erosion and siltation, firewood shortages, and loss of indigenous knowledge. Participants noted that children would not be able to learn about indigenous foods, trees, and wildlife because they would no longer exist in their communities. FGDs in Nkayi expressed community-wide anger about not benefitting from commercial hardwood timber cutting in their district. Consequently, there is increasing disenchantment with the timber company, and the Forestry Commission and RDC, both of which are paid dividends by the timber company. Part of this money is meant to go into community projects in the same manner as the CAMPFIRE programme. However, the community feels they are not getting their share. Currently, this practice is mainly done in the state designated and protected Gwampa forest, which borders Nkayi and Lupane. Communities have been excluded from the forest since it was designated as protected although there are some "illegal" residents who refuse to leave. According to the timber company representative, there are also some "illegal" activities that include hunting, cutting, and selling of hardwood by community members; firewood collection; and wild honey harvesting in Gwampa forest.

**Poor soil management** (including annual ploughing, ploughing down slopes, and poor fertility management) is leading to widespread soil degradation in all districts. Key informants from Agritex said that a driver of these practices was a lack of knowledge. According to FGD participants in Hwange, low fertility is causing very low yields despite with good rains. Erosion is leading to loss of arable and grazing land and shortages of water systems from siltation. When talking about local farmers, a key informant from Hwange said: "*The quality of the soil has reduced. The degradation is very serious... No matter how much the rains pour, there's always hunger. It's like a perpetual drought season. Like last year … even though there was a lot of rain the yields were still low. They got nothing."*

Several respondents noted that the traditional method of shifting cultivation was still being practiced, despite being vigorously discouraged by extension officers since the colonial era. A key informant from Binga said of farmers in the community: "*They do not feed their soil to enhance soil fertility and when they see that the land is not giving them enough crops, they shift to another piece of land … that is due to lack of knowledge on ways to improve soil fertility."*

A ward Agritex officer noted: "*I am worried about soil degradation, as is it the major natural resource, we cannot survive without soil … if we lose our soil, we end up having deserts. It's very worrying, this season we had so much rain that washed away the soil, and we were left with many gullies … If we have gullies, we have nowhere to farm or have enough land to build our houses."*

**Poaching and wildlife decline** was a particular problem in Nkayi where most FGD and KII participants said that most wildlife had been completely eradicated by the community through illegal hunting at night with torches. Wildfires were also deliberately started for hunting purposes. A key informant lamented: "*Can a place without wild animals be a good place? Without wildlife children will have no relationship and knowledge of wildlife. It's important for children to see these animals and not just see them in books."* In Nkayi, poaching further contributed to human-wildlife conflict due to the remaining predators (jackals and hyenas) that attack livestock in the absence of other wild food sources.

**Streambank cultivation** of horticultural crops is practiced widely throughout all the study districts although everyone knows that it is illegal. Streambank cultivation causes siltation and river pollution, mainly due to clearance of trees and ploughing (if field crops are being gown). The practice has been illegal since colonial times. Cultivation is prohibited within 30m of the edge of streams and rivers. Most FGDs and key informants and district and ward level noted that the EMA has rules against streambank cultivation. This practice is particularly bad in Binga where ploughing and field crop cultivation is common on the streambank. The main drivers appear to be farmers taking advantage of fertile soils followed by water for irrigation. In Binga and Hwange, the lack of flat land for crop cultivation is a major contributing factor as the only flat areas are along stream banks.

**The lack of livestock grazing management,** including overstocking and failure to rotate or rest grazing areas, and wildfires, were implicated in the lack of fodder and sever soil erosion, which leads to livestock encroachment into arable land. Study participants reported cattle deaths from starvation or disease caused by drought. Key informants highlighted extreme reluctance to practice de-stocking for cultural and economic reasons. Cattle are used to pay lobola (bride price) and are also an important, stable store of wealth, which is particularly important in a hyperinflationary economic environment. Participants in four FGDs mentioned that cattle are also a cultural symbol of wealth. A respondent from Hwange noted that cattle *"provide meat for relish, draft power especially in tilling the land, manure for improving soil fertility. Those with livestock, especially cattle are regarded as wealthy so cattle is a symbol of wealth. Livestock are sold to get income."*

A respondent from the department of livestock and veterinary services noted: "*Cattle are becoming too many… the problem of this community is that they did not put aside land for grazing, so when they were issuing land, you find that there are homes and fields [in the same area] … what is needed is to have a law to say an individual can have a maximum of 20 animals. If there are more, they can sell the extra and maintain the 20. Keeping up to 60 to 80 cattle is detrimental to veldt carrying capacity… When you introduce laws for the first-time people tend to retaliate but as time goes, they will realise the purpose of the laws."* Currently, there is no national law on the number of cattle that can be owned.

**Mining problems,** particularly coal mining as none of the study districts had gold mining, is a localized problem in Hwange and a severe threat to the health of people and livestock through water, soil, and air pollution and loss of land. Community respondents were extremely antagonised by this issue. They have tried for decades to engage their traditional leaders, councillors, and the EMA, to address the issue but to no avail. The government key informants interviewed regarding this issue were very reluctant to comment. One refused to have the interview recorded. The key informants told the research team that the EMA does fine the collieries when they pollute. However, this is clearly not stopping the problem. A ward level Environmental Health Technician (EHT) told the team that he collects water samples at regular intervals and takes them to Victoria Falls for analysis, but no action is taken based on the results of these samples. An FGD with middle-aged women noted: "*The companies dump mining waste into the river to save money for processing and disposing the waste in an environmentally friendly way… The water in the river is now undrinkable for livestock and community members. Livestock mortalities are high due to the contamination… We face water challenges because we can longer access water from the river for agriculture and domestic consumption. Our goats are dying."* The press has reported this issue for decades, but nothing has been done yet.[55] However according to a recent newspaper article, the colliery may finally be about to resolve the problem.[56]

**Overfishing** was most frequently mentioned in Binga occurring along the river and lake. In Binga, community members are allowed to fish for household consumption if they use fishing rods, whereas using nets requires a licence. Several different fish species are harvested but for commercial purposes the most popular are tilapia and kapenta (a type of freshwater sardine). Overfishing was linked to too many individuals and companies from Harare having licences, illegal fishing in breeding areas, use of illegal nets, and prolific poaching of fish, mainly by Zambians crossing into Zimbabwean territory. Local fishermen and fish union representatives interviewed said that large companies from Harare are being given greater concessions and that this is impacting fish availability for locals. Locals can't compete with these companies because they lack modern equipment e.g., decent nets. Some key informants feel that the fishery may be on the verge of collapse and proper monitoring is non-existent.

**Overharvesting of wild fruit** was mainly noted in Binga and includes damage done to trees, such as throwing stones and breaking branches or even chopping down the whole tree to access the fruit.

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[55] https://www.zimbabwesituation.com/news/hwange-villagers-decry-deka-river-pollution/
[56] https://miningzimbabwe.com/colliery-company-acts-on-deka-river/

Annex D details the types of wild fruits harvested. Overharvesting can also lead to reduced tree regeneration as there are fewer seeds returned to the forest. The study suggested that people in Binga were living off wild fruit sales since crop yields were extremely low. Wild fruit was being overharvested and stolen from trees in people's fields in the district. A Forestry Commission representative explained: "*People harvest everything. Some in the communities no longer have enough fruit. Some of the trees are now personalised by certain people yet they belong to the whole community. Those who want to sell must pay for a Forest Produce Permit, but no one has ever done that, and local Forestry Commission rarely benefits from these permits. We sometimes fine people for selling the fruits but at times we just leave them because they are just trying to survive.*"

**Uncontrolled sand extraction,** which destroys water courses, was noted as a problem in Hwange where the study suggests the RDC is allowing companies to extract sand without any proper regulation. The sand is used in construction of buildings. Communities accuse RDC employees of being involved in illegal extraction. When asked about uncontrolled extraction of sand, the RDC argued that those extracting sand were doing it according to the RDC and EMA regulations, however this was doubtful given the number of complaints from the community during FGDs.

## 3.3 Who is responsible for the degradation?

The responses to this question did not identify one clear group. Not surprisingly it seems that different types of people (men, women, youth, duty bearers, and companies) are engaged in different resource degradation activities at different levels for different reasons, as this excerpt from a FGD with female youth in Binga explains:

*"Wildlife poaching is done by men and male youths, meat is sold to get income for buying household needs and sending children to school… Nobody in the community cares about enforcing or reporting poaching cases and policing lies in the RDC rangers, the police and Parks and wildlife… Both men, women and youths are responsible for selling pit sand and quarry [stones] illegally being motivated by the fact that they are not getting benefits from the resource which they deem as theirs. Some traditional leaders are also engaged in this illegal act. Sand extraction has resulted in the widening of Lukosi river channel as commercial extractors have opened up access roads within the channel itself totally destroying riverbank in some areas. EMA is meant to be regulating the conduct of council and commercial extractors unfortunately no one known to the community has been arrested for breaking this law. EMA is… selective in the application of the law as it [EMA] descends heavily on farmers practicing stream bank cultivation leaving people causing immense environmental pollution and degradation. They are labelled as corrupt."*

### *Youth*

Study participants most frequently cited male youth as the responsible party (mentioned 32 times) for natural resource degradation. However, most respondents, including young people themselves, said that youth were not heavily involved with livelihoods linked to natural resources. The older respondents suggested that young people are attracted to livelihoods that give quick returns and are transient—as youth aim to move to urban areas or across borders. For young men who have not migrated, mining, sand extraction, and brickmaking are the main livelihoods related to natural resources. For young women, wild fruit harvesting and basketry were identified as key livelihoods linked to natural resources. The research team has interpreted this contradiction to suggest that despite a low youth population in rural areas, young people contribute to natural resource degradation for the following reasons: 1) the young people that do live in rural areas aim for livelihoods that are not agriculture-related because the returns are quicker; 2) young people use the available natural resources since there are few livelihood options; and 3) young people do a lot of damage despite their small population because of their increased strength and level of physical activity.

The fact that young people do not feel part of their communities is likely related to the frequency of mentioning youth as people who practice harmful behaviours and the perceived intensity of degradation inflicted by youth. Two of the youth FGDs mentioned that there was not enough land for young people. A group of young men from Hwange noted that: *"we need to have somewhere to settle as the youth, we are worried about this issue of selling land to people from other areas…The village heads are selling our land."* The same group noted that *"We are powerless, ... We have no representation as the youth…These resources will soon be exhausted."* Meanwhile, young women in a focus group in Binga reported that they feel alienated from their communities and did not think of them as home. They also said that they are left out of community development projects because they do not attend meetings. Young women are particularly affected by the issue of alienation since when they get married, wives are expected to live with their husband's community.

Middle-aged study participants mentioned a gap and conflict between generations. A key informant from Nkayi said that the traditional beliefs held by older community members are no longer relevant to youth noting that *"there is a generational gap between the elderly and the youth with no platforms to bridge this gap."* This gap was manifesting due to a fear of censoring youth in some communities. For example, a councillor in Nkayi noted that people are afraid to tell young people to stop poaching because they think the youth will come and steal your goats. He explained that when the community wanted to celebrate world wetland day with the EMA at Mbazhe wetland: "*the young people threatened us with axes and scolded the Headman and Chief so we ended up abandoning the celebration. We are afraid of them."*

### *Middle-aged men and women*

Several study participants (11) said a mixture of people or even the whole community (in five interviews) are responsible for resource degradation. They suggested that physically or economically active middle-aged men and women have the most impact on degradation. The study suggests that men, because they are physically stronger, were more involved with deforestation, sand extraction, brickmaking, and wildlife poaching while women were more likely to be responsible for stream-bank cultivation. In five interviews, study participants blamed rich people in the community for natural resource degradation and suggested that they usually have larger livestock herds, which degrade grazing areas. Rich people can employ others to exploit resources for them and because they are rich, can pay bribes and fines and just continue to degrade resources.

### *Private sector and duty bearers*[57]

Private companies assisted by councils and traditional leaders (who turn a blind eye) were deemed responsible for water pollution from mining (in Hwange), degradation of rivers through sand extraction (mainly in Hwange), and over-fishing (in Binga). Study participants in seven interviews mentioned corruption of local authorities and traditional leaders in relation to these activities. In all districts, FGD participants were outraged by the lack of regulation and corruption involved in private sector resource exploitation. They were also angered by the fact that not only do communities fail to benefit financially from private sector resource exploitation (mentioned 15 times), but they must bear the consequences in terms of loss of land, loss of livelihoods, and pollution. Regarding a Chinese owned mining company in Hwange, an FGD with older women noted: *"The Chinese do not have toilets. Anyone who questions them is bribed. The Chinese discharge chemicals into the river…. Most of the grazing area has been occupied by mining companies as a result some community members are not following practices that protect the grazing*

[57] Duty bearers are those actors who have a particular obligation or responsibility to respect and promote rules and laws such as government and traditional leaders.

*areas…Council is given money so there is no way out. We tried to form committees to lobby for benefits as a community since our livestock are dying and we breathe [coal] dust everyday but it was to no avail."*

In Binga, a key informant explains how fishing companies from Harare are blamed: *"In the past we had functional fishing associations and … we would regulate fishing, choose fishing areas and those who did not follow fishing regulations were fined. Unfortunately, this system is no longer functional. We now have an influx of rich fishermen from outside of Binga, who do as they please. Fishing has become very political and unfortunately, we are seeing a decline in the number of fish catches in the Zambezi. This is affecting the livelihood of local fishermen - less yields mean low incomes."*

## 3.4 Are individuals and communities aware of how and why natural resources are being degraded?

Study participants mentioned lack of awareness as the reason for resource degradation in six interviews. However almost everyone consulted, from community level to government departments, showed a broad and deep understanding of environmental systems and their importance. For example, most participants stated the relationship between poor soil management practices in arable and grazing areas and siltation of water systems. Most are extremely aware of and seriously concerned about the severe resource degradation in their communities. Deforestation in Nkayi was hard for some communities to perceive due to its gradual nature. Awareness is also lower than what it could be due to the lack of monitoring of resource degradation. Based on responses from Agritex officers, the need for long term measures to improve soil fertility (such as increasing soil organic matter content) appears to be the least well understood NRM practice.

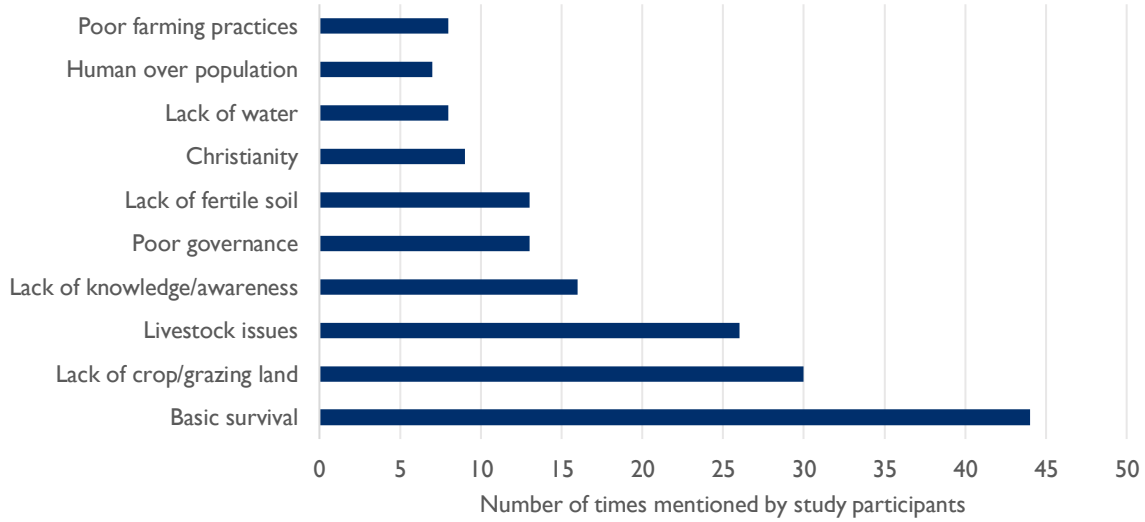
This issue of lack of awareness is discussed in more detail in section 3.5.

## 3.5 What are the reasons and motivations for the current practices that contribute to land degradation and unstainable use of water by market actors, communities, and households *(including mining, deforestation, overgrazing, and unsustainable agricultural practices)?*

The reasons and motivations were varied and are presented here (figure 6) in order of frequency of mention in FGDs and KIIs. Poor governance is discussed further under barriers to implementation of successful practices (section 3.7).

**Basic survival** as a reason for resource degradation, was mentioned 44 times in FGD and KII responses. In the FGDs, women more frequently mentioned basic survival (18 times), than men did (eight times). The study suggests that basic survival is the main driver for most individuals abusing natural resources since they have no other way of making a living. Furthermore, the livelihoods from resource exploitation that these individuals do engage in barely produce enough for them to survive. For many, farming no longer provides enough for even subsistence, so many have turned to activities such as brickmaking and sale of firewood, river sand, wild fruits, and carvings to earn money to buy food and pay for basic expenses. Other basic needs such as housebuilding materials, fuelwood, and water have no substitutes and must come from the local environment. An FGD of middle-aged men from Nkayi summed up the issue saying: *"People need income and feel it's better to degrade the natural resources than to steal from other community members."* Also, an EHT explained: *"There is not much concern about the future when people have pressing issues now."*

**Figure 6: Reasons for resource degradation**




**Lack of land and fertile soil** was also identified as reasons for streambank cultivation, deforestation, and wetland degradation. According to KII respondents, lack of land was an issue in Binga due to its hilly terrain, which means that the only flat land for crop production is on streambanks. As noted by the EMA officer: *"In all the wards is streambank cultivation. The problem is the area doesn't have good land for agriculture - except in Lusulu. But along the valley it's very mountainous - the only flatland is within streambanks. There are small patches - and they plough in those patches. We have a big hassle in driving them away from those areas because there's just no land in most of the wards."* Participants mentioned lack of fertile soil in nine FGDs, more often by men than the women.

Livestock are allowed to graze on wetlands because of the lack of grazing land due to uncontrolled veldfires and lack of rotational grazing, which depletes pastures. This issue was mentioned in eight FGDs, equally by men and women. Uncontrolled settlement patterns have arisen in recent years whereby people are being given, or choosing, land to settle in grazing areas. Grazing areas in Hwange were being increasingly occupied by private sector mining activities. Lack of fertile soil is affected by soil becoming exhausted due to continuous cropping and lack of fertility management.

**Issues related to livestock** in terms of overstocking or poor grazing management were mentioned 26 times in the FGDs (more often by women than men) as a reason for resource degradation. These can be linked to **poor governance and law enforcement,** which was cited 13 times (more often by men than women) as a reason for degradation. The study found that all NRM governance institutions are severely lacking in resources and are comprehensively failing to carry out their mandates.

**Lack of knowledge or awareness** about the causes and consequences of resource degradation was mentioned 16 times by KII respondents. It was only mentioned once in an FGD. While possible that some people in the community are not aware of the issues, all the study participants showed that they are very knowledgeable about natural resources—they value them, are aware of and concerned by resource degradation, and are aware of the regulations governing natural resources. Many were also able to admit that they are contributing to resource degradation through their actions. Therefore, lack of awareness could likely mean lack of ideas on ways to address the problem and find alternative land-use practices or livelihoods that do not degrade natural resources.

**The rise of Christianity** was identified nine times in FGDs and KIIs (more by men than women) as a reason for the decline of traditional resource government measures and the decline in the role of traditional leaders. One EMA officer summed up the issue*: "Cultural rules are no longer followed due to*

*Christian religion. Now people do not listen to the cultural values or even believe in them anymore. The older people still respect traditional ways for natural resource management however they are outnumbered and out powered by the younger generations who have a different value perspective for natural resources."*

**Overpopulation** was mentioned six times as a cause of resource degradation. Although not densely populated, the carrying capacity of Matabeleland North districts is low (due to the hot, dry climate, fragile soil, and scarce water resources). Overpopulation of people and livestock is an issue and has been getting worse for decades.

Although not mentioned by many, the study noted in responses to other questions that **profit** is undoubtedly a driver for some wealthy community members and leaders who, along with corporations, use their social and political influence or pay bribes to profit from unregulated natural resource exploitation. One example is the huge cattle herds kept by wealthy farmers. Cattle are used as a store of wealth and because they breed, they increase wealth. They are also a sign of social status. Since there is no legal limit on the number of cattle that can be kept nor a culture of destocking, the environment and less wealthy community members with smaller herds are disadvantaged.

## 3.6 What are the NRM best practices identified by community members and other stakeholders that can be implemented in the project area?

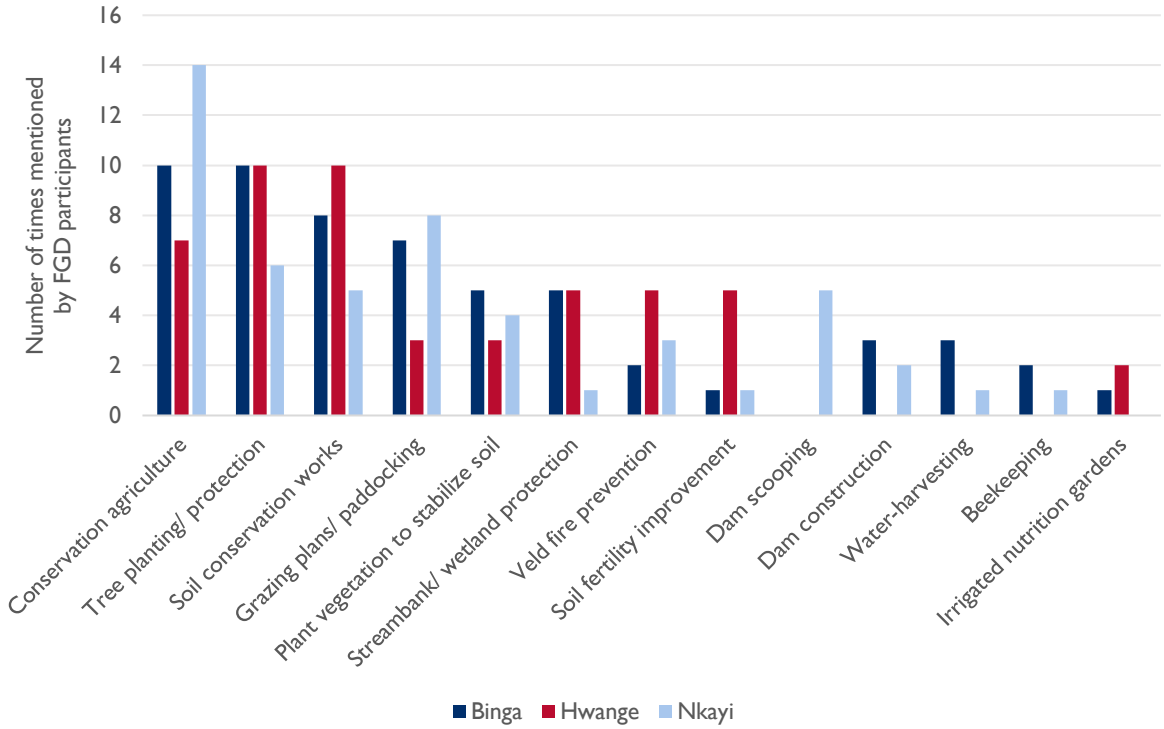
Respondents had difficulty in identifying successful practices and had to be probed. Figure 7 shows the practices that communities identified that could be used to reduce resource degradation, including those which are actually practiced in the community. Young people mentioned more beneficial practices than middle-aged people did, and men mentioned more than women. More beneficial practices were mentioned in Binga than in the other districts.

**Conservation farming** (a minimum tillage method whereby crops are planted in basins to conserve moisture and crop residues are left on the land after harvest) was the most frequently listed best practice, mentioned 26 times by KIIs and 31 times in FGDs, more by men (19 times) than women (12 times). This was widely promoted by the government last year and seems to have taken off in all districts last season, mainly thanks to the presidential inputs scheme.[58] An FGD of middle-aged men in Nkayi noted: "*Yields have significantly increased as a result of conservation farming compared to when the farmers were using the conventional farming practices. A small plot gives triple the yield when utilising conservation farming compared to conventional farming."* FGD participants also mentioned increased yields as a result of conservation farming. However, the study suggests that the government and non-governmental organisations (NGOs) giving inputs is the biggest incentive for taking up this practice.

A group of young men in Nkayi noted: *"A lot of people in the community practice conservation agriculture because of the free seed and fertilizer they get after being enlisted for such programmes."*

[58] Through this scheme, small-holder farmers are given free inputs to support increased maize production. Larger farmers get a loan of inputs through the Command Agriculture Scheme. This loan must be repaid using part of the maize harvested.

**Figure 7: Beneficial NRM practices mentioned by FGDs by study district**




**Tree planting and tree protection** measures, initiated mainly by the Forestry Commission and NGOs often through schools, were identified as examples of successful projects nine times by KIIs and 26 times in the focus groups, more by men (11 times) then women (15 times). Some FGDs mentioned that the government encourages everyone in the nation to plant trees on national tree planting day (the first Saturday of December), which is mainly done in schools.

A focus group of young women in Binga mentioned that planting trees as windbreaks is practiced in their community. Two middle-aged men in a Binga focus group mentioned that they had planted a tamarind tree (*Tamarindus indica*) and a snot apple (*Azanza garckeana)* both of which were now giving their families fruit. A Forestry Commission representative in Binga said that the commission encourages growing all indigenous trees, especially fruit trees such as snot apple (*Azanza garckeana)*, nyii (*Berchemea discolor*), and baobab (*Adansonia digitata)*. They also encourage propagation of hardwoods including rosewood (*Guibourtia coleosperma*), wooden banana (*Etandrophragma caudatum*), pod mahogany (*Afzelia quanensis*), mukwa (*Pterocarpus angloensis*), and teak (*Baikia plurijuga*). The nurseries are at community and homestead level and sometimes at schools.

A traditional leader in Binga noted schools in his community grow gum trees (Australian *Eucalyptus spp*.) and sell them to locals to generate income to improve the school. The Forestry Commission has been promoting propagation and planting of gum trees in schools and communities as woodlots for decades. The aim was to reduce the pressure on indigenous species for fuelwood and construction materials. However, although they grow very well, gum trees in Zimbabwe cause problems with lowering the local water table and inhibiting the growth of other plants, including crops in their vicinity. The Forestry Commission representative in Nkayi told the research team that the organisation is now discouraging gum trees but cannot recommend an alternative species to communities.

However, planting trees is not sufficient as noted by a Forestry Commission representative in Nkayi: *"The problem with trees is people plant them but don't look after them. They need someone with passion look*

*after them, take care of them, check to make sure whether everything is OK, [and ask] are there any diseases - termites eating them underneath? We no longer just give people trees, but we want to know what measures they are putting in place to look after the trees. Fencing is important it really helps areas to resuscitate and regrow. Paddocking helps in regeneration of an area. Goats are the real enemy of regeneration they eat everything."*

In Nkayi, the timber company has initiated a tree planting project in Gwampa forest using the seed ball method whereby seeds of the desirable hardwood species are packed into balls of soil mixed with manure. This improves germination and helps protect them from insect attack. The company representative estimated that there was a 20 percent survival rate and that most of the surviving trees were planted underneath existing trees.

Several FGD participants also mentioned tree protection methods, such as pruning for firewood (as opposed to cutting down a whole tree) and fencing trees from livestock. The Forestry Commission representative noted that in Binga, communities make fire breaks around tamarind trees since they provide valuable fruit. He also noted that a company is paying communities to collect the seeds of *Trichilia emetica,* which are used for cosmetic oil extraction. Additionally, there is a REDD+[59] project in Binga run by Carbon Green Africa so communities can benefit by protecting their trees, however, like CAMPFIRE this project has attracted controversy for benefits not reaching communities.[60]

**Soil conservation works** were mentioned ten times by KIIs and 23 times in FGDs, more by women (15 times) than men (eight times). This included gulley repair and prevention as well as construction of contour ridges in fields. One popular example in Binga was using plants, such as vetiver grass, to stabilise soil (mentioned 13 times in FGDs). These projects had been mostly initiated by NGOs or government through food for work schemes rather than by the community.

**Grazing management (including rotational grazing and paddocking)** was mentioned as being successful 12 times in KIIs and 18 times in FGDs, equally by men and women and more often by middle-aged people. Communities implemented a successful rotational grazing management system in some wards in Nkayi (where it was mentioned more often as a successful technique compared to other districts). A ward Agritex officer explained the system: "*We have a system of grazing that is systematically followed and anyone not adhering to this grazing plan is punished [by traditional leaders]. From February to May communities drive cattle away from the wetland area into the forest to allow for the regeneration of the grass species in the wetland... All the seven villages implement the same NRM practices but [one] village suffered in one year when they were not following this rotational grazing practice. One farmer in the drought year [2019] lost … 21 cattle."*

**Streambank and wetland conservation** (initiated by NGOs such as World Vision with the EMA) in Nkayi and Binga have been successful according to both key informants and focus group participants. Protection of streambanks and wetlands was mentioned slightly more often in focus groups by young men than other groups and was mentioned least in Nkayi.

**Wildfire prevention** was most frequently mentioned in Hwange in KIIs and FGDs and is coordinated by the EMA, Forestry Commission, and CAMPFIRE.

**Soil fertility improvement methods** including application of livestock manure, mulch, and other organic methods to fertilise fields were mentioned ten times, by Agritex officers in all study districts and FGD participants (more often in Hwange than in other districts).

**Beekeeping** was mentioned ten times in the study. While most of the mentions were in Binga, others were from interviews with the Forestry Commission and EMA, interviews with the timber company in

[59] REDD+ is a framework created by the UNFCCC Conference of the Parties to reduce emissions from deforestation and forest degradation

[60] https://redd-monitor.org/2018/02/08/the-kariba-redd-project-in-zimbabwe-from-carbon-credits-to-earth-tokens/

Nkayi, and a couple of focus groups in Nkayi and Binga. The Forestry Commission and the timber company in Nkayi is promoting this practice to protect forests and prevent eradication of wild bee colonies.

**Dam scooping** initiated by communities in Nkayi was mentioned (five times by focus groups with women and three times by key informants in Nkayi) as a successful practice. One key informant in the district explained: "*In Tshutshu village, the community members teamed up to scoop sand in their dam to increase the amount of water the dam can hold. Similarly, this also happened in Gezekhaya Village – where communities did dam scooping and dam maintenance activities to increase the amount of water harvested.*"

NGO-initiated **irrigation schemes** in Hwange and Binga have been successful according to four KIIs and three FGDs. However, observations of group irrigation schemes in the study districts revealed that it is common for individuals to have streambank gardens in addition to plots in group gardens established by NGOs.[61] The quality of vegetables produced in the streambank gardens is markedly higher than those from the irrigation schemes, which is likely due to better soil fertility, management, and microclimate.

According to the literature review and two KIIs, the **CAMPFIRE programme** has been successful in some Binga wards whereby funds from contract hunting appear to go directly to community projects (such as building a community centre and contributing to school improvements) rather than being siphoned by the council. The project used to exist in Nkayi but is no longer functional there. An Nkayi key informant noted: "*CAMPFIRE used to close gullies. It was successful but people chased it away. They were not happy when CAMPFIRE wanted to rehabilitate Mbazhe dam since some homesteads would have had to be relocated.*"

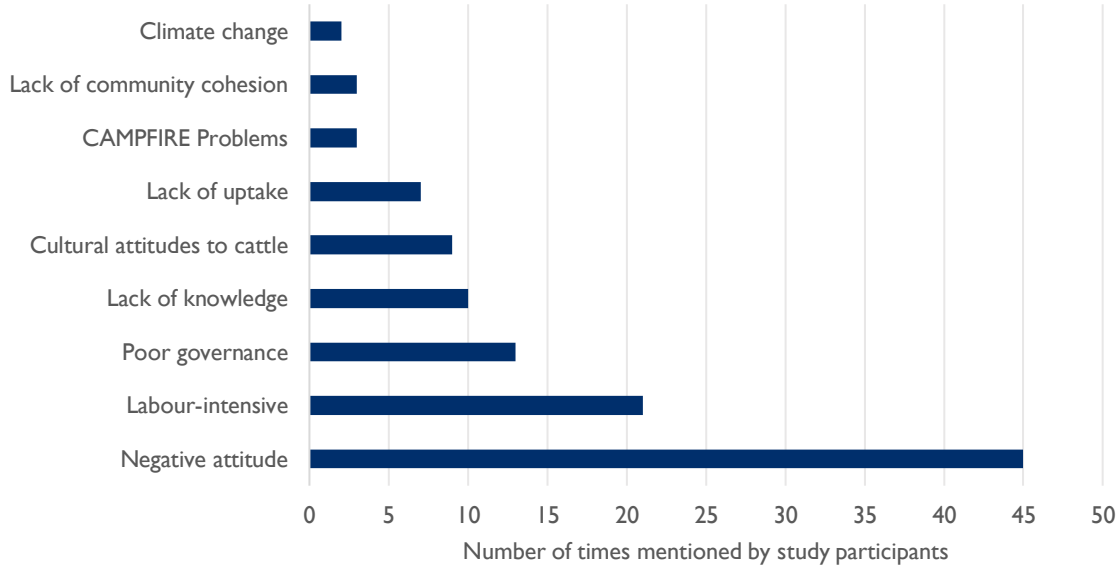
Other notable successful practices mentioned (all in Binga and more frequently by KIIs than FGDs) include destocking of cattle and livestock fodder production for supplementary feeding.

## 3.7 What are the barriers to implementing these practices?

Barriers mentioned (shown in figure 8) were similar to the reasons put forward for resource degradation, therefore only those not mentioned in section 3.5 will be discussed here.

[61] In group gardens, individuals have their own plots, but the group shares the water resource.

**Figure 8: Barriers to implementing successful NRM practices**




A **negative attitude** was cited 45 times (in FGDs and KIIs) as a major barrier to NRM. In the focus groups, men more often than women mentioned this barrier. Negative attitude includes not caring about the consequences of degradation, being lazy (mentioned six times), being selfish (mentioned four times), or having dependency syndrome (mentioned twice), whereby one expects others to address natural resource degradation issues.

This issue was most prevalent in Nkayi, where it was (mentioned in eight KIIs and three FGDs. Six KIIs and two FGDs mentioned this issue in Hwange and seven KIIs and two FGDs in Binga.

The middle-aged respondents often attributed the negative attitude regarding natural resources to young people. However, the FGDs with young people revealed that they care deeply about NRM issues. A group of village heads from Binga explained: "*People do not understand the long term consequences of their actions. People do not really know that the side effects of their actions like pulling of sleighs results in soil erosion. Some people think that when we warn them against activities that degrade the environment, we do not want them to succeed in life. People are ignorant and some do it out of jealousy and hate.*" An Agritex officer from Binga noted: "*Some people in the community are too lazy to take the initiative. They have the knowledge but it's a behavioural problem.*" Two middle-aged men mentioned negative colonial era associations with conservation practices and two others mentioned disliking being told what to do by Agritex.

**Lack of uptake** of successful practices intended to promote conservation agriculture, gulley reclamation, and cattle destocking, was cited as a barrier by study participants. The fact that conservation measures, including gulley reclamation, and conservation agriculture are **labour intensive** is likely significant factor in lack of uptake of promoted practices. Participants mentioned this 21 times, 15 of which were in FGDs where it was mentioned twice as often by women than by men. Lack of knowledge was mentioned ten times.

Study participants saw **cultural norms around cattle** as a barrier to implementing NRM best practices. Cattle is regarded as an important store of wealth and a status symbol, which prevents destocking. Agritex officers in Hwange and Binga and the Department of Veterinary and Livestock Services (DVLS) in Binga all mentioned this issue and noted that they had been trying to encourage farmers to destock cattle particularly during a drought, but adoption rates are very low. The officers all said that this was due to cultural factors associated with cattle. An Agritex officer in Hwange said: "*It is*

*just a norm. They keep livestock for prestigious reasons. They won't cull. Adoption level is 5 to 10 percent."* The DVLS officer in Binga explained: "*We do encourage them to destock the old animals. And some people do agree but the older generation will not be willing to let go because they have a strong cultural attachment with the animal."* He recommended encouraging 'beef committees' where groups of people in the community come together to pay a farmer to slaughter a cow and then shared the meat with the committee. He noted that this would reduce the impact of cattle on the land and improve on community nutrition. He also noted that *"what is needed is to have a law to say an individual can have a maximum of 20 animals, if they are more, they can sell the extra and maintain the 20. Keeping up to 60 to 80 cattle is detrimental to veldt carrying capacity."* Farmers are even resistant to slaughter goats, as noted by an Agritex officer in Binga: "*A farmer with over 40 goats will not sell three goats to buy acaricides, this is a behavioural challenge."*

Two respondents mentioned **problems with CAMPFIRE programme.** As previously mentioned, CAMPFIRE was seen as successful in one ward in Binga but collapsed in Nkayi. Some traditional leaders in Nkyai explained: "*CAMPFIRE- it was a success for a few years but later failed because people did not have an understanding of conserving and preserving natural resources and utilisation. They did not accept it because they did not like being controlled on how to use their own natural resources e.g., the Mbazhe wetland project."*

**Lack of community cohesion** was mentioned by key informants in Binga and Hwange and an FGD of older men in Nkayi. They all noted that the "lack of unity" in the community was leading to resource degradation.

The research team observed additional problems, such as challenges with irrigated gardens and politics.

The technical and social challenges of **irrigated group gardens** also influence their success. These challenges include the poor microclimate (wind and heat) created by removal of all trees when establishing the garden, poor soil fertility, crop choice, and group garden dynamic problems leading to social conflict. Seasonality is also an issue whereby gardens are often neglected or abandoned during the rains because labour is focused on field crops.

**Politics** as a problem was not mentioned much and not by any of the focus group participants. One key informant in Binga noted that if a traditional leader "*supports one political party and the community another, there tends to be conflict, with chiefs neglecting those communities."* Another key informant in Nkayi noted: *"The issue of enforcement of bylaws is tricky in the sense that there is an element of political interference because of patronage. There is an attempt to punish people, but politicians say why are you punishing people? And the enforcers get confused. The politicians do this to get people to like the party."*

## Governance issues

As already mentioned under reasons for resource degradation (3.5), extremely poor governance of natural resources is a major issue nationally and across all districts.

### *Traditional leaders*

The traditional governance systems that once existed have become severely eroded. Although legally, traditional leaders are the custodians and regulators of natural resources (according to the Traditional Leaders Act), the study shows that they are currently unable to do this. Their role has been undermined by successive government policies and the increasing influence of the church dating back to colonial times. An EMA officer explained: *"Most traditional leaders are not aware of the Act that empowers them. There might be a lack of understanding or even fear. Some call on EMA to assist them but it is their mandate to enforce regulations…The gap is in that they do not seem to understand their roles. They need to be trained and given literature. At times they do not like to take responsibility in their areas. They are afraid of sanctioning their own people."*

Problems relating to governance by traditional leaders were mentioned 73 times (in FGDs and KIIs) and included lack of capacity, corruption, community mistrust, and lack of support from government

departments. Several of the traditional leaders interviewed admitted that they themselves were ineffective.

Although respondents noted that rules are made by traditional leaders in agreement with communities, these are largely ignored. A FGD of young men in Nkayi explained: *"The village head, chief, and councillor set these laws. On estimation, 80 percent of households abide by these bylaws… Some do pay [fines] and correct their ways, however some do not do so and … some of the cases are not followed up because some community members pay leadership, and some are feared by the leaders and are not confronted."*

A FGD of older men in Nkayi noted*: "Punishments are very weak. People just apologise to village heads. Grazing land monitors favour people who break grazing land laws. People are made to pay fines and the money is … usually embezzled by village heads. The money is supposed to help the community, but this rarely happens. The same people break the law year in and year out."*

Respondents noted that chiefs were more highly respected. In every study site visited, study participants indicated that headmen and village-heads were ineffective and/ or corrupt. The study also suggested that councillors and resource monitors were lacking capacity and not performing their roles adequately.

The traditional management systems that used to exist, such as rotation of grazing areas and protection of streams and wetlands, have completely broken down. Meanwhile other negative traditional practices, such as shifting cultivation and streambank cultivation, persist in most areas.

### *Government departments*

Due to critical lack of resources, there is almost no monitoring, regulation, or punishment for environmental abuses by the EMA or Forestry Commission although departments are very aware of the problems. The EMA and Forestry Commission are invisible in most wards due to only one officer being available for a whole district, along with no money for fuel nor a functional vehicle. These departments depend almost entirely on NGOs or private sector for transport. In emergency situations they get some assistance from provincial offices.

Some of the representatives from these departments were utterly depressed about the situation. For example, one Forestry Commission respondent said: "*I feel like we're letting the traditional leaders down because when they bring up those reports some of them are so passionate about the environment but sometimes you really get ashamed when they tell you please come but the policies don't really allow you. Sometimes I end up using my own resources to come - you see this person is so dedicated and needs your support if you don't come tomorrow, he won't come back to you he'll just say you're useless. It really tears me apart. You can't really do anything about it they will have done their part you get despondent."*

The representative from the Lower Gwayi catchment council admitted that while his department is meant to monitor surface and groundwater resources, in practice no monitoring is done at all, due to lack of capacity and lack of resources.

There is also some overlap and confusion in the roles of departments and authorities. As shown in the diagram in Annex C, there are many different government departments responsible for similar things. An EMA officer in Binga explained that there is often confusion about the role of the department by the RDC who expects the EMA to be responsible for some things that do not come under its mandate–such as litter management and fire management within the boundary of the land that is meant to be managed by the RDC. It is also not very clear what specific and different roles should be played by the EMA, CAMPFIRE committees, and community environmental resource monitors and committees. If these organisations were better coordinated, in theory those which lack resources could be supported by others that are better resourced. Agritex is the only department consistently on the ground. EHTs (which fall under the Ministry of Health and Child Care) are present at ward-level but lack capacity and mandate to get involved in most NRM issues.

The Environment or Natural Resources Department in RDCs (where they exist) seem to focus on resource exploitation for the benefit of the council rather than management for the benefit of communities. Structures that have been set up at sub-district level (ward environment committees and environment monitors) are defunct. Only some CAMPFIRE committees seem to be working in some areas (notably Binga). These are voluntary committees set up by the CAMPFIRE programme in wards where CAMPFIRE is active.

Private sector companies (including mining, timber, fishing, and sand extraction companies) can exploit natural resources without accountability or any clear benefit to source communities and they can degrade and pollute with impunity.

## 3.8 What are the factors that will convince different stakeholders to adopt promoted NRM practices?

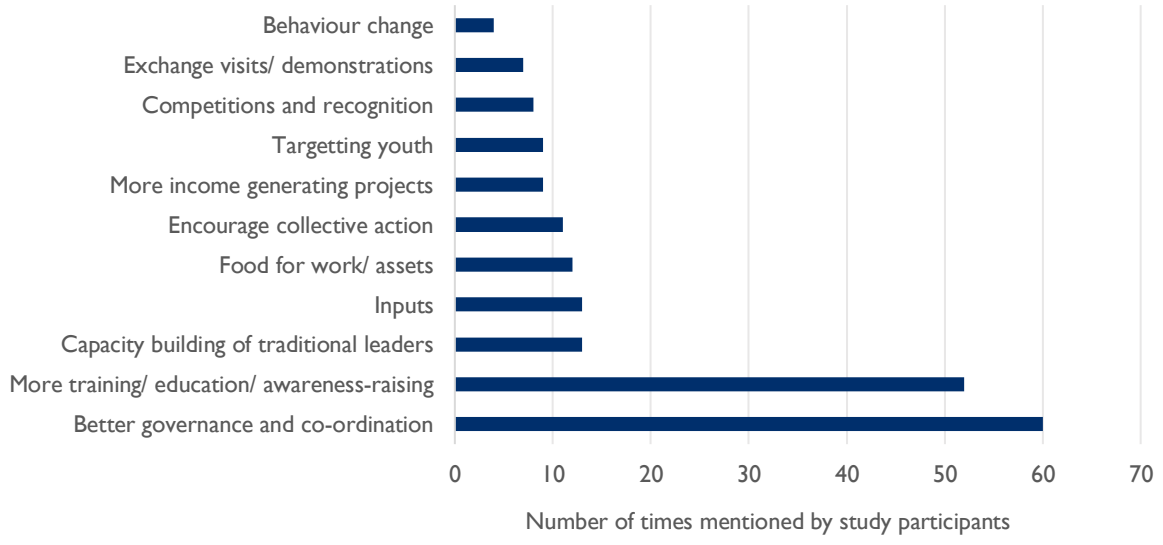
The factors that are most likely to stimulate better NRM by the different stakeholders mentioned in FGDs and KIIs are shown in figure 9.

**Better governance** was key to improvement of NRM and was mentioned 69 times, more often by key informants although the issue was mentioned in ten FGDs. Better governance included better coordination of stakeholders, enforcement of rules, and monitoring with improved accountability and transparency in terms of benefits due to communities. Study participants also saw capacity building for traditional leaders as key to improving NRM.

The next most frequently mentioned solution was more **training and awareness raising** of communities (mentioned in 12 FDGs and 28 KIIs). This was seen as most important in Binga, then in Nkayi, and was only mentioned by four key informants in Hwange.

Since the respondents seem to be very knowledgeable already (apart from on soil management), a key factor for improving NRM are interventions that go beyond training. When this was pointed out, communities had few solutions to offer. Some said that they need help in coming up with ideas to address the problems because they are so immersed in survival that they can't see a way forward. Key informants from Binga noted: "*Community initiatives succeed only when there is a great need and a direct benefit to them".* **Behaviour change** interventions were only mentioned four times.

**Figure 9: Factors that will convince and motivate different stakeholders to improve NRM**



Being given **inputs** such as seed and fertilizer to encourage uptake of conservation farming was mentioned 13 times (more often in Nkayi than the other districts and more often in FGDs). **Food for work** was mentioned 12 times as a motivator for soil conservation projects such as gulley reclamation. This was more frequently mentioned by respondents in Binga and by women in FGDs.

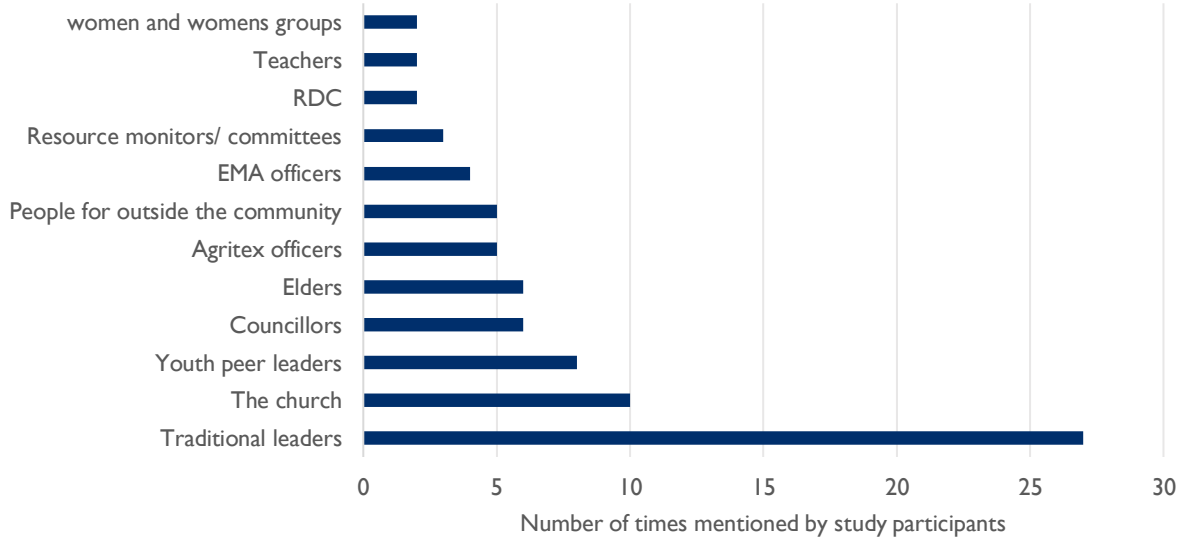
Encouraging **collective action** was mentioned 11 times (six times by key informants and most frequently by respondents in Binga). This included encouraging people to work in groups to reduce labour and working together to share ideas and information. Developing more **income generating projects** (mentioned nine times) and targeting young people (mentioned nine times, mostly by key informants) were also noted as being important solutions. **Exchange visits, field days, and demonstrations** were mentioned seven times, more frequently by key informants in Binga). **Recognition** of resource monitors by being given t-shirts, bicycles, and awards was mentioned four times and **competitions** to recognise champions were mentioned four times.

When probed most respondents agreed that being given inputs and food for work would give short-lived results and would also reinforce dependency syndrome, which has already been mentioned as a problem in these communities.

## 3.9 Who are the priority groups and the influencing groups regarding the practice of specific behaviours both positive and negative?

The **priority groups** are all land users. Women were cited as the most direct land users as they interact daily with resources (firewood and water collection, crop production, harvesting, processing, and food preparation). Men are predominantly still the community decision-makers and thus must be involved in all planning processes and must be made aware of the impact of natural resource degradation on the community and women in particular. Elderly people are repositories of traditional knowledge about NRM, and intergenerational knowledge transfer must be encouraged**.** Young people, although low in numbers in rural areas, are still blamed for most of the degradation for reasons already mentioned. Targeting youth would not only address some of the NRM problems identified but would also increase their feeling of belonging in the community. It could also help to protect them from exploitation by unregulated companies.

**Figure 10: Influencers in the community**



In terms of **influence groups,** (shown in figure 10), the following were identified (in order of frequency of mention by key informants) as people that could influence better natural resource management: traditional leaders, church leaders, youth peer leaders, community elders, councillors, Agritex officers, EMA representatives, resource monitors, RDC representatives, schoolteachers, and women's groups. Several respondents also mentioned that people from outside the community (such as NGOs) can have a lot of influence since they are well respected and non-biased.

The fact that traditional leaders are blamed for being ineffective but are also seen as key influencers is notable. Church leaders can also play a key role in supporting traditional leaders and NRM behaviour and governance. It is also notable that even though young people were often blamed as perpetrators of natural resource degradation, they were also seen as important change agents.

## 3.10. What action can communities take to promote behaviours that enable sustainable natural resources management amongst members?

Apart from the measures already listed in 3.6, communities showed that to some extent they have run out of ideas on how to address the problems and feel quite powerless. Some respondents felt that there were no solutions. An FGD in Hwange of middle-aged men stated: "*There is nothing that we can do as a community if there was a possible solution, we could have done that.*"

The final two sections in the report findings (3.11 and 3.12) deal with wild foods that are collected and consumed in the community.

## 3.11 Which wild edible plants, fruits and animals are commonly consumed at the household and at what level of consumption?

The response to this question (collected during FGDs) varies according to the wards and districts based on availability of the resource. The information likely also varies from year to year. Wild foods in terms of fruits, vegetables, mushrooms, honey, insects, lizards, small mammals, and birds were mentioned as being collected for food. Certain wild fruits, insects, animals, and small birds are sold or exchanged in barter trade with other community members, or with buyers who come from urban areas. The full list of wild fruits mentioned in each district is given in Annex D.

Since they are highly seasonal, community members had a difficult time estimating the amount of these products that contribute to their diet. Table 2 shows an example of estimates from a FGD of young women from Hwange. In Binga, respondents noted that due to crop failure, some communities depend on wild foods as their main source of income.

**Table 2: Wild foods consumed and sold in a Hwange community**

| Wild food | Percent Sold |
|---|---|
| **Wild fruits** | |
| Umviyo, wild medlar (*Vangueria infausta)* | 70 |
| Umkhomo, baobab (*Adansonia digitata)* | 5 |
| Umnyi, bird plum (*Berchemia discolor)* | 0 |
| Umthwankela, chocolate berry (*Vitex payos)* | 100 |
| Umthunduluka, batoka plum (*Falcourtia indica)* | 70 |
| Amajambe, wild grape (*Cissus spp.)* | 0 |

| Wild food | Percent Sold |
|---|---|
| Isambiya | 0 |
| Umsosobiyana, bow wood (*Grewia occidentalis)* | 0 |
| Umkhemeswane, monkey orange (*Strychnos cocculoides)* | 0 |
| Ubhunzu, half-leaf grewia (*Grewia avellana)* | 0 |
| Umsuma, African Ebony (*Diospyros mespiliformis)* | 0 |
| Uxakuxaku, snot apple (*Azanza garckeana)* | 50 |
| Umwawa, wild orange (*Strychnos madagascariensis)* | 0 |
| Umhlali, African orange (*Strychnos spinosa)* | 0 |
| Umswantsha, blue sour plum (*Ximenia americana)* | 0 |
| **Vegetables** | |
| Sipanyukile | 0 |
| Tende | 0 |
| Chadobha | 0 |
| Malandela sporo | 0 |
| Unkambo | 0 |
| Kashungwandongo | 0 |
| Munyangombe | 0 |
| Izhozhutu, mushrooms | 0 |
| Idelele, wild okra (*Abelmoschus esculentus)* | 60 |
| Imbuya yedonki, pigweed (*Amaranthus hybridus)* | 0 |
| Sidambi | 0 |
| Ulude, spider flower (*Cleome gynandra)* | 70 |
| **Insects** | |
| Amacimbi (caterpillars) | 100 |
| Inswabanda | 0 |
| Inhlwa | 0 |
| Amabhombo | 0 |
| **Small animals** | |
| Imbulumakhasane | 90 |
| Tundonga (birds) | 100 |
| Makoto | 30 |
| Mabhangwa | 0 |

| Wild food | Percent Sold |
|---|---|
| Mabhende (mice) | 100 |
| Kasindi (squirrel) | 50 |
| Kakoto | 0 |
| Imwembe (buck) | 70 |
| Ihanga (guinea fowl) | 100 |
| Kakwati | 0 |
| Chinjiri (warthog) | 70 |
| Impondwe | 0 |
| Katimba | 70 |
| Injiba (doves) | 100 |
| Ibhangu | 0 |

Table 3 shows the most commonly consumed and sold wild fruits in the three districts. The numbers in the table indicate the number of times the wild fruit was mentioned, during the FGD, as being harvested for sale or household consumption. The number of fruit species mentioned per district was surprisingly similar (19 in Binga, 21 in Hwange, and 20 in Nkayi). This was interesting because key informants in Nkayi had said there were very few wild fruits in the community. The tree species available and those most commonly consumed and sold were notably quite similar across the three districts. The fruit most commonly sold in Binga are *Vitex payos*, *Azanza garckeana,* and *Berchemia discolor*. In Hwange, the *Vangueria infausta* was the most commonly sold fruit followed by *Adansonia digitata*. In Nkayi, the most commonly sold fruit is *Adansonia digitata* followed by *Azanza garckeana.*

**Table 3: Fruits commonly harvested for household consumption or sale in the three study districts**

| **Fruit species** (Latin and Ndebele names) | **Binga** | | **Hwange** | | **Nkayi** | | **Total** |
|---|---|---|---|---|---|---|---|
| | **Sold** | **Consumed** | **Sold** | **Consumed** | **Sold** | **Consumed** | |
| *Vitex payos,* Umstwankela | 6 | 8 | 2 | 2 | 3 | 4 | 25 |
| *Azanza garckeana,* Uxakuxaku | 6 | 6 | 3 | 3 | 3 | 3 | 24 |
| *Vangueria infausta* Umviyo | 3 | 5 | 6 | 4 | 2 | 3 | 23 |
| *Berchemea discolor* Umnyi | 6 | 6 | 2 | 3 | 2 | 2 | 21 |
| *Adansonia digitata* | 1 | 1 | 5 | 3 | 4 | 3 | 17 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Umkhomo | | | | | | | |
| *Diospyros mespiliformis* Umdlawuzo | 5 | 5 | 1 | 1 | | 1 | 13 |
| *Grewia flavescens* Ubhunzu | | 2 | 1 | 3 | 1 | 4 | 11 |
| *Strychnos cocculoides* Umkhemeswane | | | 2 | 3 | 2 | 4 | 11 |
| *Tamarindus indica* Umpapanyuka | 5 | 5 | | | | | 10 |
| *Strychnos madagascariensis* Umwawa | | 1 | | 3 | | 1 | 5 |
| *Grewia occidentalis* Umsosobiyana | | | | 3 | | 1 | 4 |

In terms of wild harvested vegetables, FGD participants in Hwange and Binga respectively mentioned 22 and 16 different species that were consumed, while participants in Nkayi mentioned only four species. Hwange was the only district where participants said they sell wild vegetables (as shown in table 2). In terms of wild animals and insects caught in the wild, seven species were mentioned in Binga (only two of which were sold), 23 species were mentioned in Hwange (14 of which were sold), and only caterpillars were mentioned in Nkayi for sale and home consumption. Respondents across all three districts reported that they consume and sell wild honey and wild mushrooms.

## 3.12 What practices related to the harvesting of wild edible plants, fruits, and wildlife are prevalent?

As already mentioned, KII and FGD respondents identified wildlife poaching, overfishing, and overharvesting of wild fruits are problems. Illegal hunting of game in Nkayi has eradicated most antelope and other non-predator species according to respondents. Only 'dangerous animals' such as elephants, buffalo, and predators including leopards, hyenas, and jackals are left but these are rare according to KIIs.

According to FGDs, overharvesting of wild fruit was a problem in some areas, particularly in Binga. The study suggested that some of the people who harvest for sale take all the fruit even before it ripens, or damage the trees by breaking branches, throwing stones at the trees, and even cutting down the whole tree to get the fruit. However in other areas, the study suggested that those who harvest for sale take better care of the trees. For example, a focus group of middle-aged men in Binga said: *"Some of the trees need to be pruned in order for them to reproduce in future… We really look after these wild fruits, there are a source of livelihood, some are now planting the trees."* In the same focus group, some complained that they get very low prices for the fruits that they sell to outsiders who then put a large markup when they sell the fruit in Bulawayo.

In Hwange, a European Union-funded and Food and Agriculture Organization-supported project (Forest Forces, 2014-2017)[62] has set up a baobab processing initiative, which focus group participants said was a failure while the local Agritex officer felt it was a success. A recent press report however shows that although the project has declined, seven local entrepreneurs are using the equipment to process baobab into stockfeed, cosmetics. and other products.[63]

Wild vegetables (mostly consumed in Binga) are mainly collected for subsistence purposes. According to KIIs, control of poaching have been successful in parts of Binga due to strong collaboration between ward level CAMPFIRE committees, the RDC, and ZimParks.

# 4. Discussion and recommendations

The study set out to fill gaps in the project implementation methodology and answer research questions to inform implementation of the Amalima Loko project with respect to the purposes and thematic areas outlined in the theory of change.

The findings show that communities in the study districts value a wide range of resources because their lives and livelihoods depend on them but also because of their intrinsic value. A wide range of contextual factors (which differ between districts) and individual behaviours are contributing to natural resource degradation, mainly relating to agriculture, wild food collection, and income generation activities. Various individuals are responsible for the degradation with different genders and age groups being responsible for different degradation types. Private companies (both foreign and Zimbabwean-owned) are benefiting from resources without the communities themselves receiving benefits. Some companies are causing resource degradation and pollution with impunity. The activities of individuals and groups are leading to the severe decline of natural resources in terms of both quantity and quality. Communities and stakeholders are aware of and concerned by this decline. Most degradation by individuals is linked to their dependence on natural resources for basic survival and not having alternative livelihoods options or substitutes for things such as housebuilding materials, fuelwood, and water. Some individuals and companies are profiting from natural resource degradation, taking advantage of the extremely weak governance systems.

Successful NRM practices identified included conservation of soil, water, forests, and water systems and improved agricultural practices (notably conservation agriculture and grazing management). Although fraught with problems, the CAMPFIRE programme has been successful in reducing poaching and delivering benefits to communities in Binga and lessons can be learned and adapted from this.

Table 4 presents recommendations for Amalima Loko, which) have been developed by analysing the main degradation practices and barriers while looking at successful practices and motivations mentioned by study participants. The recommendations are in line with the theoretical framework introduced in section 2 of this report, which suggests that to change NRM behaviour, project influences need to be at multiple levels and should target individual land-users of different ages and genders, as well as households and groups–such as farmer support groups, the wider community, and the general enabling environment. The cross-cutting factors related to information, motivation, ability to act, and societal norms also need to be taken into account. Therefore, the recommendations here include ways to improve the enabling environment, as well as natural resource governance at community and district level, capacity building of individuals, and methods to encourage positive behaviour change.

[62] https://www.sundaynews.co.zw/fao-invests-55m-for-value-addition-of-forestry-products/
[63] https://www.chronicle.co.zw/hwange-villagers-put-value-addition-to-baobab-fruit/

**Table 4: Recommendations for Amalima Loko from study findings**

| NRM degradation problem | Suggested solutions/ Amalima Loko activities with respect to TOC |
|---|---|
| 1. Weakness of traditional leadership and traditional NRM governance, and undermining of traditions by the church | **Improved governance (SP1.1 and SP2.1)** empower traditional leaders supported by environmental resource monitors and councillors to set up **action committees** (I.O 1.1.2) and develop NRM plans and bylaws. Involve church leaders as well as relevant government departments (EMA, Forestry Commission, and RDC) through training (under IO.1.1.1 and IO 1.1.2).<br>**Capacitate** traditional leaders to know their roles and responsibilities.<br>**Introduce** accountability mechanisms and community feedback systems so people can report abuses anonymously. |
| 2. Government departments | **Improve governance** by facilitating mechanisms for interdepartmental coordination to fill gaps caused by lack of resources and reduce confusion in roles (IO 1.2.1). Assist with production of education and communication materials. Involve the EMA, Forestry Commission, RDC, and CAMPFIRE at all stages where possible and relevant in planning, monitoring, and accountability mechanisms. Feed into national mechanisms such as the national biodiversity strategy and action plan. |
| 3. Deforestation | **Improve governance** by supporting action committees to develop community forest management plans, bylaws, and monitoring (IO 2.1.2)<br>**Encourage** communities/ traditional leaders to issue licences for people selling firewood and fines for charcoal sellers. Licence fees and fines should go into a **community fund,** which is managed transparently and used for community development.<br>**Capacitate land users to:**<br>• Leave some high value trees in crop fields and gardens.<br>• Prune rather than cut/ burn whole trees.<br>• Plant woodlots and protect existing trees (especially high value species).<br>• Introduce agroforestry in files and gardens.<br>• Intensify field cropping, and soil improvement to reduce land clearance.<br>**Establish** tree nurseries and seed banks in communities |
| 4. Poor soil management, low fertility levels, and lack of land | **Improve governance** by instituting community-wide soil conservation and water-harvesting measures (I.O.2.2). Discourage use of sledges through community bylaws.<br>**Capacitate land users to implement: (SP 3.2)**<br>• Conservation agriculture including intensification of cropping.<br>• Contour ridges on slopes with trees or bunch grasses (vetiver). |

| | |
|---|---|
| | • Planting across the slope not down slope.<br>• Intercropping cereals with legumes for food and fodder.<br>• Leaving crop residues on soil.<br>• Planting soil improving perennials on field bounds and green manure crops in fields.<br>• Organic soil improvement methods to enhance long term soil moisture and nutrient-holding capacity.<br>**Establish farmer support groups** as part of farmer field schools to encourage behaviour change beyond training and awareness. |
| 5. Poaching/ wildlife decline and human-wildlife conflict | **Improve governance** by managing wildlife numbers through supporting CAMPFIRE systems where they exist. This will be difficult in Nkayi due to historical dislike of CAMPFIRE. Introduce community level holistic land and livestock management systems to mitigate livestock loss from predators.<br>**Capacitate land users to:**<br>• Implement tried and tested systems to keep wildlife out of crop and garden areas.<br>• Increase production and consumption of small livestock.<br>• Find alternative livelihoods. |
| 6. Streambank cultivation and wetland damage | **Improve governance** by getting permission from the EMA to relax the streambank rule from 30m to 15m with the condition that conservation measures are put in place by farmers who cultivate in these areas.<br>**Capacitate land users to:**<br>• Protect stream banks by planting appropriate trees, reeds, and bunch grasses such as Napier fodder.<br>• Use organic soil fertility improvement methods (IO 3.2.2).<br>**Establish** irrigation points for gardens (preferably individual rather than group gardens). |
| 7. Poor livestock grazing management, overstocking, and no grazing planning | **Improve governance** by supporting action committees to institute community-wide rotational grazing schemes in participation with traditional leaders building on Nkayi successes and with advice from Africa Centre for Holistic Management.<br>**Encourage**<br>• A licencing system for people with more than 20 cattle to discourage over-stocking. Licence fees to go into community fund.<br>• Community-based meat markets and beef committees to encourage destocking.<br>• Improve fodder production and supplementary feeding (IO 3.2.2). |

| | |
|---|---|
| 8. Private sector abuses, mining pollution, and overfishing | **Improve governance** with assistance from Zimbabwe Environmental Lawyers Association to support action committees to lobby private companies to commit to improved practices.<br><br>**Capacitate** fishing associations to know their rights and encourage fishers to join associations. Link them to income savings and lending schemes to raise money for better equipment.<br><br>**Encourage** private sector investment in community projects through corporate social responsibility funds. |
| 9. Over-harvesting of wild fruit and uncontrolled sand/ gravel extraction | **Improve governance** by supporting community action committees to develop bylaws and issue licences to wild fruit harvesters. Licence fees to go into community fund.<br><br>**Capacitate** harvesters to use sustainable methods. |
| 10. Labour issues related to soil conservation works and conservation agriculture | **Improve governance** by encouraging work parties for laborious tasks.<br><br>**Introduce:**<br>• Mechanised methods for large scale conservation and rehabilitation works.<br>• Labour saving technologies for conservation agriculture and small grain processing. |
| 11. Youth alienation and lack of community unity | **Improve governance** by ensuring that young people are involved in planning and decision-making.<br><br>**Use** watershed champions as peer leaders.<br><br>**Introduce** alternative non-natural resource-based livelihoods that give quick returns to encourage young people.<br><br>**Encourage** intergenerational knowledge transfer with elders presenting traditional knowledge sessions at schools.<br><br>**Involve** school children and teachers in community visioning, setting up demonstrations of better agricultural practices in school gardens and housing nurseries and seed banks. |
| 12. Negative attitudes and cultural attitudes around livestock | **Use behaviour change strategy** to address some of these issues working with **farmer support groups**. Encourage collective action and improve enabling environment through better governance and alternative livelihoods measures mentioned above. |

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# ANNEX A: Gaps to be addressed by the study

**Table 5: Information gaps identified in the Amalima Loko 'Inception Workshop'.**

| Information Gap |
|---|
| What are the barriers to the adoption of a holistic land management practices in communal lands? |
| What factors impede or enhance household and community action for sustainable NRM, how do they influence capacity and willingness to address environmental, economic, climatic, and other shocks and stressors, and how can these issues be addressed so as to improve collaborative management of the natural resource base on which resilience depends? |
| What is the intrinsic and instrumental value of natural resources for communities? |
| How can institutional and value chain actors better support the improved productive and NRM practices of the target communities? |
| How will vested interests, such as livestock owners who want to graze their livestock, become convinced that new actions are necessary to restore watersheds, including perhaps restrictions on grazing or grazing areas? |
| Why do people engage in harmful agricultural or NRM practices? |
| What are the most dominant deforestation and mining practices in the communities and why do they occur? Who is responsible? |
| What are the harmful NRM practices and who is undertaking them? How can these harmful practices be overcome? |

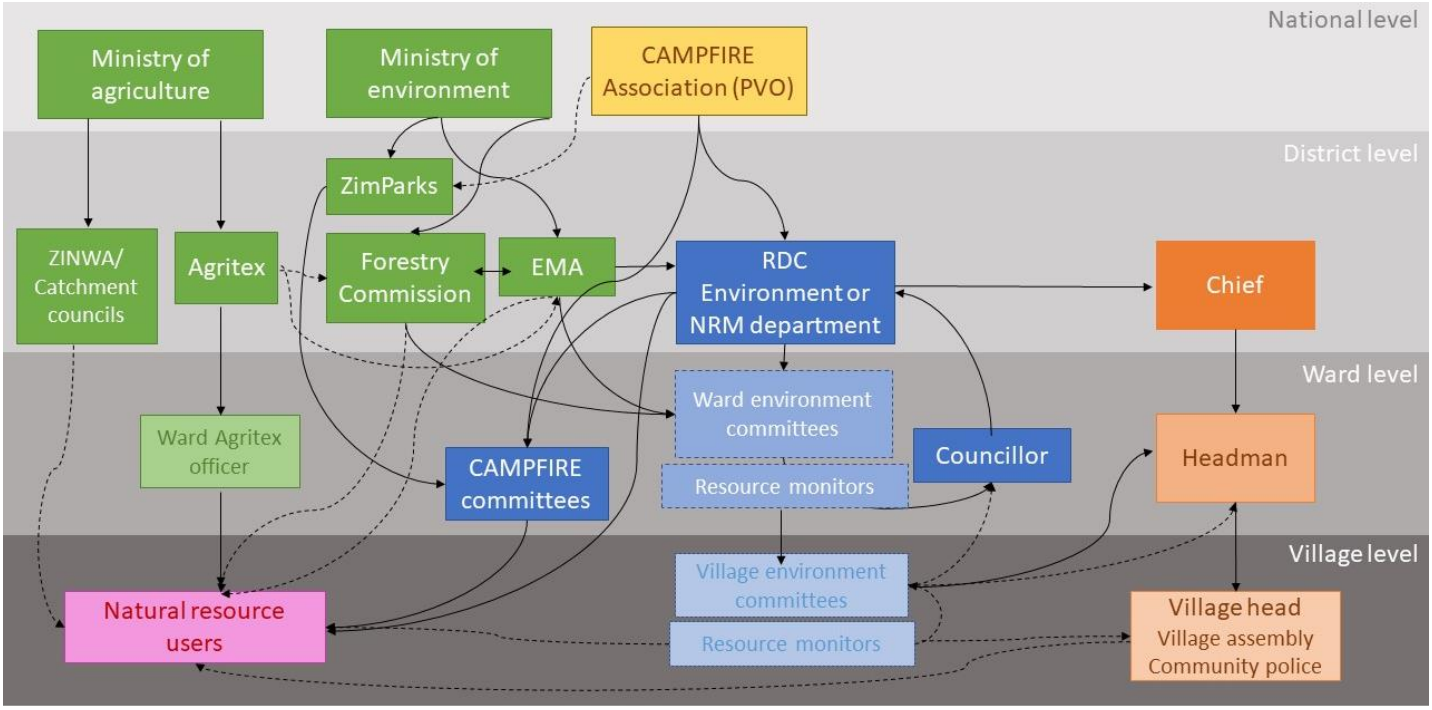
# ANNEX B: Social ecological model of behaviour change

**Figure 11: Social ecological model of behaviour change**


Source: Mckee, Manoncourt, Chin and Carnegie 2000. https://sbccimplementationkits.org/sbcc-in-emergencies/learn-about-sbcc-and-emergencies/what-is-social-and-behavior-change-communication/

# ANNEX C: NRM governance structures in the study districts

**Figure 12: NRM governance structures in the study districts**



# ANNEX D: Wild fruit species per district

The figures 13, 14, and 15 show the number of focus groups that mentioned wild fruit species that were harvested for consumption or sale across the three districts.

**Figure 13: Indigenous fruit harvested for sale and household consumption in Binga**

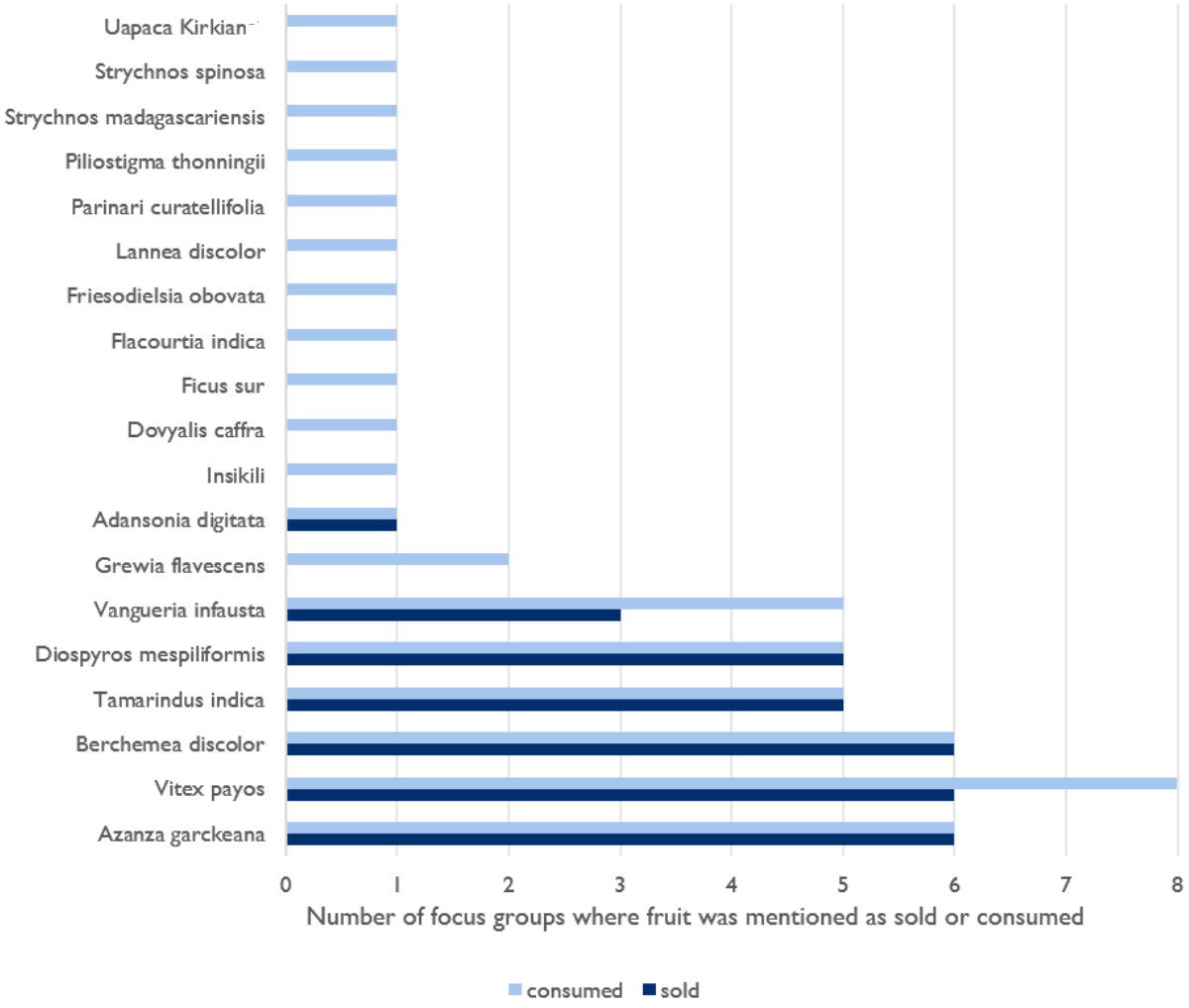


**Figure 14: Indigenous fruit harvested for sale and household consumption in Hwange**

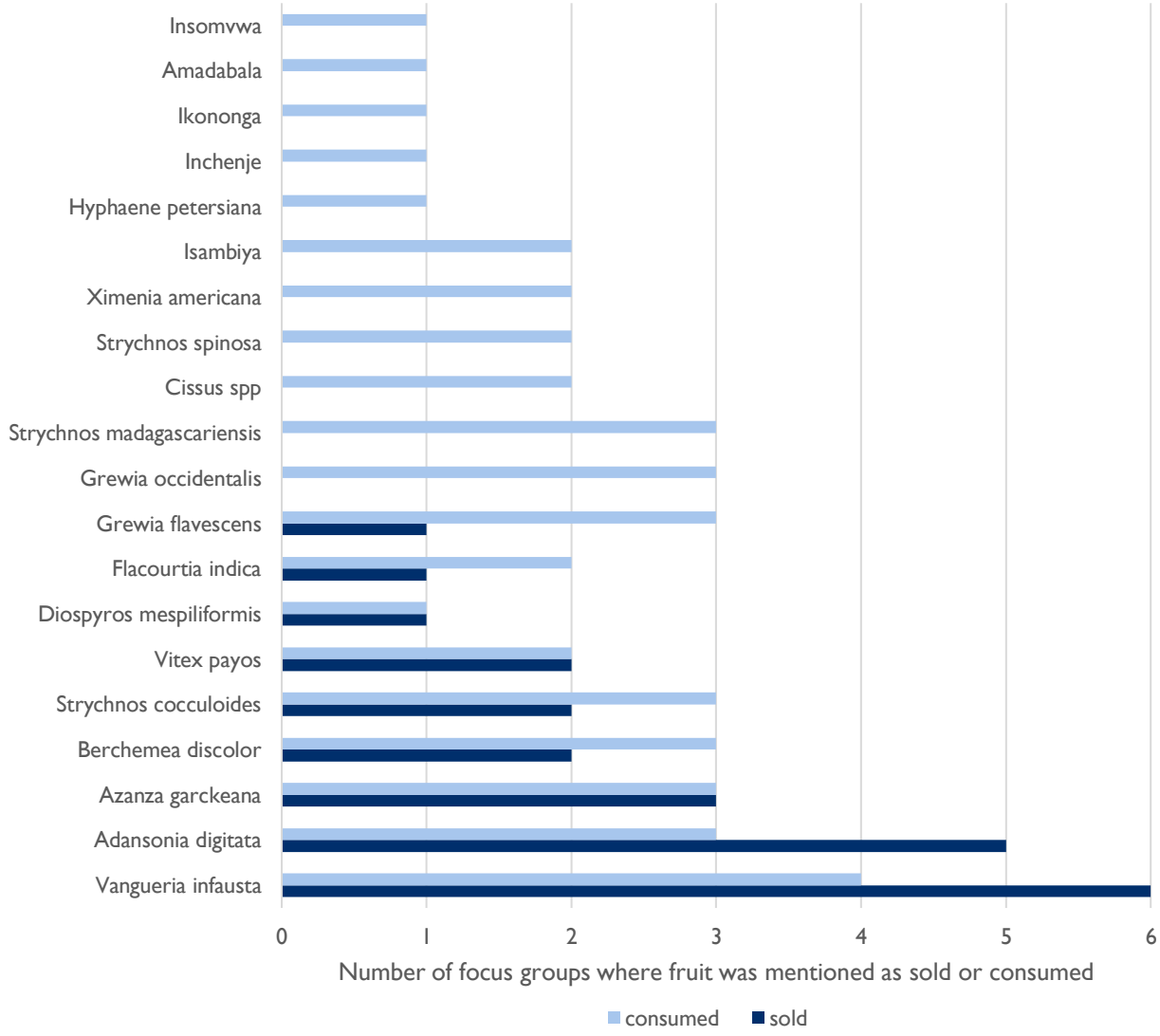


**Figure 15: Indigenous fruit harvested for sale and household consumption in Nkayi**